

STOODY

AN ESAB® BRAND

HARDFACING & HIGH ALLOY

Product Selection Guide

[Stoody.com](https://www.stoody.com)

STOODY HARDFACING AND HIGH-ALLOY JOINING

Stoody is a world leading innovator and producer of welding wires, electrodes, and powders used to combat various types of wear and corrosion. These alloys are engineered to withstand the demands of high impact and/or high abrasion conditions found in metal to metal or metal to earth applications that may also be accompanied by high temperatures or corrosion. Stoody has developed a full product offering to meet your unique requirements. Our extensive family of welding products includes iron, nickel, cobalt, titanium, tungsten, chromium, niobium and vanadium bearing alloys. In addition to hardfacing products, Stoody also offers a full line of high alloy (stainless and nickel based) joining and cladding wires and electrodes. Some of the major industries we serve are power generation, mining, construction, railroad, steel mills, steel foundries, oil and gas production and exploration as well as the pulp and paper industry.

Founded in 1921, Stoody created the hardfacing category of welding products. Today Stoody continues to lead innovation in hardfacing alloys and has grown to be a world class supplier to industries and companies around the world. Located in Bowling Green, KY, Stoody offers complete engineering and laboratory services to ensure high standards of quality control as well as custom metallurgy and product development.

Sections of this entire catalog are also available for downloading on our website at Stoody.com



Stoody products are manufactured in Bowling Green, Kentucky.

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Coated Electrodes & Bare Rods

Open-Arc and Gas-Shielded Wires

Submerged Arc Wires

High Alloy Joining & Cladding

Powders and Dropped Carbides

RECOMMENDED PRODUCTS BY INDUSTRY & APPLICATION

AGRICULTURE

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Sweeps	Moderate Impact & Abrasion	Stoody BTS Borium (ATB) Stoody 31 Stoody 2134 Stoody 965-G, 965-O, 965 AP-G Stoody 964-G, 964-O, 964 AP-G Stoody 966-G	OFW OFW SMAW SMAW GMAW, Open-Arc, FCAW GMAW, Open-Arc, FCAW GMAW
	Low Impact & Abrasion	Vancar E, Vancar G, Vancar-O Stoody 965-G, 965-O, 965 AP-G Stoody 964-G, 964-O, 964 AP-G Stoody 966-G	SMAW, OFW, Open-Arc GMAW, Open-Arc, FCAW GMAW, Open-Arc, FCAW GMAW
Chisel Points	Moderate Impact & Abrasion	Borium (ATB) Stoody 965-G, 965-O, 965 AP-G Stoody 964-G, 964-O, 964 AP-G Stoody 966-G	OFW GMAW, Open-Arc, FCAW GMAW, Open-Arc, FCAW GMAW
Ammonia Injector Feet	Low Impact & Abrasion	Borium (ATB) Vancar E, Vancar G, Vancar-O Stoody 965-G, 965-O, 965 AP-G Stoody 964-G, 964-O, 964 AP-G Stoody 966-G	OFW SMAW, OFW, Open-Arc GMAW, Open-Arc, FCAW GMAW, Open-Arc, FCAW GMAW
Grain Mill Hammers	Moderate Impact & Abrasion	Borium (ATB) TB-2954 Stoody 965-G, 965-O, 965 AP-G Stoody 964-G, 964-O, 964 AP-G Stoody 966-G	OFW OFW GMAW, Open-Arc, FCAW GMAW, Open-Arc, FCAW GMAW

EARTH MOVING - CONSTRUCTION

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Idler Rolls	Metal to Metal	ThermaClad 42	SAW
Track Rollers, Rails, Sprockets	Metal to Metal	Stoody 105B ThermaClad 42 Super Build Up-G Super Build Up-O	SAW SAW GMAW Open-Arc
Sprockets, Gear Teeth	Metal to Metal	Stoody 1105 Stoody 105-G, 105-O	SMAW GMAW, Open-Arc
Ripper Shanks	Moderate Impact & Abrasion	Stoody XHC Stoody 101HC-G, 101HC-O Stoody 964-G, 964-O, 964 AP-G	SMAW GMAW, Open-Arc GMAW, Open-Arc, FCAW
Dozer Teeth, Bucket Lips & Teeth	Moderate Impact & Abrasion	Stoody 31 Stoody 35 Stoody 2134 Stoody XHC Stoody 600 Stoody 964-G, 964-O, 964 AP-G	SMAW SMAW SMAW SMAW Open-Arc GMAW, Open-Arc, FCAW
	Low Impact & High Abrasion	Stoody 35, Stoody XHC, Stoody 101HC-G, 101-O, Stoody CP2001, Stoody 101AP	SMAW, SMAW GMAW, Open-Arc, FCAW
	Low Impact & Severe Abrasion	Vancar E, Vancar G, Vancar-O Stoody 130 Stoody 160FC	SMAW, OFW, Open-Arc Open-Arc GMAW

RECOMMENDED PRODUCTS BY INDUSTRY & APPLICATION

OIL & GAS UPSTREAM

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Earth Moving / Ground Engaging	Abrasion & Impact	Stoody XHC Super 20 Stoody 101HC Stoody CP2000 Stoody 101AP Vancar E, Vancar G, Vancar-O Stoody 101HWP	SMAW SMAW, Open-Arc GMAW, Open-Arc Open-Arc FCAW SMAW, OFW, Open-Arc Open-Arc
Pipe I.D. Cladding, Elbow I.D. Cladding	Slurry Abrasion, Corrosion	Stoody 160-E Stoody 160FC Stoody PC2009 Stoody PR2009 Stoodcor 136 Stoody CP2000	SMAW GMAW Open-Arc Open-Arc Open-Arc Open-Arc
Down Hole Tolling, Tool Joint Repair	Build Up, Tool Joint Repair	Stoody 155FC Stoody ThermoClad 104TJ	GMAW SAW
Down Hole Tolling, Hardfacing / Hardbanding	Abrasion	Stoody 160-E Stoody 160FC Stoody 160FS Stoody HB-56 Stoody HB-64 Stoody HB-Ti Stoody HB-NoMag	SMAW GMAW GMAW GMAW GMAW Open-Arc GMAW

OIL & GAS MIDSTREAM

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Pipe I.D. Cladding, Elbow I.D. Cladding	Slurry Abrasion, Corrosion	Stoody PC2009 Stoody PR2009 Stoodcor 136 Stoody CP2000 Stoody 160FC	Open-Arc Open-Arc Open-Arc Open-Arc GMAW
Valves	Slurry Abrasion, Corrosion	Stoodite 6-T / Stoodite 6-M / Stoodite 6-O Stoodite 12 / Stoodite 12-M Stoodite 21-T / Stoodite 21-M	GTAW, GMAW, Open-Arc GTAW, GMAW GTAW, GMAW
LNG Tanks, Cryogenic Joining (9% Nickel), High Alloy Clad Lines	Joining	Stoody NiCrMo3-T1	GMAW

OIL & GAS DOWNSTREAM

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Valves	Corrosion	Stoodite 6 / Stoodite 6-M / Stoodite 6-O Stoodite 12 / Stoodite 12-M Stoodite 21 / Stoodite 21-M	GTAW, GMAW, Open-Arc GTAW, GMAW GTAW, GMAW
Pump Parts	Corrosion	Stoodite 12 / Stoodite 12-M	GTAW, GMAW
Duplex Stainless Steel Joining Applications	Joining	Brilliant 2209 T-1 AP Brilliant 2594 T-1 AP	GMAW GMAW
LNG Tanks, Cryogenic Joining (9% Nickel), High Alloy Clad Lines	Joining	Stoody NiCrMo3-T1	GMAW

RECOMMENDED PRODUCTS BY INDUSTRY & APPLICATION
MINING

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Dragline Bucket, Shovel Tips	High Stress Abrasion	Stoody XHC Stoody CP2000 Stoody 160-E Stoody 160FC	SMAW Open-Arc SMAW GMAW
Tunneling, Boring	Low Impact & Severe Abrasion	Stoody 160-E Vancar E, Vancar G, Vancar-O Stoody 160FC	SMAW SMAW, OFW, Open-Arc GMAW
Conveyor Pipes	High Abrasion	Stoody CP2000 Stoody PC2009 Stoody PR2009 Stoody 160FC	Open-Arc Open-Arc Open-Arc GMAW
Augers	High Abrasion	Stoody 101HC-G, 101HC-O Stoody CP2000, Stoody 101AP, Stoody 160FC Stoody 160-E Super 20	GMAW, Open-Arc Open-Arc, FCAW GMAW SMAW SMAW, Open-Arc
Cable Sheaves	Metal to Metal	ThermaClad 42 ThermaClad 102	SAW SAW
Dragline Pins	Metal to Metal	Stoody 102	SAW

POWER GENERATION

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Roller Crushers, Grinding Rings - Coal	Low Impact & High Abrasion	Stoody 100HD Stoody CP2000 Stoody CP2001	Open-Arc Open-Arc Open-Arc
Rotary Vein Wheels	High Abrasion	Stoody CP2000 Stoody 160FC Vancar E, Vancar G, Vancar-O Super 20	Open-Arc GMAW SMAW, OFW, Open-Arc SMAW, Open-Arc
Mill Liner Plates	High Abrasion	Stoody CP2000 Stoody 101HWP Stoody 101HD	Open-Arc Open-Arc Open-Arc
Clinker Grinders	High Abrasion	Stoody 600	Open-Arc
Elbows, Rotary Veins	Low Impact & High Abrasion	Stoody 35 Stoody CP2000 Stoody 160FC	SMAW Open-Arc GMAW
Steam Valves	High Temperature, Metal to Metal	Stoodite 6H / Stoodite 6-M / Stoodite 6-O Stoodite 21 / Stoodite 21-M	GTAW, GMAW, Open-Arc GTAW, GMAW

STEEL

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Roll	Build Up	ThermaClad 8620 ThermaClad RollBuild 3	SAW SAW
Continuous Casters	Corrosion, Thermal Fatigue & Abrasion	ThermaClad 423, 423N SOS 423	SAW Open-Arc
Pinch Rolls	Abrasion, Thermal Resistance	ThermaClad 443	SAW
Cold Rolling, Bell Seats	Abrasion	ThermaClad 102	SAW
Burden Area, Guides, Bell	Abrasion	Stoody 103 Stoody 100HD Stoody CP2000	SMAW Open-Arc Open-Arc

RECOMMENDED PRODUCTS BY INDUSTRY & APPLICATION

DREDGING

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Pump Housings	Low Impact & Abrasion	Stoody 100HD Stoody CP2000	Open-Arc Open-Arc
	High Impact	Stoody 117 Stoody 31	Open-Arc SMAW
Pump Seals, Impellers	Moderate Impact & Abrasion	Stoody 117 Stoody 31, Stoody 133	Open-Arc SMAW, FCAW
Rotary Cutter Teeth	High Stress Abrasion	Stoody 160FC Stoody 160-E	GMAW SMAW

CEMENT

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Raw Materials Pulverizing Mill	Moderate Impact & High Abrasion	Stoody 100HC Stoody CP2000 Stoody CP2001 Stoody 100HD	Open-Arc Open-Arc Open-Arc Open-Arc
Pulverizing Rolls, Tables	Low Impact & High Abrasion	Stoody CP2000	Open-Arc
Feed Screw Flights	High Abrasion	Stoody CP2000 Stoody 130 Stoody 160FC	Open-Arc Open-Arc GMAW
High Pressure Clinker Rolls	High Pressure & Abrasion	Stoody 600, Stoody 670	Open-Arc, GMAW
	Build Up	ThermaClad Roll Build 3	SAW
Mill Paddles	Moderate Impact & Abrasion	Stoody 35 Stoody XHC Super 20 Stoody CP2000 Vancar	SMAW SMAW SMAW Open-Arc SMAW, GMAW, Open-Arc

RECYCLING

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Tire Shredding Knives	High Stress, Metal to Metal	Stoody M7 Stoody 964-G, 964-O, 964 AP-G	GMAW GMAW, Open-Arc, FCAW
Tub Grinders	High Stress Abrasion	Vancar Stoody 121-G, 121-O	SMAW, GMAW, Open-Arc GMAW, Open-Arc
Rotor Disc Car Crusher	High Impact	Stoody 2110 Stoody 100-G, 110-O	SMAW GMAW, Open-Arc
Alligator Shears, Labounty Shears	High Stress, Metal to Metal	Stoody 1102 Stoody 102-G, 102-O	SMAW GMAW, Open-Arc
Grapples	High Impact, Metal to Metal	Stoody 965-G, 965-O, 965 AP-G Stoody 964-G, 964-O, 964 AP-G Stoody Self-Hardening (SHIP)	GMAW, Open-Arc, FCAW GMAW, Open-Arc, FCAW SMAW

LOGGING / PULP / PAPER

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Debarking Hammers	Medium Impact & Abrasion	Stoody 33, Stoody 2134 Stoody 133, Stoody 134, Stoody 160FC, Vancar	SMAW, SMAW FCAW, FCAW, GMAW SMAW, GMAW, Open-Arc

RECOMMENDED PRODUCTS BY INDUSTRY & APPLICATION

QUARRIES - CRUSHING

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Roll Crusher Rollers	Build Up / Repairs	Stoody 110-G, 110-O Stoody 2110	GMAW, Open-Arc SMAW
	Build Up / Hardface	Stoody 117 Stoody 100HC	Open-Arc Open-Arc
Rotors, Impeller Bars	Build Up / Manganese / Carbon Steel	Stoody 110-G, 110-O Stoody 2110, Stoody 111	GMAW, Open-Arc SMAW, FCAW
Crusher Hammers	Moderate Impact & Abrasion	Stoody 2134 Stoody 134-G, 134-O, Stoody Super 20	SMAW GMAW, Open-Arc, SMAW and FCAW
Jaw Crusher - Jaws	Moderate Impact & Abrasion	Stoody 134-G, 134-O	GMAW, Open-Arc
	High Impact & Abrasion	Stoody 600, Stoody 111 Stoody 670	Open-Arc, FCAW, GMAW
Joining	Joining Manganese to Carbon Steel	Stoody 110-G, 110-O Stoody 2110	GMAW, Open-Arc SMAW
Various Hammers	Low Impact & High Abrasion	Versalloy Plus, Versalloy AP Stoody 21 Stoody 121-G, 121-O	SMAW, FCAW SMAW GMAW, Open-Arc
Worn Cones, Mantles	Repairs	Stoody 110-G, 110-O Stoody 2110	GMAW, Open-Arc SMAW
	Build Up & Hardface	Stoody 117 Stoody 100HC Stoody CP2000	Open-Arc Open-Arc Open-Arc
New Cones, Mantles	Moderate Impact & High Abrasion	Stoody 100HC	Open-Arc

RAILROAD - TRACK REPAIR

APPLICATION	MODE - WEAR OR REPAIR	PRODUCT	PROCESS
Austenitic Manganese Steel Frogs, Inserts, Crossings	Build Up & Repair	Nicromang Frog Nicromang Plus Nicromang, Dynamang Foundry Co-Mang Trackwear Stoody 2110, Stoody 110	SMAW, Open-Arc SMAW, Open-Arc SMAW, Open-Arc SMAW, Open-Arc SMAW, Open-Arc SMAW, Open-Arc
High Carbon Steel Frogs, Inserts, Crossings	Build Up & Repair	Railend 932 Stoody Build-Up LH, Stoody Build-Up Stoody Super Build-Up	SMAW, Open-Arc SMAW, GMAW/Open-Arc GMAW/Open-Arc

PROCESS KEY

FCAW - Flux Cored Arc Welding
GMAW - Gas Metal Arc Welding (MIG)
GTAW - Gas Tungsten Arc Welding (TIG)
OFW - Oxy-Fuel Welding

Open-Arc - Open Arc Welding
SAW - Submerged Arc Welding
SMAW - Shielded Metal Arc Welding (Stick)

GROUP 1: BUILD-UP AND JOINING ALLOYS

Service Conditions and Typical Applications	Coated Electrodes and Bare Rods (Pages 12-15)	COATED	BARE	Open-Arc and Gas-Shielded Wires (Pages 30-35)	Submerged Arc Wires (Pages 59-61)	Relative Abrasion Resistance and Impact Strength		
						LOW	MEDIUM	HIGH
A. Build-Up of Carbon Steel Applications: Machinery parts-wearing parts of carbon and low-alloy steel subject to metal-to-metal rolling, sliding and impact loading. Examples are shafts, gears and other heat-treated and machined surfaces. Also used to renew worn steel parts to near original dimensions prior to hard surfacing.	BUILD-UP LH	•		STOODY BUILD-UP BUILD-UP AP-G	THERMACLAD 104			
						THERMACLAD ROLL BUILD 3		
	NICROMANG	•		DYNAMANG	DYNAMANG-S			
	NICROMANG PLUS	•		NICROMANG PLUS				
	NICROMANG FROG	•		NICROMANG FROG				
	FOUNDRY CO-MANG	•		FOUNDRY CO-MANG-O				
	TRACKWEAR	•		TRACKWEAR (Formerly SA Manganese)				
C. Build-Up and Joining of Both Carbon and Manganese Steel	STOODY 2110	•		STOODY 110				
				STOODY 111				
				STOODY 120				
	VERSALLOY PLUS	•		VERSALLOY AP-G		N/A		
D. Joining and Build-Up of Cast Irons Applications: Welding and repairs of cast iron parts.	CASTWELD™ 55	•		CASTWELD Ni 55-O/S	CASTWELD Ni 55-O/S	N/A		
				CASTWELD Ni 30-O/S	CASTWELD Ni 55-S	N/A		
	CASTWELD 57	•		CASTWELD 30-G	CASTWELD Ni 30-O/S	N/A		
	CASTWELD 99	•				N/A		

GROUP 2: METAL TO METAL WEAR

Service Conditions and Typical Applications	Coated Electrodes and Bare Rods (Pages 16-17)	COATED	BARE	Open-Arc and Gas-Shielded Wires (Pages 36-38)	Submerged Arc Wires (Pages 62-69)	Relative Abrasion Resistance and Impact Strength		
						LOW	MEDIUM	HIGH
Applications: Non-lubricated metal-to-metal rolling or sliding parts where temperature can be a factor such as steel mill rolls and undercarriage parts of earth moving equipment.				SUPER BUILD-UP	THERMACLAD 107	Low	Medium	High
					THERMACLAD 105B	Low	Medium	High
	STOODY 1105	●		STOODY 105	THERMACLAD 105	Low	Medium	High
					THERMACLAD 4552	Low	Medium	High
				STOODY 420	THERMACLAD 420	Low	Medium	High
					THERMACLAD 104TJ	Low	Medium	High
	STOODY 1102	●		STOODY 102	THERMACLAD 102	Low	Medium	High
	RAIL END 932	●		RAIL END 932-0	THERMACLAD 42	Low	Medium	High
				M7-G		Low	Medium	High
				STOODY 964AP-G		Low	Medium	High
				STOODY 964		Low	Medium	High
				STOODY 966-G		Low	Medium	High

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION (HIGH ALLOY-IRON BASED)

Service Conditions and Typical Applications	Coated Electrodes and Bare Rods (Pages 18-22)	COATED	BARE	Open-Arc and Gas-Shielded Wires (Pages 39-51)	Submerged Arc Wires (Page 70)	Relative Abrasion Resistance and Impact Strength		
						LOW	MEDIUM	HIGH
Applications: Surfaces subject to abrasion from bulk handling of rock, ore, clay, sand, etc., such as digger teeth, crushing surfaces, grizzlies, mullers, conveyor screws, etc.	SELF HARDENING	●		STOODY 965 STOODY 965 AP-G		Low	Medium	High
				STOODY 117		Low	Medium	High
	STOODY 33	●		STOODY 133		Low	Medium	High
	STOODY 19	●				Low	Medium	High
	STOODY 21	●		STOODY 121		Low	Medium	High
	STOODY 31	●		STOODY 131		Low	Medium	High
	BTS		●			Low	Medium	High
	STOODY 35	●		STOODY 135		Low	Medium	High
				STOODY 964AP-G		Low	Medium	High
	CTS	●		STOODY 134		Low	Medium	High
	STOODY 2134	●		STOODY 964		Low	Medium	High
				STOODY 100HC	STOODY 103CP	Low	Medium	High
				STOODY 101HC		Low	Medium	High
				STOODYCOR 136		Low	Medium	High
				STOODY 100HD		Low	Medium	High
				STOODY PC2009		Low	Medium	High
				STOODY PR2009		Low	Medium	High
				STOODY 100XHC		Low	Medium	High
	STOODY XHC	●		STOODY 101HD 101HT, 101AP		Low	Medium	High
				STOODY 101HWP		Low	Medium	High
				STOODY 966		Low	Medium	High
				STOODY 968-O		Low	Medium	High
				STOODY 970-G		Low	Medium	High
	SUPER 20	●		SUPER 20		Low	Medium	High
				STOODY CP2000	STOODY CP2000-S	Low	Medium	High
				STOODY 600		Low	Medium	High
				STOODY 670		Low	Medium	High
	STOODY 45	●		STOODY 143	STOODY 143-S	Low	Medium	High
				STOODY CP2001		Low	Medium	High
				STOODY 145	STOODY 145-S	Low	Medium	High

GROUP 4: METAL TO EARTH (EARTH CUTTING & DIGGING) FOR EXTREME ABRASION AND LOW IMPACT (TUNGSTEN & VANADIUM CARBIDE)

Service Conditions and Typical Applications	Coated Electrodes and Bare Rods (Pages 23-25)	COATED	BARE	Open-Arc and Gas-Shielded Wires (Pages 52-54)	Submerged Arc Wires	Relative Abrasion Resistance and Impact Strength			
						LOW	MEDIUM	HIGH	
Applications: Cutting edges of digging tools such as augers and rotary rock bits. Surfaces subject to sliding abrasion from rock, sand, ore, cement, etc., such as digging teeth, scraping edges, conveyor screws, etc.	AC-DC BOROD	●		STOODY 130					
	BARE BOROD		●						
	AC-DC TUBE BORIUM	●							
	ACETYLENE TUBE BORIUM		●						
	TB-2954		●						
	TB-20062		●						
	TUBE BORIUM H		●						
	HORSESHOE BORIUM		●						
	VANCAR E & G	●	●		VANCAR				
					STOODY 155FC				
	STOODY 160-E	●			STOODY 160FC, 160FC-O				
					STOODY 160FS				

GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES (COBALT AND NICKEL BASED)

Service Conditions and Typical Applications	Coated Electrodes and Bare Rods (Pages 26-29)	COATED	BARE	Open-Arc and Gas-Shielded Wires (Pages 55-57)	GMAW (M)	Submerged Arc Wires (Pages 71-72)	Relative Abrasion Resistance and Impact Strength			
							LOW	MEDIUM	HIGH	
Applications: Wearing surfaces operating at red heat and/or corrosive environments such as plows in roasting ovens, tong bits handling ingots, steam throttling valves, etc.	STOODITE 6 STOODITE 6H	●	●	STOODITE 6-M STOODITE 6-T	●	STOODITE 6-S				
	STOODITE 12	●	●	STOODITE 12-M	●	STOODITE 12-S				
	STOODITE 1	●	●	STOODITE 1-M	●					
	STOODITE 21	●	●	STOODITE 21-M STOODITE 21-T	●	STOODITE 21-S				
	STOODY 50		●							
	STOODY 60		●		STOODY 60-M	●				
	STOODY C	●			STOODY C-M	●	STOODY C-S			

GROUP 1: BUILD-UP AND JOINING ALLOYS

A. BUILD-UP OF CARBON STEELS

STOODY® BUILD-UP LH - COATED

STOODY BUILD-UP LH is a solid core electrode with a special low hydrogen coating to provide a high strength fusion bond on carbon and low alloy steels. When used as a base alloy for hardsurfacing overlays or for restoring parts to original dimensions, it provides a weld deposit with excellent compressive strength and ductility capable of absorbing heavy impact and/or compressive loads. It can be applied in multiple layers without cracking, spalling or mushrooming. It is machinable in the "as welded" condition with reasonable procedural care and can be forged at red heat. It is not recommended for manganese steel or cast iron and will work harden under high impact loads.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity (reverse preferred) in stringer or weave beads. Preheat and slow cool prior to machining; carbide tools are recommended. Strongly magnetic on carbon and low alloy steel. This electrode is an all-position electrode. NOTE: Should not be used for joining.

Applications: Tractor Rollers, Steel Shovel Pads, Tractor and Shovel Idlers, Gear Teeth, Sprockets and Shafts

Typical Chemical Composition:

Alloy Content – 4.5% (Chromium, Molybdenum, Manganese, Silicon, Carbon)

Iron Base

Typical Mechanical Properties:

Hardness:

- 1 Layer (weave beads) Med. Carbon Steel 27 HRC
- 2 Layers (weave beads) Med. Carbon Steel 29 HRC
- 3 Layers (weave beads) Med. Carbon Steel 31 HRC
- Tensile Strength..... 118 ksi (815 MPa)
- Yield Strength..... 113 ksi (780 MPa)
- Elongation 6%

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC±)
■ 11414100	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100 – 185
■ 11412900	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140 – 250
■ 11413000	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	180 – 310
■ 11413100	10 lb Vac Pak (4.5 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	200 – 360

NICROMANG® - COATED

NICROMANG is an out of position extruded electrode with excellent impact strength. It work hardens under impact. Deposits can be flame cut. NICROMANG has a high deposition rate. Designed for build-up, and joining of manganese steels. No limit to deposit thickness.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity (reverse preferred). Use straight polarity for fastest deposition. Minimum spatter loss. Produces a thin, non-popping slag that is easily removed. Weave beads 2–3x electrode diameter are preferred. Deposits are non-magnetic and machinability is poor. Interpass temperature should not exceed 500°F (260°C) maximum. Not recommended for build-up of carbon steel.

Applications: Dipper and Tooth Build-up, Crusher Rolls, Dredge Pump Parts, Rolling Mill Couplers, Rolling Mill Spindles, Crusher Jaws, Impact Breaker Bars, Hammer Mill, Shovel Pads, Railroad Frogs (manganese)

Typical Chemical Composition:

Alloy Content – 23% (Manganese, Chromium, Nickel, Carbon, Silicon)

Iron Base

Typical Mechanical Properties:

- Hardness (2 Layers) / Work Hardens to.....200 BHN / 500 BHN
- Tensile Strength..... 120 ksi (830 MPa)
- Yield Strength..... 70 ksi (480 MPa)
- Elongation 42%

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC±)
■ 45150850	60 lb Bulk Pak (27.2 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100 – 160
■ 45150810	10 lb Box (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100 – 160
■ 45151050	60 lb Bulk Pak (27.2 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140 – 200
■ 45151010	10 lb Box (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140 – 200
■ 45151250	60 lb Bulk Pak (27.2 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	170 – 225
■ 45151210	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	170 – 225
■ 45151650	60 lb Bulk Pak (27.2 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	230 – 330
■ 11498800	10 lb Box (4.5 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	230 – 330
■ 45152050	60 lb Bulk Pak (27.2 kg)	5/16" x 18" (8.0 mm x 45.7 cm)	270 – 390

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 1: BUILD-UP AND JOINING ALLOYS

B. BUILD-UP AND JOINING OF MANGANESE STEEL

NICROMANG® PLUS - COATED

NICROMANG PLUS is similar to Stoody MicroMang except it is formulated to produce a higher hardness in the “as-welded” condition. This higher hardness will reduce the amount of initial metal deformation under heavy loads. MicroMang Plus is not recommended for buildup on carbon steel.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity (reverse preferred) using stringer or weave beads. Weldability is good in the flat and horizontal positions. Multiple layers can be applied without difficulty when proper procedures are followed. Maintain low heat input, do not exceed 500°F (260°C) degrees interpass temperature and peen with the flat face of a hammer, when possible, to relieve weld stress.

Applications: Manganese Railroad Frogs and Crossings, Manganese Steel Castings

Typical Chemical Composition:

Alloy Content – 23% (Manganese, Chromium, Carbon, Molybdenum, Nickel)

Iron Base

Typical Mechanical Properties:

Hardness / Work Hardens to.....235 BHN / 55 HRC
 Tensile Strength..... 132 ksi (910 MPa)
 Yield Strength.....89 ksi (615 MPa)
 Elongation 35%

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC±)
11857600	10 lb Box (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100 – 160
11857700	10 lb Box (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140 – 200
11852900	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	170 – 225
11852000	60 lb Bulk Pak (27.2 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	170 – 225
11872900	10 lb Box (4.5 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	230 – 330
■ 11876900	10 lb Box (4.5 kg)	5/16" x 18" (8.0 mm x 45.7 cm)	270 – 390

NICROMANG® FROG - COATED

NICROMANG FROG is a high strength, high manganese alloy, designed for buildup repair of castings such as manganese railroad frogs and crossings, crusher hammers, and impact bars. The high alloy content of the Nicromang Frog allows for high work hardening while maintaining high impact resistance and toughness. Deposits are austenitic whether applied to carbon steel or manganese steel, non-magnetic, machinable with carbide tools, and can be flame cut.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity (reverse preferred) using stringer or weave beads. Weldability is good in the flat and horizontal positions. Multiple layers can be applied without difficulty when proper procedures are followed. Maintain low heat input, do not exceed 500°F (260°C) degrees interpass temperature and peen with the flat face of a hammer, when possible, to relieve weld stress.

Applications: Manganese Railroad Frogs and Crossings, Manganese Steel Castings

Typical Chemical Composition:

Alloy Content – 23% (Manganese, Chromium, Carbon, Molybdenum, Nickel)

Iron Base

Typical Mechanical Properties:

Hardness / Work Hardens to 235 BHN / 55 HRC
 Tensile Strength..... 132 ksi (910 MPa)
 Yield Strength.....89 ksi (615 MPa)
 Elongation 35%

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC±)
11972600	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	170 – 225
■ 11972500	10 lb Box (4.5 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	230 – 330

FOUNDRY CO-MANG® - COATED

FOUNDRY CO-MANG is a manganese steel coated electrode and provides an excellent color match to the manganese base metal. It is suitable for multi-layer buildup and has excellent work hardening characteristics. It is usable for austenitic manganese steel repair, buildup and joining.

Welding Procedures/Characteristics: Can be applied AC or DCEP (reverse polarity). Weave beads 2-3 times the electrode diameter are preferred. Deposits are non-magnetic and machinability is poor. Interpass temperature should not exceed 500°F (260°C). Not recommended for build up of carbon steel.

Applications: Rock Crushing and Mining: Crusher Roll, Jaws, Grizzly Bars, Screens, Grates, Impactor Bars, Dredge Pump Parts, Hammer Mill Hammers, Shovel Pads, Latch Pins, Dipper Front Edge and Teeth.

Typical Chemical Composition:

Alloy Content – 18% (Carbon, Manganese, Molybdenum)
 Iron Base

Typical Mechanical Properties:

Hardness / Work Hardens to..... 170-210 BHN / 350-450 BHN
 Tensile Strength..... 128 ksi (880 MPa)
 Yield Strength..... 71 ksi (490 MPa)
 Elongation 42%

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC±)
11814000	10 lb Box (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140 – 180
■ 44441050	60 lb Bulk Pak (27.2 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140 – 180
11814100	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	175 – 225
■ 44441250	60 lb Bulk Pak (27.2 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	175 – 225
44441650	60 lb Bulk Pak (27.2 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	220 – 280

GROUP 1: BUILD-UP AND JOINING ALLOYS

B. BUILD-UP AND JOINING OF MANGANESE STEEL

TRACKWEAR® - COATED

TRACKWEAR is a high strength manganese steel electrode especially developed for the build-up of parts subject to heavy battering loads, such as railroad frogs and crossings. Its initial strength and hardness is high and it work hardens quickly with minimal flow and roll over. It works well when applied to standard manganese steel alloy castings, nickel manganese steel alloy castings, and molybdenum manganese steel castings. It is also compatible with any other standard manganese steel welding material that may have been applied previously.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity (straight preferred). Deposits do not respond to heat treatment. Weave beads 2-3x electrode diameter are preferred. Machinability is poor. Not recommended for build-up of carbon steel. Interpass temperature should not exceed 500°F (260°C) maximum.

Applications: Railroad Frogs, Railroad Crossings, Track Castings, Steel Mill Rolls, Wobbler Spindles, Coupling Boxes, Crusher Equipment Parts

Typical Chemical Composition:

Alloy Content – 19% (Manganese, Vanadium, Carbon)
Iron Base

Typical Mechanical Properties:

Hardness (2 Layers) / Work Hardens to.....240 BHN / 500 BHN
Tensile Strength.....128 ksi (880 MPa)
Yield Strength.....85 ksi (585 MPa)
Elongation25%

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC±)
48701050	60 lb Bulk Pak (27.2 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	100 – 160
■ 48701250	60 lb Bulk Pak (27.2 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	140 – 230
■ 48701650	60 lb Bulk Pak (27.2 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	200 – 300

C. BUILD-UP AND JOINING OF BOTH MANGANESE STEEL AND CARBON STEELS

STOODY® 2110 - COATED

STOODY 2110 is a solid core extruded electrode with alloys in the coating designed for build-up of austenitic manganese steel parts subject to high impact loading without limitations to deposit thickness. It is a modified high chromium-high manganese steel that combines toughness and wear resistance. This alloy can be applied to low carbon steel and used to join austenitic manganese steels to low carbon steel.

Welding Procedures/Characteristics: Can be applied AC or DCEP (reverse polarity). Weldability is excellent with low spatter. Build-up is superior to other electrodes of this type. Use stringer or weave beads. Deposits are dense, porosity-free, extremely tough and workhardens rapidly. Cannot be flame cut; machinable with carbide tools, non-magnetic. Not recommended for cast iron.

Applications: Shovel Pads, Roll Crushers, Hammers, Shovel Teeth, Grate Bars, Carbon, Steel Frogs, Switch Points, Manganese Rail Components, Sugar Mill Hammers, Knives and Roll Flanges

Typical Chemical Composition:

Alloy Content – 31% (Manganese, Chromium, Nickel, Carbon, Silicon)

Iron Base

Typical Mechanical Properties:

Hardness:
2 Layers (1020 Steel) / Work Hardens200 BHN
Work hardens to48-53 HRC
2 Layers (Mang. Steel)210 BHN
Work hardens to50-55 HRC
5 Layers (Mang. Steel)220 BHN
Work hardens to50-55 HRC
Tensile Strength.....119 ksi (820 MPa)
Yield Strength.....76.5 ksi (525 MPa)
Elongation40%

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC+)
■ 11431300	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100 – 130
■ 10202800	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	125 – 190
■ 10202900	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	150 – 260
■ 10203000	10 lb Vac Pak (4.5 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	240 – 325

VERSALLOY™ PLUS - COATED

VERSALLOY PLUS is a modified austenitic stainless steel recommended for joining, rebuilding or cushion-overlaying on applications involving high strength, heat and corrosion resistance. It is frequently used to join metals in dissimilar applications involving stainless steels and low carbon steels.

Welding Procedures/Characteristics: Can be applied AC or DCEP (reverse polarity) using a short to medium arc length. Apply in stringer or slight weave beads. Easy slag removal.

Applications: General purpose electrode used for joining stainless steels to other alloys; also a good cushioning layer for hardfacing.

Typical Chemical Composition:

Alloy Content – 40% (Chromium, Nickel, Silicon, Manganese, Carbon)

Iron Base

Typical Mechanical Properties:

Hardness / Work Hardens to.....230 BHN / 340 BHN
Tensile Strength.....116 ksi (800 MPa)

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC+)
■ 11820600	5 lb Vac Pak (2.27 kg)	3/32" x 14" (2.4 mm x 35.6 cm)	50 – 90
■ 11816900	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	75 – 125
■ 11820700	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	90 – 150

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 1: BUILD-UP AND JOINING ALLOYS

D. BUILD-UP AND JOINING OF CAST IRONS

CASTWELD™ 55 (55% NICKEL TYPE) - COATED

CASTWELD 55 is for worn cast iron parts requiring build-up or repair. Castweld 55 has good strength and tolerance to the high phosphorus often found in cast irons. It is used as a general purpose rod especially when welding thick sections. Castweld 55 is also recommended for joining cast iron to dissimilar metals.

Welding Procedures/Characteristics: Must be applied with DCEP (reverse polarity). When welding cast iron always clean the part, preheat and slow cool. Use stringer bead technique (limit weave width to 3–4x electrode diameter). It's preferable to run short (approx. 2") weld beads and to use a skip welding technique. Peen immediately after each weld. Short arc is recommended. Remove slag before restriking electrode on previous weld bead. Composition meets AWS A5.15/A5.15.1590 ENiFeCl-A.

Applications: Joining or build-up on cast iron parts, i.e. Pump Housings, Engine Blocks, Assorted Castings, Sugar Mill Press Rolls, Roll Flanges

Typical Chemical Composition: Nickel, Iron

Typical Mechanical Properties:

Deposit Layers Unlimited
Machinability Poor

Part Number	Pkg	Dimensions Diameter x Length	Amperage (DC+)
11375000	5 lb Vac Pak (2.27 kg)	3/32" x 14" (2.4 mm x 35.6 cm)	40 – 80
■ 11369500	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	70 – 110
11369400	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	100 – 140



Sugar Mill Roll Repair

CASTWELD™ 57 - COATED

CASTWELD 57 consistently produces weld deposits which exceed the physical properties of standard Castweld 55. These have typical weld deposit impact strengths of 1 to 9 foot pounds. Castweld 57 can achieve impact strengths of 10 to 15 foot pounds. Castweld 57 is used on worn cast iron parts requiring build up or joining but not needing tight dimensional control or machining. Castweld 57 has good tolerance for high phosphorus often found in cast iron to dissimilar metals.

Applications: Joining dissimilar metals to cast iron, Joining or build up of cast iron parts, Engine Blocks, Pump Housings, Assorted Castings

Typical Chemical Composition: Carbon, Manganese, Nickel, Silicon, Iron

Typical Mechanical Properties:

Tensile Strength..... 62 ksi (425 MPa)
Yield Strength..... 51 ksi (350 MPa)
Elongation 7%
Charpy Impact Strength..... 12.5 ft lb (17 J)
(@ room temperature)

Part Number	Pkg	Dimensions Diameter x Length	Amperage (DC+)
11956900	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	70 – 110
11956800	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	100 – 140
11951100	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	120 – 170

CASTWELD™ 99 (99% NICKEL TYPE) - COATED

CASTWELD 99 makes a softer deposit than Castweld 55 and is preferred if machining of the deposit is required following welding of cast iron parts.

Welding Procedures/Characteristics: Must be applied with DC reverse polarity. When welding cast iron always clean the part, preheat and slow cool. Use stringer bead technique (limit weave width to 3–4x electrode diameter). It's preferable to run short (approx. 2") weld beads and to use a skip welding technique. Peen immediately after each weld. Short arc is recommended. Remove slag before restriking electrode on previous weld bead.

Applications: Repair of cast iron, particularly hairline cracks and casting defects.

Part Number	Pkg	Dimensions Diameter x Length	Amperage (AC, DC±)
11375100	5 lb Vac Pak (2.27 kg)	3/32" x 14" (2.4 mm x 35.6 cm)	40 – 80
■ 11375200	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	70 – 110
11375300	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	100 – 140

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

STOODY® 1105 - COATED

STOODY 1105 is a solid core electrode with an extruded coating containing the alloying elements. It provides good weldability and a high deposition rate. It bonds readily to carbon and low alloy steels. Deposit properties are the same as those of Stooddy 105 wire.

Welding Procedures/Characteristics: Can be applied in stringer or weave beads. Runs well on DC, either polarity; highest deposition rate with DCEN (straight polarity). Limit layers to four. Forgeable at red heat. Machinable with carbide tools. Not recommended for manganese steels or cast iron. Deposit is magnetic on carbon and low alloy steels.

Applications: Tractor Rollers, Tractor Idlers, Arch Wheels, Shovel Rollers and Idlers Sprockets, Drive Tumblers, Churn Drills, Charging Car Wheels, Wobblers, Coupling Boxes, Sugar Mill Sprockets, Gears

Typical Chemical Composition:

Alloy Content – 5% (Chromium, Manganese, Silicon, Molybdenum, Vanadium, Carbon)
Iron Base

Typical Mechanical Properties:

Hardness:
(1/2" weave beads – air cooled)
2 Layers - 1045 steel.....38-42 HRC
For hot wear applications up to 600°F (315°C).

Part Number	Pkg	Dimensions Diameter x Length	Amperage (DC±)
■ 11345100	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	80 – 150
■ 11173800	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140 – 210
■ 11173900	10 lb Vac Pak (4.5 kg)	3/16" (4.8 mm) x 14" (4.8 mm x 35.6 cm)	165 – 250



Sugar Mill Sprockets can be repaired with Stooddy 1105 and Super Build Up.

STOODY® 1102 - COATED

STOODY 1102 is a solid core electrode designed for wear resistance in metal to metal applications. It has an extruded coating that contains the alloying elements. Stooddy 1102 has an all weld metal composition and physical properties similar to those of H-12 tool steel. Weldability is very good. It is good for hot wear applications up to 1100°F (593°C) and can be machined using carbide tools.

Welding Procedures/Characteristics: Can be applied DC either polarity - DCEP (reverse preferred) using stringer or weave beads. Multiple layers (up to 4 layers) can be applied without difficulty when proper preheat, interpass temperature and cooling rates are observed.

Applications: Cable Sheaves, Forging Dies, Crane Wheels, Hot and Cold Shear Blades, Drill Pipe Hard Banding, Hot Work Extrusion Rolls

Typical Chemical Composition:

Alloy Content – 11% (Chromium, Molybdenum, Tungsten, Manganese, Silicon, Carbon, Vandium)
Iron Base

Typical Mechanical Properties:

Hardness:52-58 HRC

Part Number	Pkg	Dimensions Diameter x Length	Amperage (DC±)
■ 11857000	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	125 – 150
■ 11857100	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140 – 200



Bearing Housing

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

Coated Electrodes and Bare Rods

GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

RAIL END 932 - COATED

STOODY Rail End 932 is a solid cored electrode designed specifically for repair of carbon steel railroad track components. It has excellent tensile strength to maintain the desired rail dimensions. Rail End 932 has fine weldability and a good contour. It has a low hydrogen type of coating and is formulated for welding onto high carbon steel rails and frogs. It is not intended for use on manganese steel.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads. Weldability is very good and can be applied in multiple layers with proper preheat and interpass temperature procedures. Designed for high carbon steel rails and frogs, not for use on manganese steel

Applications: Carbon Steel Rail Ends, Wheel Burns, Frogs, Crossings

Typical Chemical Composition:

Alloy Content – 6% (Carbon, Chromium, Manganese, Molybdenum, Silicon)
Iron Base

Typical Mechanical Properties:

Impact Resistance..... Excellent
Abrasion Resistance Moderate
Hardness38-40 HRC
Deposit Layers Multiple
Tensile Strength..... 150 ksi (1035 MPa)

Part Number	Packaging	Dimensions Diameter x Length	Amperage (DC+)
11704800	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100-160
11704700	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	140-240
■ 11504600	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	180-280
■ 11704600	10 lb Vac Pak (4.5 kg)	1/4" x 14" (6.4 mm x 35.6 cm)	200-330



Rail Ends

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® SELF-HARDENING - COATED

STOODY SELF-HARDENING, is a solid core electrode with an extruded coating containing the alloying elements. It is magnetic on carbon or low alloy steels.

Welding Procedures/Characteristics: Can be applied AC or DCEP (reverse polarity). Out of position characteristics are limited. Limit weave beads to 3/4" or use stringers. Maximum of three layers if a crack free deposit is desired. Can be applied to carbon, low alloy, and manganese steel. Can be forged at red heat; not readily machinable.

Applications: Churn Drills, Trailer Hitch, Machine Components, Bearings, Sliding Metal Parts, Sugar Cane Harvesters, Mill Press Rolls

Typical Chemical Composition:

Alloy Content – 12% (Chromium, Manganese, Silicon, Carbon)
Iron Base

Typical Mechanical Properties:

Hardness:
All Weld Metal52-58 HRC
2 Layers (weave beads) - Mild Steel.....52-56 HRC
Water-quenched from 1700°F (925°C).....56-59 HRC
Furnace-cooled from 1700°F (925°C).....19-22 HRC
2 Layers (weave beads) - 1045 Steel.....54-58 HRC
Water-quenched from 1700°F (925°C).....56-60 HRC
Furnace-cooled from 1700°F (925°C).....19-23 HRC

Part Number	Packaging	Dimensions Diameter x Length	Amperage (AC, DC±)
■ 11172400	10 lb Box (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	110 – 150
■ 11172500	10 lb Box (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	150 – 200
11172600	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	175 – 275

STOODY® 33 - COATED

STOODY 33 is an all-position tubular electrode recommended where sound deposits with low coefficient of friction are desired. It bonds well with carbon, low alloy, and manganese steels, and polishes to a mirror finish. Multiple layer deposits are sound, and can be heat treated. Stody 33 has a versatile balance of abrasion wear resistance and impact strength.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity - DCEP (reverse preferred). Can be applied in multiple layers. With proper welding procedures, can be applied crack-free. The deposit is non-machinable and can be applied to carbon, low alloy and manganese steels.

Applications: Cement Mill Gudgeons, Pump Shells, Rendering Screws, Debarking Hammers, Dredge Parts, Friction Type Guides, Hog Anvils

Typical Chemical Composition:

Alloy Content – 32% (Chromium, Carbon, Manganese, Molybdenum, Nickel, Silicon)
Iron Base

Typical Mechanical Properties:

Abrasion Resistance Good
Impact Resistance..... Moderate
Hardness:
On Carbon Steel.....42-46 HRC
On Manganese Steel.....37-41 HRC
Magnetic:
On Carbon Steel..... Slightly
On Manganese Steel..... No

Part Number	Packaging	Dimensions Diameter x Length	Amperage (AC, DC±)
■ 11305700	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	120 – 165
■ 11305600	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	160 – 250

STOODY® 19 - COATED

STOODY 19 is a solid core electrode with an extruded coating containing the alloying elements. This electrode has excellent welder appeal. It bonds well with carbon or alloy steel including manganese.

Welding Procedures/Characteristics: Apply in weave beads using AC or DC, either polarity - DCEP (reverse preferred). Limit to two layers. A severe water quench should be avoided. Easy slag removal with excellent out of position characteristics. Deposits are slightly magnetic on carbon and low alloy steels. Not machinable or forgeable. Deposits will develop cross checks

Applications: Crusher Rolls, Dredge Pump Shells Impellers, Impact Breaker Bars Scrapers

Typical Chemical Composition:

Alloy Content – 26% (Chromium, Carbon, Molybdenum, Manganese, Silicon)
Iron Base

Typical Mechanical Properties:

Hardness:
2 Layers - Mang. Steel45-49 HRC
2 Layers - Med. Carbon51-55 HRC

Part Number	Packaging	Dimensions Diameter x Length	Amperage (AC, DC±)
■ 11360000	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	90 – 130
■ 11356700	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	120 – 160
■ 11356800	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	140 – 220
11356900	10 lb Vac Pak (4.5 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	175 – 300

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 21 - COATED

STOODY 21 is a tubular electrode with a graphitic coating. It bonds well with cast iron, carbon or low alloy steel. It is slightly magnetic on carbon and low alloy steels, non-magnetic on manganese. It has good impact and abrasion characteristics.

Welding Procedures/Characteristics: Applied DC, either polarity - DCEP (reverse preferred). Limit to two layers. A severe water quench should be avoided. No slag interference. Limited to flat welding only. Deposits will cross check. Stringer beads recommended. Deposits are not machinable or forgeable.

Applications: Shells, Compactor, Buckets, Mill Hammers, Bucket Teeth, Dredge Pump

Typical Chemical Composition:

Alloy Content – 23% (Chromium, Carbon, Silicon, Manganese, Molybdenum)
Iron Base

Typical Mechanical Properties:

Hardness:
2 Layers - Mang. Steel46-50 HRC
2 Layers - Med. Carbon52-56 HRC
For hot wear applications up to 800°F (425°C).

Part Number	Packaging	Dimensions Diameter x Length	Amperage (DC±)
■ 11172700	10 lb Box (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	90 – 130
10205200	50 lb Bulk Pak (22.7 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	90 – 130
■ 11172900	10 lb Box (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	120 – 160
■ 10205600	50 lb Bulk Pak (22.7 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	120 – 160
■ 11173000	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	140 – 220
■ 10205700	50 lb Bulk Pak (22.7 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	140 – 220
■ 11173100	10 lb Box (4.5 kg)	1/4" x 14" (6.4 mm x 35.6 cm)	175 – 300
■ 10205800	50 lb Bulk Pak (22.7 kg)	1/4" x 14" (6.4 mm x 35.6 cm)	175 – 300

STOODY® 31 - COATED

STOODY 31 is a tubular electrode containing the alloying elements and has an extruded coating. Welding characteristics are excellent. Deposits have a low coefficient of friction and provide good resistance to corrosion and heat. Can be applied to carbon, alloy and manganese steels. It offers an outstanding balance of abrasion resistance and impact strength.

Welding Procedures/Characteristics: Applied DC, either polarity - DCEP (reverse preferred) using either stringer beads or weave beads. Weldability is excellent for out of position work with complete slag coverage that is virtually self-removing. Deposits are not machinable or forgeable.

Applications: Bucket Arms, Chain Links, Rolling Mill Guides, Pulleys, Scrapers, Buckets, Blades

Typical Chemical Composition:

Alloy Content – 34% (Chromium, Molybdenum, Carbon, Silicon, Manganese)

Iron Base

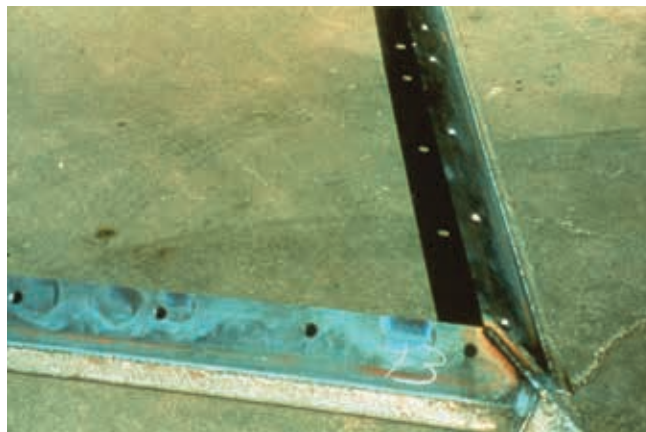
Typical Mechanical Properties:

Hardness:
2 Layers - Mang. Steel47-49 HRC
2 Layers - Carbon Steel45-48 HRC
For hot wear applications up to 950°F (510°C).

Part Number	Packaging	Dimensions Diameter x Length	Amperage (DC±)
■ 10206300	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100 – 120
■ 10206400	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	120 – 180
■ 10206500	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	170 – 240
■ 10206600	10 lb Vac Pak (4.5 kg)	1/4" x 14" (6.4 mm x 35.6 cm)	250 – 325



Agricultural Disc Blade



Agricultural Noble-Type Sweep

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

BTS - BARE

BTS is a bare tubular rod for oxy-fuel applications. Good for metal-to-metal wear and earth abrasion. Particularly suited where thin deposits are required. Deposits exhibit a low coefficient of friction and polishes to a mirror finish under earth abrasion. Can be applied to carbon, low alloy and manganese steels.

Welding Procedures/Characteristics: Use 20 to 40 drill-size tip; use excess acetylene feather 3x length of inner cone. Clean rust, scale and dirt from part. Heat part to "sweating" temperature and apply with minimum dilution. A minimum deposit thickness of 1/16" (1.6 mm) is recommended. Deposits are not forgeable or machinable; magnetic on carbon and alloy steels.

Applications: Cultivator Discs, Bird Machine Screws, Plowshares, Conveyor/Classifier Flights, Sand Chutes, Subsoiler Blades, Sweeps, Chisel Points

Typical Chemical Composition:

Alloy Content – 39% (Chromium, Carbon, Nickel, Silicon, Manganese)
Iron Base

Typical Mechanical Properties:

Hardness:
As Deposited56-60 HRC
For hot wear applications up to 900°F (480°C).

Part Number	Packaging	Dimensions Diameter x Length
■ 10207800	60 lb Carton (27.2 kg)	5/32" x 28" (4.0 mm x 71 cm)
■ 10207900	60 lb Carton (27.2 kg)	3/16" x 28" (4.8 mm x 71 cm)
10208000	60 lb Carton (27.2 kg)	1/4" x 28" (6.4 mm x 71 cm)

STOODY® 35 - COATED

STOODY 35 is a solid core electrode with a heavy extruded coating containing the alloy elements. Weldability is excellent. Can be applied to carbon alloy and manganese steels.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity - DCEP (reverse preferred). Use straight polarity to increase deposition rate. Can be applied in stringer or weave beads. A two layer deposit should be made to assure proper chemistry for best wear results. Deposits are not machinable or forgeable.

Applications: Teeth, Screws, Tile Mixer Paddles, Crushing Equipment, Sugar Mill Combs, Elevator Screw Flights, Press Rolls, Scrappers, Roll Flanges

Typical Chemical Composition:

Alloy Content – 38% (Chromium, Carbon, Silicon, Manganese)
Iron Base

Typical Mechanical Properties:

Hardness:
2 Layers - 1045 plate as welded53-57 HRC
2 Layers (weave beads) - Mang. Steel50-53 HRC
Deposits may workharden to58-60 HRC
For hot wear applications up to 950°F (510°C).

Part Number	Packaging	Dimensions Diameter x Length	Amperage (AC, DC±)
■ 11322900	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	125 – 175
■ 11318200	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	175 – 250
■ 11318300	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	225 – 300
■ 11318400	10 lb Vac Pak (4.5 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	275 – 350



Shear Blade Housing

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

CTS - COATED

CTS is a tubular electrode containing granular alloying elements. It has a dipped graphitic coating. Because of its high manganese content, deposits offer good resistance to impact as well as abrasion resistance. It is an excellent choice for hardfacing on cast iron.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity - DCEP (reverse preferred) using either stringer beads or weave beads - 1" (2.54 cm) wide beads preferred. Limit deposits to two layers. Recommended for flat welding only. Can be applied to carbon, low alloy and austenitic manganese steels. Deposits are not machinable or forgeable.

Applications: Crushing Applications, Pug Mill Paddles, Sintering Mill Breakers/Bars, Cement Mill Die Rings, Railroad Tie Tamper Tips, Sugar Mill Press Roll Flanges

Typical Chemical Composition:

Alloy Content – 38% (Chromium, Manganese, Carbon, Silicon, Molybdenum)

Iron Base

Typical Mechanical Properties:

Hardness:
 2 Layers (weave beads) - Med. Carbon.....57-61 HRC
 2 Layers (weave beads) - Mang. Steel.....47-51 HRC
 For hot wear applications up to 900°F (480°C).

Part Number	Packaging	Dimensions Diameter x Length	Amperage (AC, DC±)
10207000	60 lb Bulk Pak (27.2 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	125 – 175
■ 10207300	60 lb Bulk Pak (27.2 kg)	1/4" x 18" (6.4 mm x 45.7 cm)	275 – 350

STOODY® 2134 - COATED

STOODY 2134 is a tubular electrode containing granular alloying elements. The coating is graphitic. It exhibits excellent abrasion resistance in fine, sandy soils. It is the best choice for high abrasion accompanied by high impact. It is also a good choice for hardfacing on cast iron parts.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity - DCEP (reverse preferred). For AC applications welding machines with minimum of 70 volts OCV recommended. Limit deposits to two layers. Welds extremely well at low amperages. Recommended for flat welding only. Weldability is very good when proper procedures are followed. Easy slag removal. For use on carbon, low alloy, and manganese steels. Deposits are not machinable or forgeable.

Applications: Crusher Rolls, Pit Scraper, Mill Hammers, Bucket Teeth, Impactor Bars (final pass), Sugar Mill Shredder Anvils, Hammers, Knives, Press Rolls, Scrappers

Typical Chemical Composition:

Alloy Content – 36% (Chromium, Carbon, Molybdenum, Manganese, Silicon)

Iron Base

Typical Mechanical Properties:

Hardness:
 2 Layers (weave beads) - 1045 Plate
 as welded56-60 HRC
 Line-cooled from 1750°F (954°C).....48-51 HRC
 Water-quenched from 1750°F (954°C).....63-65 HRC
 2 Layers (weave beads) - Mang. Steel.....45-50 HRC
 Deposits may work harden 5 to 6 HRC
 For hot wear applications up to 950°F (510°C).

Part Number	Packaging	Dimensions Diameter x Length	Amperage (AC, DC±)
11919100	10 lb Box (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100 – 150
■ 11276800	10 lb Box (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	100 – 155
■ 10208300	60 lb Bulk Pak (27.2 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	100 – 155
■ 11276700	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	150 – 210
■ 10208400	60 lb Bulk Pak (27.2 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	150 – 210
■ 10208500	60 lb Bulk Pak (27.2 kg)	1/4" x 14" (6.4 mm x 35.6 cm)	180 – 300



Manganese Break Bar Crusher



Debarking Hammers

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® XHC - COATED

STOODY XHC is a solid core electrode with an extruded graphitic coating containing the alloying elements. Deposits are highly resistant to both sliding and grinding abrasion. A very good choice for hardfacing on cast iron.

Welding Procedures/Characteristics: Can be AC or DC, either polarity - DCEP (reverse preferred) using either stringer or weave beads (1" (2.5 cm) wide beads preferred). Limit deposits to two layers. Considerable cross checking is normal. Bonds well to manganese, carbon and alloy steels. In addition to its excellent weldability it has a very high deposition rate. Deposits are not machinable or forgeable

Applications: Grader Blades, Harrow Plows, Slurry Pipe, Sugar Cane Harvesters, Mill Shredder Anvils, Combs, Elevator Screw Flights, Press Rolls, Scrappers

Typical Chemical Composition:

Alloy Content – 35% (Chromium, Carbon, Manganese, Silicon, Molybdenum)

Iron Base

Typical Mechanical Properties:

Hardness:

- 1 Layer (weave beads)
Med. Carbon Steel.....60-66 HRC
 - 1 Layers (weave beads) - Mang. Steel.....50-55 HRC
- For hot wear applications up to 1000°F (540°C).

Part Number	Packaging	Dimensions Diameter x Length	Amperage (AC, DC±)
■ 11383000	10 lb Box (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	100 – 150
■ 11382700	10 lb Box (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	125 – 250
■ 11382500	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	150 – 300
11382400	10 lb Box (4.5 kg)	1/4" x 14" (6.4 mm x 35.6 cm)	250 – 375

SUPER 20 - COATED

SUPER 20 is a solid core electrode with a heavy extruded coating containing the alloying elements. It's extremely good wear resistance is attributed to the addition of molybdenum, tungsten and chromium.

Welding Procedures/Characteristics: Can be applied DCEP (reverse polarity). Weld with a short arc. Can be applied either as stringer or weave beads. Limit to one layer. Deposits will exhibit cross checking patterns normal for high alloys. Deposits are not machinable or forgeable.

Applications: Crusher Parts, Coke Pusher Shoes, Ash Fan Blade, Hot Slag Dipper Teeth, Spiral Conveyors, Pug Mill Paddles, Feed Mill Hammers, Sintering Plant Parts, Anhydrous Ammonia Plows

Typical Chemical Composition:

Alloy Content – 39% (Chromium, Molybdenum, Carbon, Tungsten, Silicon, Manganese)

Iron Base

Typical Mechanical Properties:

Hardness:

- 1 Layer - Mang. Steel.....58-63 HRC
 - 1 Layer - Carbon Steel.....60-65 HRC
- For hot wear applications up to 1100°F (593°C).

Part Number	Packaging	Dimensions Diameter x Length	Amperage (DC+)
■ 46520810	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	70 – 160
■ 46521010	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	130 – 250
46521210	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	200 – 300

STOODY® 45 - COATED

STOODY 45 is an alloy coated electrode capable of high abrasion resistance, high corrosion resistance and high hardness at elevated temperatures. This electrode contains high niobium and molybdenum, which contributes to its excellent high temperature abrasion resistance. Can withstand temperatures up to 1400°F (760°C).

Welding Procedures/Characteristics: Can be applied in stringer or weave beads using DCEP (reverse polarity). Limit deposits to two layers maximum. Bonds well with carbon, low alloy and manganese steels.

Applications: Iron & Steel Industry: Guides, Sinter Plant Parts, Blast Furnace Parts, Slag Rakes, Hot Wire Guide, Hot Ash Elbows, Exhaust Fan Blades, Crushers, Coke Pusher Shoes, Hot Screens.

Cement and Refractory: Cement Screws, Cement Dryers, Hot Cement Cones, Cement Furnace Parts, Mixer Blades, Presses.

Mining: Wear Plates, Excavator Bucket Teeth, Conveyor Screws, Slurry Pipes.

Typical Chemical Composition:

Alloy Content – 48% (Chromium, Molybdenum, Niobium, Carbon, Tungsten, Manganese, Vanadium, Silicon)

Iron Base

Typical Mechanical Properties:

- Abrasion Resistance Good
 - Impact Resistance..... Low
 - Corrosion Resistance..... Good
 - Hardness59-61 HRC
 - Deposit Layers2
- For hot wear applications up to 1400°F (760°C).

Part Number	Packaging	Dimensions Diameter x Length	Amperage (DC+)
12014700	10 lb Box (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	170 – 220

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GROUP 4: METAL TO EARTH FOR EXTREME ABRASION AND LOW IMPACT

AC-DC BOROD® - COATED

AC-DC BOROD is similar to Tube Borium in all respects except particle mesh size, which is finer (425 microns down) to provide deposits resembling a fine grit sandpaper. Its deposit is heterogeneous consisting of tungsten carbide particles suspended in a tungsten steel matrix. Borod deposits generally provide slightly increased abrasion protection.

Welding Procedures/Characteristics: For AC-DC Borod, use minimum amperage to minimize dilution. Use AC or DCEP (reverse polarity). Avoid multiple layers; use stringer beads. For hot wear application up to 900°F (482°C). **Applications:** Log Grapplers, Concrete Pug Mill Paddles, Ash Plows, Ore Chutes, Sand Slinger Buckets

BARE BOROD® - BARE

BARE BOROD is similar to Tube Borium in all respects except particle mesh size, which is finer (40 down) to provide deposits resembling a fine grit sandpaper. Its deposit is heterogeneous consisting of tungsten carbide particles suspended in a tungsten steel matrix. Borod deposits generally provide slightly increased abrasion protection.

Welding Procedures/Characteristics: For Bare Borod adjust excess acetylene flame 3x length of inner cone. Use torch tip size larger than normally used to weld same diameter mild steel rod. Sweat deposit to parent metal, applying with minimum dilution. Avoid multiple layers. For hot wear application up to 900°F (482°C).

Applications: Irrigation Shovel, Bean Knife, Chisel Tooth, Twisted Chisel, Auger Bits, Conveyor Fans, Anvil Knives

AC-DC TUBE BORIUM® - COATED

AC-DC TUBE BORIUM is manufactured by metering crushed tungsten carbide particles of controlled mesh size into steel tubes. The AC-DC Borium receives a thin graphitic coating. Borium is available in a variety of particle sizes; fine mesh sizes increase wear resistance, coarse sizes improve cutting efficiency. BORIUM deposits absorb more impact than the finer BOROD overlays because more matrix is exposed.

Welding Procedures/Characteristics: For AC-DC Borium, use minimum amperage to minimize dilution. Can be applied AC or DCEP (reverse polarity). Apply in flat or inclined position. Use a stringer bead. Avoid multiple layers. Maximum working temperature 900°F.

ACETYLENE TUBE BORIUM® - BARE

ACETYLENE TUBE BORIUM is manufactured by metering crushed tungsten carbide particles of controlled mesh size into steel tubes. Borium is available in a variety of particle sizes; fine mesh sizes increase wear resistance, coarse sizes improve cutting efficiency. Borium deposits absorb more impact than the finer Borod overlays because more matrix is exposed.

Welding Procedures/Characteristics: For ATB, adjust excess acetylene flame 3x length of inner core. Use torch tip size larger than normally used to weld same diameter mild steel rod. Sweat deposits to parent metal with minimum dilution. Limit to one layer. Maximum working temperature is 900°F (482°C).

Applications: Plow Shares, Cane Knives, Teeth, Tool Drill Bits

Typical Chemical Composition:

Alloy Content: Tungsten Carbide - 60%
Iron Base

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Typical Chemical Composition:

Alloy Content: Tungsten Carbide - 60%
Iron Base

Part Number	Packaging	Grain Size	Dimensions Diameter x Length	Amperage (AC, DC+)
■ 10234400	10 lb Vac Pak (4.5 kg)	40 - Down (425μ - Down)	1/8" x 14" (3.2 mm x 35.6 cm)	80 - 100
■ 10234600	10 lb Vac Pak (4.5 kg)	40 - Down (425μ - Down)	5/32" x 14" (4.0 mm x 35.6 cm)	100 - 120
■ 10234800	10 lb Vac Pak (4.5 kg)	40 - Down (425μ - Down)	3/16" x 14" (4.8 mm x 35.6 cm)	120 - 150

Typical Chemical Composition:

Alloy Content: Tungsten Carbide - 60%
Iron Base

Part Number	Packaging	Grain Size	Dimensions Diameter x Length
■ 10231300	10 lb Box (4.5 kg)	40 - Down (425μ - Down)	1/8" x 14" (3.2 mm x 35.6 cm)
10231700	10 lb Box (4.5 kg)	40 - Down (425μ - Down)	5/32" x 14" (4.0 mm x 35.6 cm)
10234000	60 lb Bulk Pak (27.2 kg)	40 - Down (425μ - Down)	5/32" x 28" (4.0 mm x 71 cm)
10231900	10 lb Box (4.5 kg)	40 - Down (425μ - Down)	3/16" x 14" (4.8 mm x 35.6 cm)

Applications: Furrowing Shovel, Subsoiler Point, Rasp Bars, Tool Joints, Muller Plows

Typical Chemical Composition:

Alloy Content: Tungsten Carbide - 60%
Iron Base

Part Number	Packaging	Grain Size	Dimensions Diameter x Length	Amperage (AC, DC+)
■ 10229100	10 lb Vac Pak (4.5 kg)	30 x 40 (600μ - 425μ)	1/8" x 14" (3.2 mm x 35.6 cm)	80 - 100
■ 10229300	10 lb Vac Pak (4.5 kg)	20 x 30 (850μ - 600μ)	5/32" x 14" (4.0 mm x 35.6 cm)	100 - 120
■ 10229500	10 lb Vac Pak (4.5 kg)	20 x 30 (850μ - 600μ)	3/16" x 14" (4.8 mm x 35.6 cm)	120 - 150
10229700	10 lb Vac Pak (4.5 kg)	10 x 30 (2000μ - 600μ)	1/4" x 14" (6.4 mm x 35.6 cm)	140 - 165

Part Number	Packaging	Grain Size	Dimensions Diameter x Length
11895000	60 lb Bulk Pak (27.2 kg)	30 x 40 (600μ - 425μ)	7/64" x 28" (2.8 mm x 71 cm)
■ 10227100	10 lb Box (4.5 kg)	30 x 40 (600μ - 425μ)	1/8" x 14" (3.2 mm x 35.6 cm)
10227300	60 lb Bulk Pak (27.2 kg)	30 x 40 (600μ x 425μ)	1/8" x 28" (3.2 mm x 71 cm)
■ 10227500	10 lb Box (4.5 kg)	20 x 30 (850μ - 600μ)	5/32" x 14" (4.0 mm x 35.6 cm)
■ 11429000	10 lb Box (4.5 kg)	30 x 40 (600μ - 425μ)	5/32" x 28" (4.0 mm x 71 cm)
10227900	10 lb Box (4.5 kg)	20 x 30 (850μ - 600μ)	3/16" x 14" (4.8 mm x 35.6 cm)
■ 10228100	10 lb Box (4.5 kg)	30 x 40 (600μ - 425μ)	3/16" x 14" (4.8 mm x 35.6 cm)
10228700	10 lb Box (4.5 kg)	30 x 40 (600μ - 425μ)	1/4" x 14" (6.4 mm x 35.6 cm)

GROUP 4: METAL TO EARTH FOR EXTREME ABRASION AND LOW IMPACT

STOODY TB-2954 - BARE

Stoody TB-2954 bare oxy-acetylene hardfacing rod is used primarily for grain mill hammers. It has extreme abrasion resistance and low impact resistance. It is manufactured by metering crushed tungsten carbide particles with a mesh size of 100 – 250 into steel tubes.

Applications: Grain Mill Hammers

Typical Chemical Composition

Alloy Content: Tungsten Carbide - 60%
Iron Base

Part Number	Packaging	Grain Size	Dimensions Diameter x Length
11466900	60 lb Bulk Pak (27.2 kg)	100 - 250 (150 μ - 60 μ)	3/16" (4.8 mm) x 28"

STOODY TB-20062 - BARE

Stoody TB-20062 is a GTAW rod intended for metal-to-earth applications involving extreme abrasion and moderate impact. It is manufactured by metering crushed tungsten carbide particles of controlled mesh size into steel tubes.

Applications: Wear Plates, Tool Drill Bits

Typical Chemical Composition:

Alloy Content: Tungsten Carbide - 60%
Iron Base

Part Number	Packaging	Grain Size	Dimensions Diameter x Length
11706300	60 lb Bulk Pak (27.2 kg)	10 x 20 (2000 μ - 850 μ)	Diameter x Length 5/16" (8.0 mm) x 28"

TUBE BORIUM® H - BARE

TUBE BORIUM H was developed for the hardfacing of drill bits for use in hard rock areas. The percentage of tungsten carbide has been reduced in these products, making them more impact resistant allowing the material to be used in multiple layer applications.

Welding Procedures/Characteristics: Designed for multiple layers. Adjust excess acetylene flame 3x length of inner cone. Use torch tip size larger than normally used to weld same diameter mild steel rod. Sweat deposits to parent metal with minimum dilution. For hot wear applications up to 900°F (482°C).

Applications: Churn Drills, Cable Tools, Rotary Drill Bits

Typical Chemical Composition:

Alloy Content: Tungsten Carbide - 40%
Iron Base

Part Number	Packaging	Grain Size	Dimensions Diameter x Length
10240000	60 lb Bulk Pak (27.2 kg)	40 - Down (425 μ - Down)	5/32" x 28" (4.0 mm x 71 cm)
■ 10240100	60 lb Bulk Pak (27.2 kg)	40-Down (425 μ - Down)	3/16" x 28" (4.8 mm x 71 cm)

HORSESHOE BORIUM® - BARE

HORSESHOE BORIUM weld deposit contains relatively large undissolved tungsten carbide particles which provides a maximum non-slipping surface.

Welding Procedures/Characteristics: Adjust excess acetylene flame 3x length of inner cone. Use torch tip size larger than normally used to weld same diameter mild steel rod. Sweat deposits to parent metal with minimum dilution. Limit to one layer.

Applications: Horseshoes

Typical Chemical Composition:

Alloy Content: Tungsten Carbide - 60%
Iron Base

Part Number	Packaging	Grain Size	Dimensions Diameter x Length
■ 10228900	10 lb Box (4.5 kg)	8 x 10 (2360 μ - 2000 μ)	1/4" (6.4 mm) x 14" (6.4 mm x 35.6 cm)

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GROUP 4: METAL TO EARTH FOR EXTREME ABRASION AND LOW IMPACT

STOODY® 160-E - COATED

STOODY 160-E coated electrode consists of tungsten carbide particles in a nickel silicon boron matrix. This microstructure (approximately 55% by weight) gives Stooddy 160-E superior toughness, corrosion and excellent fine particle erosion resistance in slurry type applications.

Applications: Dredge Rotary Cutter Heads, Pipe Id & Filtering Screens, Drill Bits & Stabilizers

Typical Chemical Composition:

Tungsten Carbide Particles in a Nickel-Silicon-Boron Matrix

Typical Mechanical Properties:

Abrasion Resistance	Excellent
Tungsten Carbide Hardness.....	2200-2400 HV
Matrix Hardness Single Layer	50-60 HRC
Matrix Hardness Two Layer.....	50-60 HRC
Deposit Layers	2 Maximum
Surface Cross Check	Depends on application

Part Number	Packaging	Dimensions Diameter x Length	Amperage (DC+)
■ 11897400	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	130-155

VANCAR® G - BARE FOR OXY-FUEL

VANCAR G fabricated rods contain specially formulated vanadium tungsten carbide particles approximately equal to tungsten carbide in hardness but only half as heavy. Vancar's greatest advantage over tungsten carbide is that it can be applied in multiple layers and still retain its original hardness due to uniform distribution of the carbide particles. This provides wear rates that remain very uniform throughout the life of the deposit.

Welding Procedures/Characteristics: Designed for multiple layers. Adjust excess acetylene flame 3x the length of the inner cone. Use torch tip size larger than normally used to weld same diameter mild steel rod. Sweat deposits to parent metal with minimum dilution. For hot wear applications up to 900°F (482°C).

Applications: Ripper Shanks, Impellers, Stabilizers, PVC Plastic Mixer Paddles

Typical Chemical Composition:

Alloy Content: 41% (Vanadium, Tungsten, Chromium, Carbon, Silicon, Boron, Molybdenum, Nickel, Manganese)

Iron Base

Part Number	Packaging	Dimensions Diameter x Length
11334900	50 lb Bulk Pak (22.7 kg)	5/32" x 28" (4.0 mm x 71 cm)

VANCAR® E - COATED

VANCAR E deposits contain specially formulated vanadium tungsten carbide particles approximately equal to tungsten carbide in hardness but only half as heavy. Vancar's advantage over tungsten carbide is that it can be applied in multiple layers and still retain its original hardness due to uniform distribution of the carbide particles. The alloy also offers excellent impact resistance. This provides wear rates that remain very uniform throughout the life of the deposit. Vancar E is a fabricated electrode with a dipped coating.

Welding Procedures/Characteristics: For DCEP (reverse polarity) application. Use lowest practical amperage that will assure a good bond to minimize dilution with the base metal. Use mid-range amperage for best possible coverage and best surface appearance. Can be applied up to three layers. For hot wear applications up to 900°F (482°C).

Applications: Farm Drill Points, Dry Cement Pump Screw, Drill Pipe Stabilizer Wings, Ammonia Injector Wings, Pug Mill Knives, Chisels

Typical Chemical Composition:

Alloy Content: 37% (Vanadium, Tungsten, Carbon, Silicon, Molybdenum, Manganese, Nickel)

Iron Base

Part Number	Packaging	Dimensions Diameter x Length	Amperage (DC+)
■ 11327600	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	80 - 130
■ 11296500	10 lb Vac Pak (4.5 kg)	3/16" x 14" (4.8 mm x 35.6 cm)	130 - 165

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES

STOODITE® 6 - BARE, COATED & MIL BARE

STOODITE 6 is the most generally used cobalt alloy, having excellent resistance to many forms of mechanical and chemical degradation over a wide temperature range. Particular attributes are its outstanding self-mated, anti-galling properties, high temperature hardness, and a high resistance to cavitation erosion, which result in its wide use as a valve seat material. The alloy is ideally suited to variety of hardfacing processes. Machinable with carbide tools. Bonds well with weldable alloy steels, including stainless.

Welding Procedures/Characteristics: Weld DC reverse polarity. Use minimum amperage; apply weave bead 3/4" to 1 1/2" (20-38 mm) wide. For check-free deposits, preheat and slow cool. In applying bare rod, use a larger torch tip than is generally used for same diameter mild steel. Use excess acetylene feather 3x length of inner cone. With the gas tungsten arc process, use 100% Argon. Generally a 2 layer deposit.

Applications: Sintering Machine Seat, Covers, Flapper Gates, Valves and Seats, Coke Pusher Shoes, Cooling Bed Rolls, Hot Trimming Dies, Forging Die Blocks, Chain Saw Guide Bars, Blow Valves, Pulp Digester, Plastic Extrusion Screws.

Can be certified to AWS and military specifications. Must be requested at time of order.

Average Hardness, Rockwell C:

Hardness39-42 HRC

Part Number	Packaging	Dimensions	Length	Amperage DC+
STOODITE 6 - BARE				
■ 11361100	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 – 120
■ 11411800	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	36" (91.4 cm)	90 – 120
■ 11347200	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160
■ 11259600	5 lb Tube (2.26 kg)	3/16" (4.8 mm)	14" (35.6 cm)	160 – 180
■ 11259300	5 lb Tube (2.26 kg)	1/4" (6.4 mm)	14" (35.6 cm)	220 – 270

Flame: 3X Certification to AWS A5.21 ERCoCr-A

STOODITE 6 - COATED

■ 10242700	10 lb VacPak (4.5 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 – 120
■ 10243100	10 lb VacPak (4.5 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160
■ 10243500	10 lb VacPak (4.5 kg)	3/16" (4.8 mm)	14" (35.6 cm)	160 – 180

Certification to AWS A5.13 ECoCr-A

STOODITE 6 MIL - BARE

11449300	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 – 120
11491500	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	36" (91.4 cm)	90 – 120
11449100	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160
11449400	5 lb Tube (2.26 kg)	1/4" (6.4 mm)	14" (35.6 cm)	220 – 270

Flame: 3X Certification to MIL R-17131C Amd 1, Type MIL-RCoCr-A-1

STOODITE® 6H - BARE & MIL BARE

STOODITE 6H, like its base product STOODITE 6, provides resistance to many forms of chemical and mechanical degradation over a wide temperature range. While the chemistry of STOODITE 6H bare rod will fall within the prescribed chemical analysis for STOODITE 6, the amounts of several elements in 6H are more closely controlled within the range to provide better transfer across an arc, thus yielding a smoother gas tungsten arc deposit. This premium version of STOODITE 6 has outstanding consistency, anti-galling properties, high temperature hardness and high resistance to cavitation erosion. It bonds well with weldable grade steels, including stainless.

Welding Procedures/Characteristics: Weld DC reverse polarity. Use minimum amperage; apply weave bead 3/4" to 1 1/2" (20-38 mm) wide. For crack-free deposits, preheat and slow cool. In applying bare rod, use a larger torch tip than is generally used for same diameter mild steel. Use excess acetylene feather 3x length of inner cone. With the gas tungsten arc process, use 100% Argon. Generally a 2 layer deposit.

Applications: Valves and Valve Seats, Bearing and Bushing Areas, Dies.

Can be certified to AWS and military specifications. Must be requested at time of order.

Average Hardness, Rockwell C:

Hardness40-48 HRC

Part Number	Packaging	Dimensions	Length	Amperage DC+
STOODITE 6H - BARE				
11410100	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 – 120
11450600	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	36" (91.4 cm)	90 – 120
11448700	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160
11858300	5 lb Tube (2.26 kg)	3/16" (4.8 mm)	14" (35.6 cm)	160 – 180

STOODITE 6H MIL - BARE

812901107125	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 – 120
■ 11480400	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	36" (91.4 cm)	90 – 120
■ 11481000	5 lb Tube (2.26 kg)	3/16" (4.8 mm)	14" (35.6 cm)	160 – 180
■ 11965600	5 lb Tube (2.26 kg)	3/16" (4.8 mm)	36" (91.4 cm)	160 – 180

Flame: 3X Certification to MIL R-17131C Amd 1, Type MIL-RCoCr-A-3

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GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES

STOODITE® 12 - BARE & COATED

STOODITE 12 is close to Stoodite 6 in composition with the most significant difference between the alloys being one of carbide volume, hence high hardness and resistance to abrasion. Non-magnetic; not forgeable. Machined with difficulty using carbide tools. Bonds well with weldable alloy steels, including stainless.

Welding Procedures/Characteristics: Weld DC reverse polarity. Use minimum amperage; apply weave bead 3/4" to 1 1/2" (20-38 mm) wide. For check free deposits, preheat and slow cool. In applying bare rod, use a larger torch tip than is generally used for same diameter mild steel. Use excess acetylene feather 3x length of inner cone. With the gas tungsten arc process, use 100% Argon. Generally a 2 layer deposit.

Applications: Saw Teeth, Saw Bars, Valve Seat

Can be certified to AWS specifications. Must be requested at time of order.

Average Hardness, Rockwell C:

Hardness40-48 HRC

Part Number	Packaging	Dimensions	Length	Amperage DC+
STOODITE 12 - BARE				
11406700	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 - 120
11449500	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 - 160
11480100	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	36" (91.4 cm)	135 - 160

Flame: 3X Certification to AWS A5.21 ERCoCr-B

STOODITE 12 - COATED

811211205125	10 lb VacPak (4.5 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 - 120
811211205156	10 lb VacPak (4.5 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 - 160

Certification to AWS A5.13 ECoCr-B

STOODITE® 1 - BARE & COATED

STOODITE 1 has a relatively high volume of carbides within its structure because of its carbon content of 2.5 percent. This gives the alloy excellent resistance to abrasion and solid particle erosion, with some sacrifice in toughness. Non-magnetic; not forgeable. Machined with difficulty using carbide tools; grind finish. Bonds well with weldable alloy steels, including stainless.

Welding Procedures/Characteristics: Weld DC reverse polarity. Use minimum amperage; apply weave bead 3/4" to 1 1/2" (20-38 mm) wide. For check-free deposits, preheat and slow cool. In applying bare rod, use a larger torch tip than is generally used for the same diameter mild steel. Use excess acetylene feather 3x length of inner cone. With the gas tungsten arc process, use 100% Argon.

Applications: Mixer, Seals, Rotors, Hydropulper Disc Segments, Carbon Scrapers

Can be certified to AWS specifications. Must be requested at time of order.

Average Hardness, Rockwell C:

Hardness50-56 HRC

Part Number	Packaging	Dimensions	Length	Amperage DC+
STOODITE 1 - BARE				
■ 10240500	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 - 120
■ 11450100	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 - 160

Flame: 3X Certification to AWS A5.21 ERCoCr-C

STOODITE 1 - COATED

■ 10240700	10 lb VacPak (4.5 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 - 120
■ 10241100	10 lb VacPak (4.5 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 - 160

Certification to AWS A5.13 ECoCr-C

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GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES

STOODITE® 21 - BARE & COATED

STOODITE 21 is a low carbon, molybdenum strengthened cobalt-chromium alloy. Its excellent high temperature strength and stability are responsible for its use as a hot die material, while its inherent resistance to galling (under self-mated conditions), cavitation erosion, and corrosion have made it a popular fluid valve seat facing alloy.

Welding Procedures/Characteristics: Weld DC reverse polarity. Use minimum amperage; apply weave bead 3/4" to 1 1/2" (20-38 mm) wide. For check-free deposits, preheat and slow cool. In applying bare rod, use gas tungsten arc process with 100% Argon as the shielding gas. Can be machined. Bonds well with weldable alloy steels, including stainless.

Applications: Hot Forming Dies, Valves and Seats, Turbine Runners.

Can be certified to AWS specifications. Must be requested at time of order.

Average Hardness, Rockwell C:

Tungsten Arc, Two Layer Deposit: 24 HRC
(Work Hardened 45 HRC)
Shielded Metal Arc, Two Layer Deposit: 26 HRC
(Work Hardened 45 HRC)

Part Number	Packaging	Dimensions	Length	Amperage DC+
STOODITE 21 - BARE				
■ 812101105125	5 lb Tube (2.26 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 – 120
■ 812101105156	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160
■ 812101105187	5 lb Tube (2.26 kg)	3/16" (4.8 mm)	14" (35.6 cm)	160 – 180
812101105250	5 lb Tube (2.26 kg)	1/4" (6.4 mm)	14" (35.6 cm)	220 – 270

Flame: 3X Certification to AWS A5.21 ERCoCr-E

STOODITE 21 - Coated				
■ 812101205125	10 lb VacPak (4.5 kg)	1/8" (3.2 mm)	14" (35.6 cm)	90 – 120
■ 812101205156	10 lb VacPak (4.5 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160
■ 11889200	10 lb VacPak (4.5 kg)	3/16" (4.8 mm)	14" (35.6 cm)	160 – 180
■ 812101205250	10 lb VacPak (4.5 kg)	1/4" (6.4 mm)	14" (35.6 cm)	220 – 270

Certification to AWS A5.13 ECoCr-E

STOODY® 50 - BARE & COATED

Stoody 50 is a nickel-based cast rod with a low melting point. It flows easily on to base metals and yields smooth deposits. It can be formed and wiped to sharp edge. Deposits maintain a high level of hardness up to 1200°F (650°C), and resist galling, pitting and corrosion in addition to abrasion. It can be deposited on low and medium carbon steels, and cast iron (with flux). Deposits have exceptional hot hardness properties.

Welding Procedures/Characteristics: It was developed primarily for oxyacetylene applications because it wets and flows easily in thin deposits or when necessary, can be stacked. Thoroughly clean work piece prior to welding. Observe preheat and postheat requirements where necessary. When deposited use a neutral oxyacetylene flame. Can also be applied with gas tungsten arc (TIG) process. Generally limited to 1 or 2 layers. Deposits are best finished by grinding; machining is not recommended. This alloy can be hot-formed while in the plastic stage.

Applications: Glass Molds, Centrifuges, Oil Extraction Screws

Can be certified to AWS and military specifications. Must be requested at time of order. Certification to MIL-R-17131C Amd 1, Type MIL-R-NiCr-B-1 requires business case justification for special order. No active part numbers.

Average Hardness, Rockwell C:

Hardness. 48-51 HRC

Part Number	Packaging	Dimensions	Length	Amperage DC+
STOODY 50 - BARE				
824107105156	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160
824107105187	5 lb Tube (2.26 kg)	3/16" (4.8 mm)	14" (35.6 cm)	160 – 180
824107105250	5 lb Tube (2.26 kg)	1/4" (6.4 mm)	14" (35.6 cm)	220 – 270

Flame: 1X Certification to AWS A5.21 ERNiCr-B

STOODY 50 - COATED				
11833400	10 lb VacPak (4.5 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160

Certification to AWS A5.13 ENiCr-B

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GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES

STOODY® 60 - BARE

Stoody 60 has the same basic properties as Stoody 50 but is somewhat harder and more wear resistant.

Welding Procedures/Characteristics: Weldability is the same as Stoody 50 but the deposits are much harder and are therefore much more prone to cracking. Generally grind finish; not machinable.

Applications: Draw Blocks, Expeller Screws

Can be certified to AWS specifications. Must be requested at time or order.

Average Hardness, Rockwell C:

Hardness56-57 HRC

Part Number	Packaging	Dimensions	Length	Amperage DC+
824007105156	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	14" (35.6 cm)	135 – 160
11868800	5 lb Tube (2.26 kg)	5/32" (4.0 mm)	36" (91.4 cm)	135 – 160
824007105187	5 lb Tube (2.26 kg)	3/16" (4.8 mm)	14" (35.6 cm)	160 – 180
824007105250	5 lb Tube (2.26 kg)	1/4" (6.4 mm)	14" (35.6 cm)	220 – 270

Flame: 1 - 1/2X Certification to AWS A5.21 ERNiCr-C

STOODY® C - COATED

Stoody C coated electrodes are nickel-based electrodes with an alloy coating for DC reverse electric arc applications. Resistant to high heat and corrosion accompanied by abrasion and/or impact. It retains hardness up to 1200°F (650°C) and has low frictional properties.

Welding Procedures/Characteristics: DC reverse polarity is recommended; AC and DC straight polarity are not advisable. Use a reasonable low current, consistent with good weldability, to minimize penetration and dilution. Hold a very short arc. Two or three-layer deposits are recommended for maximum effectiveness. Normal preheating and post heating requirements should be observed, depending on type of base metal. Slag removal is easy. Deposits are dense, smooth and resistant to high temperature deformation and corrosive agents. Although extremely tough, deposits are readily machinable with high speed or cemented carbide tools. Not recommended for joining.

Applications: Tong Bits, Bleeder Valves, Hot Shear Blades

Average Hardness, Rockwell C:

Shielded Metal Arc, Two Layer Deposit..... HBN 96 (37 HRC Work Hardened)

Note: Deposit will work and age harden in service to 35-40 HRC with minimum deformation.

Part Number	Packaging	Dimensions	Length	Amperage DC+
11848400	5 lb VacPak (2.26 kg)	3/32" (2.4 mm)	9" (23 cm)	55 – 100
11412800	10 lb VacPak (4.5 kg)	1/8" (3.2 mm)	14" (35.6 cm)	80 – 120
10245700	10 lb VacPak (4.5 kg)	5/32" (4.0 mm)	14" (35.6 cm)	110 – 150
10245900	10 lb VacPak (4.5 kg)	3/16" (4.8 mm)	14" (35.6 cm)	130 – 170

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GROUP 1: BUILD-UP AND JOINING ALLOYS

A. BUILD-UP OF CARBON STEELS

STOODY® BUILD-UP

STOODY BUILD-UP is a low alloy fabricated wire that has excellent compressive strength and resistance to plastic deformation. This is an excellent alloy for use as an underbase for subsequent hardfacing. Several diameters are available for use both with and without shielding gases. This material has good machinability in the “as-welded” condition using carbide tools. It is not recommended for manganese steel or cast iron and will workharden under impact.

Welding Procedures/Characteristics: Can be applied AC or DC, either polarity - DCEP (reverse preferred) in either stringer or weave beads 1/2" to 3/4" (13 mm - 19 mm) wide. Can be applied out of position with proper welding techniques. Slag removal is very good. This wire is not recommended for joining applications. Vertical welding can be done by welding a horizontal shelf approximately 2" (5 cm) wide and then going up.

Applications: Hammers, Wheel Burns, Repairing Battered Rail, Steel Mill Wobblers and Pods, Carbon Steel Shovel Pads, Shafting, Rolls, Pump Parts, Sugar Mill Press Roll Tooth (Major Repairs), Press Roll Sprockets

Nominal Composition:

Alloy Content – 4% (Manganese, Chromium, Silicon, Molybdenum, Carbon)

Iron Base

Typical Mechanical Properties:

Base Metal	Layers	Hardness
0.10% C	2	24-28 HRC
0.40% C	2	30-35 HRC
0.80% C	2	38-42 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11423900	10 lb PS (4.5 kg)	0.045" (1.2 mm)	98% Ar/2% O or 75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	175-225	18-24
■ 11423800	33 lb WB (15 kg)	0.045" (1.2 mm)	98% Ar/2% O or 75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	175-225	18-24
■ 11304900	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-3/4" (13-19 mm)	250-300	23-26
■ 11258300	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-3/4" (13-19 mm)	250-300	23-26
■ 11183600	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	1"-1 1/2" (25-38 mm)	150-500	26-29
■ 11000100	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	150-500	26-29
11142800	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	150-500	26-29
11813100	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	150-500	26-29
11869900	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	150-500	26-29

STOODY® BUILD-UP AP-G

STOODY BUILD-UP AP-G is a shielded, flux cored, all position, general purpose build up with excellent compressive strength and resistance to plastic deformation, making it ideal for use as an under base subsequent hardfacing. This all position martensitic alloy is used for build up on mild and low alloy steel. It has good machinability in the as welded condition using carbide tools, and it can be forged at red heat. Stoodly Build Up AP-G operates in smooth semi-spray transfer which allows high deposition in out-of-position application. Deposits can be applied crack free in multiple layers.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using 75% Ar / 25% CO₂ shielding gas, this wire has excellent out-of-position characteristics in the vertical, overhead and horizontal positions. It has a smooth semi-spray transfer and can be applied to carbon and low alloy steels.

Applications: Mild and low alloy steels, Hammers, Wheel Burns, Repairing Battered Rail, Steel Mill Wobblers and Pods, Carbon Steel Shovel Pads, Shafting, Rolls, Pump Parts

Nominal Composition:

Alloy Content – 4% (Carbon, Manganese, Chromium, Molybdenum, Silicon)

Iron Base

Typical Mechanical Properties:

Abrasion Resistance	Low
Impact Resistance.....	Moderate
Deposit Layers	Multiple
Hardness (2 Layers)	24-27 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11845500	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2" (13 mm)	140-225	25-26
12013300	50 lb PP (22.7 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	170-275	21-23

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GROUP 1: BUILD-UP AND JOINING ALLOYS

B. BUILD-UP AND JOINING OF MANGANESE STEEL DYNAMANG®

DYNAMANG is an austenitic manganese material containing chromium and nickel. It produces a tough, high strength deposit that workhardens under impact. Primarily used for the build-up, repair and joining of manganese steel. Deposit thickness is unlimited and can be flame cut without difficulty.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads 1/2" to 3/4" (13 mm - 19 mm) wide. Wire extension (arc length) is very important. If it becomes too long, excessive spatter results; if too short, "stubbing" will occur. The use of CO2 shielding gas reduces the amount of spatter with the 1/16" (1.6 mm) diameter wire. Limit interpass temperature to 500°F (260°C) maximum.

Applications: Crusher Rolls, Jaw Crushers, Hammer Crushers, Dredge Pump, Cutters, Shovel Pads, Buckets and Teeth, Gyratory Crusher Mantles

Nominal Composition:

Alloy Content – 20% (Manganese, Chromium, Nickel, Carbon)
Iron Base

Typical Mechanical Properties:

Tensile Strength..... 120 ksi (825 MPa)
Yield Strength..... 70 ksi (480 MPa)
Elongation in 2 in..... 42%
Hardness:
All weld metal..... 200 BHN
Work hardens to..... 500 BHN

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11836400	33 lb WB (15 kg)	0.045" (1.2 mm)	Open-arc or CO ₂	1/2"-3/4" (13-19 mm)	150-180	25-27
■ 11446700	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1" (19-25 mm)	200-250	23-27
11470200	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1" (19-25 mm)	200-250	23-27
■ 11249900	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1 1/2"-2" (38-51 mm)	220-350	25-28
■ 11250100	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	1 1/2"-2" (38-51 mm)	220-350	25-28
■ 11250200	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	1 1/2"-2" (38-51 mm)	220-350	25-28

NICROMANG® PLUS

NICROMANG PLUS is similar to NicroMang except it is formulated to produce a higher hardness in the "as-welded" condition. This higher hardness will reduce the amount of initial metal deformation under heavy loads. NicroMang Plus is not recommended for buildup on carbon steels.

Welding Procedures/Characteristics: DC reverse polarity recommended (electrode positive). Use stringer or weave beads 3/8" - 5/8" (10 mm - 16 mm) wide. Weldability is good in the flat position. Multiple layers can be applied without difficulty when proper procedures are followed. Maintain low heat input, do not exceed 500°F (260°C) interpass temperature.

Applications: Manganese Railroad Frogs and Crossings, Manganese Steel Castings

Nominal Composition:

Alloy Content – 23% (Manganese, Chromium, Carbon, Molybdenum, Nickel)
Iron Base

Typical Mechanical Properties:

All weld metal..... 230 BHN
Workhardened to..... 55 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11873100	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-1" (13-25 mm)	200-250	23-27
11950200	33 lb WB (15 kg)	5/64" (2.0 mm)	Open-arc	3/4"-1" (19-25 mm)	220-260	27-28
11887100	25 lb PS (11.3 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-300	24-27
11854200	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	275-375	25-28
11851900	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	275-375	25-28

NICROMANG® FROG

NICROMANG FROG is a high strength, high manganese alloy, designed for buildup repair of castings such as manganese railroad frogs and crossings, crusher hammers, and impact bars. The high alloy content of the NicroMang Frog allows for high work hardening while maintaining high impact resistance and toughness. Deposits are austenitic whether applied to carbon steel or manganese steel, non-magnetic, machinable with carbide tools, and can be flame cut.

Welding Procedures/Characteristics: DC reverse polarity recommended (electrode positive). Use stringer or weave beads 3/8" - 5/8" (10 mm - 16 mm) wide. Weldability is good in the flat position. Multiple layers can be applied without difficulty when proper procedures are followed. Maintain low heat input, do not exceed 500°F (260°C) interpass temperature.

Applications: Manganese Railroad Frogs, Crossings, Track Components; Crusher Cone Nuts and Mantles, Crusher Hammer Rolls, Impactor Bars and Rotors

Nominal Composition:

Alloy Content – 23% (Manganese, Chromium, Carbon, Molybdenum, Nickel)
Iron Base

Typical Mechanical Properties:

Abrasion Resistance Moderate
Impact Resistance..... Excellent
Hardness / Work Hardens to 185 BHN / 36 HRC
Magnetic..... No
Surface Cross Checks No
Tensile Strength..... 81 ksi (557 MPa)
Yield Strength..... 127 ksi (878 MPa)
Elongation 37%

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12051500	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-1" (13-25 mm)	200-250	23-27
11973200	33 lb WB (15 kg)	5/64" (2.0 mm)	Open-arc	3/4"-1" (19-25 mm)	220-260	24-27

GROUP 1: BUILD-UP AND JOINING ALLOYS

B. BUILD-UP AND JOINING OF MANGANESE STEEL

FOUNDRY CO-MANG®-O

FOUNDRY CO-MANG-O is a manganese steel wire. It is suitable for multi-layer buildup and has excellent work hardening characteristics. It is usable for austenitic manganese steel repair, buildup and joining and provides an excellent color match to the manganese base metal.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads 1/2" to 3/4" (13 mm - 19 mm) wide. Contact tip to work piece distance (arc length) is very important. If it becomes too long, excessive spatter results; if too short, "stubbing" will occur. Limit interpass temperature to 500°F (260°C), maximum.

Applications: Rock Crushing and Mining, Dredge Pump Parts, Hammer Mill Hammers, Shovel Pads, Crusher Rolls, Jaws, Grizzly Bars, Screens, Grates, Impactor Bars, Manganese Railroad Frogs, Latch Pins

Nominal Composition:

Alloy Content – 18% (Carbon, Manganese, Molybdenum)
Iron Base

Typical Mechanical Properties:

Tensile Strength..... 128 ksi (880 MPa)
Yield Strength..... 71 ksi (490 MPa)
Elongation in 2 in (5 cm). 42%
Hardness:
As Deposited..... 170-210 BHN
Work hardens to..... 350-450 BHN

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11847800	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-250	25-27
■ 11863600	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-250	25-27
11908300	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	225-275	25-27

TRACKWEAR® (Formerly SA Manganese)

TRACKWEAR is a very high strength austenitic manganese containing vanadium developed for the build-up of manganese steel castings. Deposits have a higher initial yield strength than other austenitic manganese steel wires, work hardens much faster and also develops minimal flow and rollover in service.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended. This alloy can be deposited in multiple layers although if build-up of more than a 1/2" (13 mm) is required, NICROMANG would be preferred. Machinability is very poor and deposits can be flame cut. Limit interpass temperature to 500°F (260°C) maximum.

Applications: Top Layer on Frog Heel Extension, Manganese Insert, Top 2 Layers on Build-up of Manganese Steel Frog Point, Crusher Rolls, Dredge Pump Parts, Dipper Fronts and Teeth, Impact Breaker Bars, Hammer Mill Hammers, Latch Pins, Roll Wobblers and Spindles, Shovel Pads, Crusher Jaws, Railroad Frogs and Crossings

Nominal Composition:

Alloy Content – 19% (Manganese, Carbon, Vanadium)
Iron Base

Typical Mechanical Properties:

Tensile Strength..... 128 ksi (880 MPa)
Yield Strength..... 85 ksi (585 MPa)
Elongation in 2 in..... 42%
Hardness:
All weld metal..... 200 BHN
Workhardened to..... 500 BHN

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11821000	33 lb WB (15 kg)	5/64" (2.0 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	225-275	23-27
61800755	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-450	23-26



Rail Frog (Switch Frog)

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

Open-Arc and Gas-Shielded Wires

GROUP 1: BUILD-UP AND JOINING ALLOYS

C. BUILD-UP AND JOINING OF BOTH CARBON AND MANGANESE STEELS

STOODY® 110 or 110MC*

STOODY 110 is a modified high chromium high manganese steel widely used in the rebuilding of manganese steel parts subject to severe impact loading. This material offers excellent cavitation resistance; good toughness and wear resistance; and is sometimes used as the final hardfacing layer in extreme impact situations.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads 1/2" to 3/4" (13 mm - 19 mm) wide. Deposits cannot be flame cut, are machinable with carbide tools, are non-magnetic and are not recommended for cast iron. The addition of CO2 shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability.

Applications: Drive Tumblers, Shovel Pads, Shovel Teeth, Turbine Cone, Wobbler Feeder, Manganese Frogs, Crusher Rolls, Sugar Mill Hammers, Knives, Press Roll Flanges

Nominal Composition:

Alloy Content – 35%(Chromium, Manganese, Nickel, Silicon, Carbon) Iron Base

*MC = "Metal Cored" — Part Numbers 11836900 and 11836800

Typical Mechanical Properties:

Tensile Strength..... 119 ksi (820 MPa)
Yield Strength..... 76 ksi (525 MPa)
Elongation in 2 in..... 40%
Hardness:
All weld metal..... 17 HRC
Work hardens to..... 55 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11452600	33 lb WB (15 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	135-185	18-24
■ 11424400	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-1" (13-25 mm)	150-210	22-26
■ 11345000	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-1" (13-25 mm)	150-210	22-26
■ 11214400	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	175-375	25-28
■ 11000300	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	175-375	25-28
■ 11143400	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	175-375	25-28
■ 11140900	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	175-375	25-28
■ 11836900	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	175-375	25-28
■ 11836800	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	175-375	25-28

STOODY® 111-O & STOODY® 111-G

STOODY 111-0 is an open arc wire that produces an austenitic chromium manganese steel deposit containing titanium alloy carbides. Stooddy 111-0 is used in the rebuilding of manganese steel parts subject to severe impact loading combined with abrasion. The abrasion resistance of Stooddy 111-0 is five to six times superior to that of an austenitic manganese deposit as measured in the ASTM G65 test. This material offers good toughness and wear resistance, and is sometimes used as the final hardfacing layer in extreme impact situations. It can be used on carbon and manganese steels.

Applications: Drive Tumblers, Wobbler Feeders, Turbine Cones, Crusher Rolls, Shovel Pads, Fluid Components, Sugar Mill Hammers, Knives

Structure: Austenitic Chromium Manganese Steel with a high volume of tightly packed titanium alloy carbides.

Typical Mechanical Properties:

Hardness:
As Deposited..... 30 HRC
Work Hardened 49 HRC
Abrasion Resistance Good
Impact Toughness Good
Cross Checks No
Machinable No
Deposit Layers Up to 3 Layers

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11981800	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	300-400	26-27

STOODY® 120

STOODY 120 is a high manganese wire recommended for applications involving severe wear and impact. Deposits are austenitic whether applied to manganese steel or carbon steel. This is an excellent alloy for the rebuilding of crusher rolls, hammers, impactor nuts, cone crusher nuts and railroad track components.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads. Welding can be done out-of-position with the smaller diameter wires; vertical up requires a wide weave technique. Deposits are non-magnetic, machinable with carbide tools and can be flame cut. The addition of CO2 shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability.

Applications: Crusher Hammers Rolls, Impactor Bars and Rotors, Crusher Cone Nuts and Mantles, Track Components

Nominal Composition:

Alloy Content – 25% (Manganese, Chromium, Carbon, Silicon) Iron Base

Typical Mechanical Properties:

Tensile Strength..... 133 ksi (920 MPa)
Yield Strength..... 91.5 ksi (630 MPa)
Elongation in 2 in..... 29 %
Hardness:
All weld metal..... 18 HRC
Work hardens to..... 55 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11438500	33 lb WB (15 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	150-200	24-28
11402500	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"- 1" (13-25 mm)	150-250	22-26
■ 11420400	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"- 1" (13-25 mm)	150-250	22-26

GROUP 1: BUILD-UP AND JOINING ALLOYS

C. BUILD-UP AND JOINING OF BOTH CARBON AND MANGANESE STEELS

VERSALLOY® AP-G

VERSALLOY AP-G is a modified austenitic stainless steel used for joining, rebuilding and/or as an overlay in dissimilar applications involving stainless and low alloy steels. It's an excellent all-purpose wire used for a wide variety of applications.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads. The addition of CO₂ shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability.

Applications: Used for joining stainless steel to other alloys.

Nominal Composition:

Alloy Content – 37% (Chromium, Nickel, Manganese)
Iron Base

Typical Mechanical Properties:

Ultimate Tensile Strength94 ksi (680 MPa)
Elongation in 2 in..... 35%

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11925200	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	120-220	18-26
11904500	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	5/8"-1 1/4" (16-32 mm)	150-285	23-26

STOODY® SOS® 307 MOD.

STOODY SOS 307 MOD. wire offers the productivity and efficiencies of continuous welding wire and the convenience and low cost of open arc (gas-less) welding. Welding can be done indoors or outdoors – even in moderate wind or draft conditions. Weldability is excellent, producing weld deposits that are sound and clean with flat to slightly convex bead shape. Stooddy SOS wire deposits have a lower percentage of penetration than GMAW deposits at the same current levels which means less dilution and distortion. Stooddy SOS wire can be used as a direct replacement for solid stainless wires or electrodes of the same grade both in fabricating and overlay applications. Stooddy's SOS wire does not require specialized equipment. For best results, constant voltage, direct current power source is recommended.

Applications: DOWNHAND ONLY – Used to join carbon and low alloy steels, 14% manganese steels, and armor plate. It can be used as a buffer layer before hardfacing and applications where work hardening is required. Sugar Mill Press Roll Sprockets.

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12027300	50 lb PP (22.7 kg)	3/32" (2.4 mm)	Open-arc	1" - 1 1/4" (25-32 mm)	275-320	28-30

D. JOINING AND BUILD-UP OF CAST IRONS

CASTWELD™ Ni 55-O/G/S

CASTWELD Ni 55-O wire is used on worn cast iron parts requiring joining or build-up. It has good tolerance for the high phosphorus often found in cast irons. It works well when welding thick sections, and is also recommended for joining cast iron to dissimilar metals.

Welding Procedures/Characteristics: Must be applied using DCEP (reverse polarity). When welding cast iron always grind clean the part, preheat and slow cool. Use string bead technique and make short, convex weld beads. Use of the "skip welding" technique is preferred. Peen deposits immediately after welding. Remove slag before re-striking on the previous bead. Addition of CO₂ gas will reduce spatter and improves weldability. Can be applied in multiple layers. Composition meets AWS A5.15 ENiFeT3-CI.

Applications: Joining, Build-Up and Repair of Cast Iron Parts, Engine Blocks and Heads, Cast Iron Universal Joints Welding to Steel Drive Shafts, Pump Housings, Assorted Castings, Sugar Mill Press Rolls, Roll Flanges

Nominal Composition:

Alloy Content – 59% (Carbon, Manganese, Nickel, Silicon)
Iron Base

Typical Mechanical Properties:

Tensile Strength.....75 ksi (515 MPa)
Yield Strength.....46 ksi (315 MPa)
Deposit Characteristics:
Machinability Poor
Number of Deposit LayersUnlimited

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11895600	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	Open-arc	1/2"-5/8" (13-16 mm)	140-170	23-26
■ 11858700	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	5/8"- 3/4" (16-19 mm)	200-250	24-27
■ 11863300	50 lb PP (22.7 kg)	3/32" (2.4 mm)	Open-arc or CO ₂	3/4"-1" (19-25 mm)	250-350	25-28

Note: When welding cast iron, always preheat and slow cool. Convex stringer beads desired. Peen after each weld.

*Nickel content percentage can vary slightly.

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GROUP 1: BUILD-UP AND JOINING ALLOYS

CASTWELD™ Ni 30-O

CASTWELD Ni 30-O/S open arc wire is used on worn cast iron parts requiring joining or build up. It has good tolerance for the high phosphorus often found in cast irons. Castweld Ni 30-O/S can also be submerged arc welded using a neutral flux.

Applications: Joining, Build Up and Repair of Cast Iron Parts, Pump Housings, Assorted Castings

Nominal Composition: Carbon, Manganese, Nickel, Silicon, Iron

Typical Mechanical Properties:

Machinability	Fair
Number of Deposit Layers	Unlimited
Hardness, 1 Layer on Cast Iron	29 HRC
Hardness, All Weld	330 HB

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11962300	50 lb PP (22.7 kg)	3/32" (2.4 mm)	Open-arc or CO ₂	3/4"-1" (19-25 mm)	250-350	25-28

CASTWELD™ Ni 30-G

CASTWELD Ni 30-G is a shielded iron-nickel tubular alloy cored wire for GMAW of cast iron. The tubular wire provides deposition rates equal to that of solid wire at lower amperage. The feature reduces heat input into the work piece.

Castweld Ni-30-G wire is used on worn cast iron parts requiring joining or build up. It has good tolerance for the high phosphorus often found in cast irons.

Applications: Joining, Build Up and Repair of Cast Iron Parts, Pump Housings, Assorted Castings

Typical Composition: Carbon, Manganese, Nickel, Silicon, Iron

Typical Mechanical Properties:

Machinability	Fair
Number of Deposit Layers	Unlimited

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11974900	50 lb PP (22.7 kg)	3/32" (2.4 mm)	98% Ar / 2% O ₂	1"-1¼" (25-32 mm)	330-390	26-28

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GROUP 2: METAL TO METAL WEAR

STOODY® SUPER BUILD-UP

STOODY SUPER BUILD-UP is used both as a build-up and hardfacing material because it has good compressive strength, hardness, and wear resistance. It is not intended to be used as an underbase for subsequent hardfacing. When a shielding gas is used, machinability is very good with carbide tools.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads. Weldability is very good and can be applied out-of-position. The addition of CO₂ shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability. Multiple layers can be applied without difficulty when proper preheat and interpass temperatures are maintained.

Applications: Gear Teeth, Sprockets, Steel Shovel Pads, Overlaying Carbon Steel Shafts, Sugar Mill Press Roll Sprockets

Nominal Composition:

Alloy Content – 5% (Chromium, Manganese, Molybdenum, Silicon, Carbon)

Iron Base

Typical Mechanical Properties:

Base Metals..... 0.20% C Steel
Layers:.....2
Hardness35-40 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11423700	10 lb PS (4.5 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	120-220	18-24
■ 11423600	33 lb WB (15 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	120-220	18-24
11946200	33 lb WB (15 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂	1/2"- 3/4" (13-19 mm)	180-300	24-28
■ 11426500	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"- 1" (13-25 mm)	140-260	23-26
11426400	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"- 1" (13-25 mm)	140-260	23-26
11837900	50 lb PP (22.7 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-350	24-28
11466200	200 lb HP (90.7 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-350	24-28

STOODY® 105-G & 105-O

STOODY 105-G (GMAW) and 105-O (Open-arc) are low alloy wires developed for the rebuilding of carbon and low alloy parts used in applications involving metal-to-metal wear. Requires carbide tools for machining. Good for hot wear application up to 600°F (316°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads. Weldability is very good and can be applied out-of-position. The addition of CO₂ shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability. Multiple layers can be applied without difficulty when proper preheat and interpass temperatures are maintained.

Applications: Tractor Rollers, Undercarriage parts, Shovel Idlers and Rollers, Shovel House Rolls (Hook Rolls), Top Carrier Rolls, Crane Wheels, Mine Car Wheels

Nominal Composition:

Alloy Content – 7% (Chromium, Manganese, Silicon, Molybdenum, Carbon)

Iron Base

Typical Mechanical Properties:

Base Metals..... 0.20% C Steel
Layers:.....2
Hardness41-46 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11441100	50 lb PP (22.7 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	3/4"-1" (19-25 mm)	250-300	25-26
11917600	500 lb POP (226.8 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/2" (19-38 mm)	200-350	24-28

STOODY® 102-G & 102-O

STOODY 102 has an all weld metal composition and physical properties that are very similar to those of H-12 tool steel. Good for hot wear application up to 1000°F (538°C). Has very good compressive strength and abrasion resistance. Requires carbide tools for machining.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads. Weldability is very good and can be applied out-of-position. The addition of CO₂ shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability. Multiple layers can be applied without difficulty when proper preheat and interpass temperatures are maintained.

Applications: Cable Sheaves, Hot and Cold Shear Blades, Forging Dies, Drillpipe Hardbanding, Crane Wheels, Hot Work Extrusion Rolls

Nominal Composition:

Alloy Content – 14% (Chromium, Manganese, Molybdenum, Tungsten Carbon, Vanadium)

Iron Base

Typical Mechanical Properties:

Base Metals..... 0.20% C Steel
Layers:.....2
Hardness48-53 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
Stoody 102-O						
■ 11426800	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1 1/8" (19-29 mm)	200-250	22-26
■ 11426700	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1 1/8" (19-29 mm)	200-250	22-26
Stoody 102-G						
11422400	10 lb PS (4.5 kg)	.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	135-185	18-24
■ 11422300	33 lb WB (15 kg)	.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	135-185	18-24
11422000	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1 1/8" (13-29 mm)	200-250	22-26

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GROUP 2: METAL TO METAL WEAR

STOODY® RAIL END 932-O

STOODY RAIL END 932 semi-automatic open arc wire is designed specifically for repair of carbon steel railroad track components. It has excellent tensile strength to maintain the desired rail dimensions. Rail End 932 is formulated for welding on high carbon steel rails and frogs and is not intended for use on manganese steel.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads. Weldability is very good and can be applied in multiple layers with proper preheat and interpass temperature procedures. Designed for high carbon steel rails and frogs, not for use on manganese steel.

Applications: Carbon Steel Rail Ends, Wheel Burns, Frogs, Crossings

Nominal Composition:

Alloy Content – 5% (Carbon, Chromium, Manganese, Molybdenum, Silicon)

Iron Base

Deposit Characteristics:

Impact Resistance..... Moderate
 Abrasion Resistance High
 Hardness34-38 HRC
 Machinability Yes
 Deposit Layers Multiple
 Surface Cross Checks No
 Magnetic..... Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11802500	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1/2"- 3/4" (13-19 mm)	225-280	27-28
11950300	33 lb WB (15 kg)	5/64" (2.0 mm)	Open-arc	1"-1¼" (25-32 mm)	250-350	24-26
11887000	25 lb PS (11.3 kg)	3/32" (2.4 mm)	Open-arc	1"-1½" (25-38 mm)	300-400	26-28

STOODY® M7-G

STOODY M7-G is a molybdenum high speed tool steel similar to AISI M7 grade. It is a martensitic alloy with small sized precipitated carbides. This material is characterized by a high hardenability (58 to 66 HRC) and excellent wear resistance. Can be used at elevated temperatures up to 1000°F (538°C), with condition of moderate thermal shock.

Welding Procedures/Characteristics: DCEP (reverse polarity) using 75 Argon/ 25 CO2 shielding gas. Preheat high speed tool steels from 750°F to 1200°F (399°C to 649°C). On other steels, preheat and post heat accordingly. Deposits should be limited to 2 or 3 layers.

Applications: Hot and Cold Dies, Blanking Dies, Piercing Dies, Tire Shredders, Cutting and Shaving Knives, Shear Braces, Cladding High Wear Areas on Equipment and Building up Composite Dies and Tools.

Nominal Composition:

Alloy Content – 19% (Carbon, Manganese, Silicon, Chromium, Molybdenum, Tungsten, Vanadium)

Iron Base

Deposit Characteristics:

Abrasion Resistance Good
 Impact Resistance..... Good
 Deposit Layers 2-3
 Hardness58-66 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11810800	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2" (13 mm)	125-180	18-20
11849400	50 lb PP (22.7 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2" (13 mm)	125-180	18-20
11868500	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	220-300	24-28
■ 11834200	50 lb PP (22.7 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	220-300	24-28
11917900	200 lb HP (90.7 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	220-300	24-28
11925500	400 lb NTP (181.4 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	220-300	24-28
11916500	33 lb WB (15 kg)	5/64" (2.0 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	250-350	25-29



Tire Shredder

GROUP 2: METAL TO METAL WEAR

STOODY® 964 AP-G

STOODY 964 AP-G is a gas shielded, flux cored, all position, general purpose, hardfacing wire. The deposit is a specially formulated wear resistant alloy which produces a uniform distribution of small primary carbides in a martensitic matrix. The small carbides provide greatly improved wear resistance over martensitic steel, many tool steels, and some conventional chromium carbide alloys. 964 AP-G possesses excellent resistance to impact and plastic deformation. Deposits are crack free on carbon 300 stainless and manganese steels. Other base metals should be preheated and post heated appropriately. The material is characterized by a high hardness and excellent wear resistance. 964 AP-G is recommended for parts where cross checking is undesirable. 964 AP-G offers improved weldability over chromium carbide and many other tool steel welding wires.

Applications: Slitter Blades, Auger Flights, Rendering Screws, Tamper Tools, Extruder Screws, Tamper Feet, Tillage Tools, Dredge Parts, Drag Line Bucket Lips, Sugar Cane Harvesters

Structure: Small Primary Carbides in a Martensitic Matrix

Deposit Characteristics:

Abrasion Resistance	Excellent
Hardness	58-64 HRC
Impact Resistance.....	Good
Deposit Layers	2 Max
Surface Cross Checks	None
Magnetic	
on Stainless Steel	Slightly
on Carbon Steel.....	Yes
on Manganese Steel.....	Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11970600	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	140-225	25-29
■ 11983700	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	180-250	25-29

STOODY® 964-G

STOODY 964-G deposit is a specially formulated wear resistant alloy which produces a uniform distribution of small primary carbides in a martensitic matrix. The small carbides provide greatly improved wear resistance over martensitic steel, many tool steels, and some conventional chromium carbide alloys. 964-G possesses excellent resistance to impact and plastic deformation. Deposits are crack free on carbon 300 stainless and manganese steels. Other base metals should be preheated and post heated appropriately. The material is characterized by a high hardness and excellent wear resistance. 964-G is recommended for parts where cross checking is undesirable. 964-G offers improved weldability over chromium carbide and many other tool steel welding wires.

Applications: Slitter Blades, Auger Flights, Rendering Screws, Tamper Tools, Extruder Screws, Tamper Feet, Tillage Tools, Dredge parts, Drag Line Bucket Lips

Structure: Small Primary Carbides in a Martensitic Matrix

Deposit Characteristics:

Abrasion Resistance	Excellent
Hardness	60-65 HRC
Impact Resistance.....	Good
Deposit Layers	2 Max
Surface Cross Checks	None
Magnetic	
on Stainless Steel	Slightly
on Carbon Steel.....	Yes
on Manganese Steel.....	Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11965300	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	125-230	18-22
■ 11965800	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	190-330	18-22

STOODY® 966-G

STOODY 966-G is a molybdenum-tungsten high speed tool steel with a high concentration of uniformly distributed small primary carbides. The presence of the small carbides greatly improve the wear resistance when compared to M-7 tool steel. Stooddy 966-G provides wear resistance greater than or equal to that of conventional chromium carbides but does not cross check when proper preheat and welding procedures are used. It is recommended for parts where cross checking is undesirable. It can be applied crack free without preheat on carbon, 300 series stainless and manganese steels, when proper preheat and interpass temperatures are maintained. Post weld heat treatment may be required for other base metals. The deposit will crack on cast irons. The material is characterized by a high hardness (62-67).

Applications: Tillage Tools, Tire Shredders, Hard Banding, Cutting and Shaving knives, Extruder Screws, Shear Blades, Blanking Dies, Piercing Dies, Excellent for cladding high wear areas on equipment

Structure: Small Primary Carbides in a high speed tool steel matrix

Deposit Characteristics:

Abrasion Resistance	Excellent
Impact Resistance.....	Moderate
Deposit Layers	2
Hardness	62-67 HRC
Surface Cross Checks	None
Magnetic	
on Stainless Steel	Slightly
on Carbon Steel.....	Yes
on Manganese Steel.....	Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11965900	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2"-5/8" (13-16 mm)	220-250	19-21
■ 11981400	33 lb WB (15 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂	5/8"-3/4" (16-19 mm)	250-300	17-24
■ 11965200	50 lb PP (22.7 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂	5/8"-3/4" (16-19 mm)	250-300	17-24

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Open-Arc and Gas-Shielded Wires

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 965-G & 965-O

STOODY 965-G can be categorized as a general purpose hardfacing alloy that offers a good balance of impact and abrasion resistance. Analysis and properties are very similar to Stoodly Self-Hardening. Applications would include both metal-to-metal and metal-to-earth. Deposits are martensitic, forgeable, and are not readily machinable. Can be applied to carbon, low alloy and manganese steel.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using either stringer or weave beads. Weldability is very good in flat and horizontal applications. The addition of CO₂ shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability

Applications: Tillage Tools, Drag Line Bucket Lips, Tamper Feet, Chisel Plows, Dredge Parts, Extruded Screws, Muller Tires, Sugar Mill Classification Table Combs, Press Rolls - Underlay

Nominal Composition:

Alloy Content – 10% (Chromium, Manganese, Silicon, Carbon)
Iron Base

Mechanical Properties Typical Rockwell Hardness:

Base Metal 0.20% C Steel
Layers: 2
Hardness 56-60 HRC



Stoodly 965 with addition of dropped tungsten carbides.

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
965-G						
■ 11929300	5 lb PS-LLW (2.27 kg)	0.035" (0.9 mm)	75-80% Ar, Bal. CO ₂	1/2"-5/8" (13-16 mm)	80-130	15-20
11933300	25 lb PS (11.3 kg)	0.035" (0.9 mm)	75-80% Ar, Bal. CO ₂	1/2"-5/8" (13-16 mm)	80-130	15-20
■ 11423000	10 lb PS (4.5 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	150-200	25-29
■ 11423100	33 lb WB (15 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	150-200	25-29
■ 11875400	300 lb NTP (136 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	150-200	25-29
■ 11501500	33 lb WB (15 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	3/4"-1" (19-25 mm)	200-250	27-31
■ 11823900	50 lb PP (22.7 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	3/4"-1" (19-25 mm)	200-250	27-31
■ 11864500	200 lb HP (90.7 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	3/4"-1" (19-25 mm)	200-250	27-31
11933500	200 lb NTP (90.7 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	3/4"-1" (19-25 mm)	200-250	27-31
11875500	400 lb NTP (181.4 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	3/4"-1" (19-25 mm)	200-250	27-31
965-O						
■ 11427100	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1 1/4" (19-32 mm)	200-250	27-31
■ 11427000	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1 1/4" (19-32 mm)	200-250	27-31
11956000	200 lb HP (90.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1 1/4" (19-32 mm)	200-250	27-31
11956100	500 lb POP (226.8 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	3/4"-1 1/4" (19-32 mm)	200-250	27-31
11946100	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc or CO ₂	1 1/4"-1 1/2" (32-38 mm)	300-350	25-28
11987200	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc or CO ₂	1 1/4"-1 1/2" (32-38 mm)	425-475	28-30

Deposit Characteristics:

Abrasion Resistance Good
Impact Resistance..... Good
2 Layer Hardness 57-62 HRC
Deposit Layers 2 Normal, 3 Max.

STOODY® 965 AP-G

STOODY 965 AP-G is a gas-shielded, flux cored, all position, general purpose hardfacing alloy which offers a good balance of impact and abrasion resistance. It can be used in both metal-to-metal and metal-to-earth applications. Deposits are forgeable but not readily machinable. Stoodly 965 AP-G has a smooth semi-spray transfer and can be applied to carbon, low alloy, and manganese steels. It is magnetic on carbon and low alloy steels but not on manganese steels. Analysis and properties are similar to Stoodly Self-Hardening covered electrode.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using 75 Argon/25 CO₂ shielding gas. This wire has excellent out-of-position characteristics in the vertical, overhead and horizontal positions. It has a smooth semi-spray transfer and can be applied to carbon and low alloy steels.

Applications: Tillage Tools, Dredge Parts, Sliding Metal Parts, Tire Shredder Knives, Drag Line Bucket Lips, Extruder Screws, Tamper Feet, Churn Drills, Muller Tires, Sugar Cane Harvesters

Nominal Composition:

Alloy Content – 11% (Carbon, Chromium, Manganese, Molybdenum, Silicon)

Iron Base

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12023500	10 lb PS (4.5 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	140-225	26-29
■ 11807800	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	140-225	26-29
■ 11808600	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	170-275	24-30
11962400	200 lb HP (90.7 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"- 3/4" (13-19 mm)	170-275	24-30

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 600

STOODY 600 is an open arc wire which produces a titanium carbide bearing deposit. It has excellent abrasion resistance, yet maintains toughness for good impact resistance. Stooddy 600 exhibits good operational characteristics and excellent slag removal when compared to other titanium carbide wires. It is particularly suited to high stress application such as cement clinker crusher rolls.

Welding Procedures/Characteristics: An open arc wire designed for DCEP (reverse polarity). It can be applied in multiple layers to carbon and low alloy steel as well as manganese.

Applications: High Pressure Cement Rolls, Bucket Lips, Muller Tires, Hammer Crushers, Tillage Tools, Chisel Plows, Tamper Feet, Hard Banding, Sugar Mill Hammers, Knives, Press Rolls

Nominal Composition:

Alloy Content – 19% (Carbon, Manganese, Silicon, Chromium, Molybdenum, Titanium)
Iron Base

Deposit Characteristic:

Abrasion Resistance Very Good
Impact Resistance..... High
Typical Hardness:
1 Layer on mild steel 59 HRC
2 Layer on mild steel 41 HRC
3 Layer on mild steel 37 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11930300	33 lb WB (15 kg)	0.045" (1.2 mm)	Open-arc	1/2"-3/4" (13-19 mm)	150-225	22-26
11934300	200 lb HP (90.7 kg)	0.045" (1.2 mm)	Open-arc	1/2"-3/4" (13-19 mm)	150-225	22-26
■ 11886600	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	3/4"-1" (19-25 mm)	200-300	22-26
11928000	200 lb HP (90.7 kg)	1/16" (1.6 mm)	Open-arc	3/4"-1" (19-25 mm)	200-300	22-26
12046500	50 lb PP (22.7 kg)	5/64" (2.0 mm)	Open-arc	1" - 1 1/4" (25-32 mm)	250-350	24-26
11846000	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	300-400	25-27
11916600	500 lb POP (226.8 kg)	3/32" (2.4 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	300-400	25-27
11814400	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-500	26-28
11929400	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-500	26-28

STOODY® 670

STOODY 670 is a gas metal arc wire that produces a niobium carbide bearing deposit. It has excellent abrasion resistance yet maintains toughness for good impact resistance. Stooddy 670 exhibits good operational characteristics compared to other niobium or titanium carbide wires. It is particularly suited to high stress applications such as cement clinker crusher rolls.

Applications: High Pressure Cement Rolls, Bucket Lips, Muller Tires, Hammer Crushers, Tillage Tools, Chisel Plows, Tamper Feet

Structure: Niobium Carbides in a Martensitic Matrix

Deposit Characteristics:

Abrasion Resistance Very Good
Hardness 58 HRC
Impact Resistance..... High
Deposit Layers Up to 5
Surface Cross Checks Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12044600	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	3/4"-1" (19-25 mm)	200-300	26-28

STOODY® 117

STOODY 117 gives a semi-austenitic matrix with uniformly dispersed chromium carbides that provides a deposit with very good impact, abrasion and anti-galling properties. Frequently used as both a build-up and hardfacing alloy on manganese and low alloy materials.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using stringer beads and fast travel. Light cross-checking pattern develops which allows this material to be applied in multiple layers without difficulty. Weldability is very good and deposits are not machinable.

Applications: Crusher Rolls, Hammers, Bell Type Gyratory Cones, Bucket Lips, Mantles, Dredge Pump Shells, Sugar Mill Press Rolls

Nominal Composition:

Alloy Content – 17% (Chromium, Carbon, Molybdenum, Manganese, Silicon, Copper)
Iron Base

Typical Mechanical Properties:

Hardness:
Nominal Hardness 43-45 HRC
3 Layers on mild steel 43-45 HRC
2 Layers on Mang. steel 38-40 HRC
Work hardens to 55-60 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11808400	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1"-1 1/4" (25-32 mm)	190-230	24-25
11835900	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	1"-1 1/2" (25-32 mm)	275-325	25-28
11289100	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	300-600	31-35
■ 11320600	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	300-600	31-35
11289000	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	300-600	31-35
11832400	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	300-600	31-35

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3 Open-Arc and Gas-Shielded Wires

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 133

STOODY 133 offers good resistance to corrosion, heat, and galling and can be applied in multiple layers crack free. Deposits are machinable with carbide tools and will polish to a mirror finish in service. Can be applied to manganese, carbon and low alloy steels. Recommended for parts where low coefficient of friction is desirable and where cross checking is undesirable.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using either stringer or weave beads. The addition of CO₂ shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability.

Applications: Hog Hammers, Chipper Knife Components, Debarking Hammers, Log Anvils, Rendering Flights

Nominal Composition:

Alloy Content – 35% (Chromium, Nickel, Carbon, Manganese, Silicon, Molybdenum)
Iron Base

Typical Mechanical Properties:

Hardness:
2 Layers on carbon steel.....39-42 HRC
2 Layers on Mang. steel.....35-39 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11867600	33 lb WB (15 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂	1/2"-3/4" (13-19 mm)	175-225	20-24
■ 11319000	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-1" (13-25 mm)	175-350	22-26
11288200	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-1" (13-25 mm)	175-350	22-26
11288100	60 Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-350	24-28

STOODY® 121

STOODY 121 gives a semi-austenitic matrix with uniformly dispersed chromium carbides and is recommended for applications where abrasion is severe and impact is only moderate. Provides excellent service on a wide variety of heavy equipment and earth engaging tools. Typically cross-checks when applied and is not machinable. Can be applied to carbon, low alloy and manganese steels

Welding Procedures/Characteristics: DCEP (reverse polarity) recommend using either stringer or weave beads. The addition of CO₂ shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves the weldability. Limit deposits to 2 layers maximum in the downhand position only.

Applications: Scraper Sides, Scraper Cutters, Vibrator Ditcher Shank, Post Hole Augers, Augers, Pug Mill Paddles, Tamper Tools

Nominal Composition:

Alloy Content – 21% (Chromium, Carbon, Manganese, Silicon)
Iron Base

Typical Mechanical Properties:

Base Metal LayersHRC
0.20% C Steel 1 40-43
0.20% C Steel 2 48-50
Mang. Steel 1 40-44
Mang. Steel 2 47-51

On carbon steel or low alloy steel: Slightly magnetic
On Mang. steel: Non-magnetic not forgeable or machinable

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11423300	10 lb PS (4.5 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2" - 3/4" (13-19 mm)	175-200	22-26
■ 11423200	33 lb WB (15 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2" - 3/4" (13-19 mm)	175-200	22-26
■ 11408300	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-1" (13-25 mm)	205-255	24-28
■ 11420600	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-1" (13-25 mm)	205-255	24-28
■ 11086600	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-350	24-28
11087700	200 lb HP (90.7 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-350	24-28
■ 11000500	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-350	24-28
■ 11143700	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-350	24-28

STOODY® 131

STOODY 131 is recommended for parts where a low coefficient of friction and minimum cross checking are desirable. Deposits provide excellent bearing surfaces on friction type guides, cement mill gudgeons, etc. Can be applied to carbon, low alloy and manganese steels. Deposits are not machinable or forgeable.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended (downhand only) using either stringer or weave beads. Can be applied out-of-position. Generally limited to 2 layers although multiple layers can be applied with proper procedures (fast travel and preheat control).

Applications: Gyrotory Cross Heads, Guides, Dredge Parts, Pumps

Nominal Composition:

Alloy Content – 21% (Chromium, Molybdenum, Carbon, Silicon, Manganese)
Iron Base

Typical Mechanical Properties:

Hardness:
2 Layers on mild steel40-45 HRC
2 Layers on Mang. steel.....37-40 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11464900	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	175-225	24-26
11000700	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	250-350	24-28
11143800	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	250-350	24-28
11141400	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	250-350	24-28

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 135

STOODY 135 open arc wire is a high chromium-carbon, iron based tubular alloy wire recommended for metal-to-earth applications subject to severe abrasion. It develops a tight cross-checking pattern of 3/8" to 1/2" (10 mm - 13 mm) and is frequently used in crushing and construction applications. It can be applied to carbon, low alloy, or manganese steels and can be used in hot wear applications up to 900°F (482°C). Deposits cannot be machined or forged.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended, using either stringer or weave beads. Can be applied to carbon, low alloy or manganese steels. Excellent operator appeal in the downhand welding position.

Applications: Scraper Sides, Cutters and Blades, Shovel Bucket Tooth Adapters, Tillage Tools, Augers and Auger Flights, Crushing and Grinding Equipment, Ripper Shanks and Teeth, Bucket Sides and Lips, Conveyor Screws, Fan Blades

Nominal Composition:

Alloy Content – 35% (Carbon, Chromium, Manganese, Silicon, Molybdenum)

Iron Base

Deposit Characteristic:

Abrasion Resistance Excellent
Impact Resistance..... Low
Hardness 2 Layers 1020
Carbon Steel54-62 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11862600	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1" (25 mm)	200-220	24-26
11835100	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc	1" (25 mm)	200-220	24-26

STOODY® 964 AP-G

STOODY 964 AP-G is a gas shielded, flux cored, all position, general purpose, hardfacing wire. The deposit is a specially formulated wear resistant alloy which produces a uniform distribution of small primary carbides in a martensitic matrix. The small carbides provide greatly improved wear resistance over martensitic steel, many tool steels, and some conventional chromium carbide allots. 964 AP-G possesses excellent resistance to impact and plastic deformation. Deposits are crack free on carbon 300 stainless and manganese steels. Other base metals should be preheated and post heated appropriately. The material is characterized by a high hardness and excellent wear resistance. 964 AP-G is recommended for parts where cross checking is undesirable. 964 AP-G offers improved weldability over chromium carbide and many other tool steel welding wires.

Applications: Slitter Blades, Auger Flights, Rendering Screws, Tamper Tools, Extruder Screws, Tamper Feet, Tillage Tools, Dredge Parts, Drag Line Bucket Lips, Sugar Cane Harvesters

Structure: Small Primary Carbides in a Martensitic Matrix

Deposit Characteristics:

Abrasion Resistance Excellent
Hardness58-64 HRC
Impact Resistance..... Good
Deposit Layers2 Max
Surface Cross Checks None
Magnetic
on Stainless Steel..... Slightly
on Carbon Steel Yes
on Manganese Steel Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11970600	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	140-225	25-29
■ 11983700	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	180-250	25-29

STOODY® 134-G & 134-O

STOODY 134 is a high chromium-iron alloy enhanced with molybdenum recommended for applications subject to severe abrasion, moderate impact and high compressive loads. Deposits are generally limited to 2 layers, develop cross checks and are not machinable or forgeable. Can be used in hot wear applications up to 900°F (482°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using either stringer or weave beads. Can be applied to low alloy and manganese steels. Recommended for downhand welding only.

Applications: Shovel Bucket Tooth Adapters, Vertical Screen Deflector Grates, Grizzly Bars, Gyrotory Crusher Liners or Concaves, Hammer Mill Rotor Discs, Sizing/Scalping Screens, Crushing Equipment (Rolls, Hammers, Impellers), Bucket Teeth, Lips, Rippers

Nominal Composition:

Alloy Content – 33% (Chromium, Carbon, Molybdenum, Manganese, Silicon)

Iron Base

Typical Mechanical Properties:

Hardness:

1 Pass on mild steel.....42-46 HRC
2 Passes on mild steel56-60 HRC
1 Pass on Mang. steel.....43-47 HRC
2 Passes on Mang. steel45-50 HRC
On carbon or low alloy steel: Slightly magnetic
On Mang. steel: Non-magnetic. Not heat treatable.

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12021800	33 lb WB (15 kg)	1/16" (1.6 mm)	Argon – 75% CO ₂	1/2"-3/4" (13 – 19 mm)	225-275	24-26
11836000	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-Arc	1/4" – 1/2" (32 – 38 mm)	300-350	25-28
■ 11000900	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	300-350	26-28
11143900	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	300-350	26-28
11141500	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	300-350	26-28

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GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 964-G

STOODY 964-G deposit is a specially formulated wear resistant alloy which produces a uniform distribution of small primary carbides in a martensitic matrix. The small carbides provide greatly improved wear resistance over martensitic steel, many tool steels, and some conventional chromium carbide alloys. 964-G possesses excellent resistance to impact and plastic deformation. Deposits are crack free on carbon 300 stainless and manganese steels. Other base metals should be preheated and post heated appropriately. The material is characterized by a high hardness and excellent wear resistance. 964-G is recommended for parts where cross checking is undesirable. 964-G offers improved weldability over chromium carbide and many other tool steel welding wires.

Applications: Slitter Blades, Auger Flights, Rendering Screws, Tamper Tools, Extruder Screws, Tamper Feet, Tillage Tools, Dredge Parts, Drag Line Bucket Lips

Alloy Type: Small Primary Carbides in a Martensitic Matrix

Deposit Characteristics:

Abrasion Resistance Excellent
 Hardness 60-65 HRC
 Impact Resistance..... Good
 Deposit Layers 2 Max
 Surface Cross Checks None
 Magnetic
 on Stainless Steel..... Slightly
 on Carbon Steel Yes
 on Manganese Steel Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11965300	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	125-230	18-22
■ 11965800	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"-3/4" (13-19 mm)	190-330	18-22

STOODY® 100HC

STOODY 100HC is a high chromium-iron alloy recommended for applications subject to severe abrasion and moderate impact and heat. Develops very tight cross checking pattern and is frequently used in crushing applications. Generally limited to 2 layers although in the rebuilding of coal pulverizer rolls multiple layers can be applied using specific welding procedures. Deposits are not machinable or forgeable and can be used in hot wear applications up to 900°F (482°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using either stringer or weave beads. Increased deposition can be achieved using straight polarity but weld soundness will suffer. Can be applied to carbon, low alloy, and manganese steels. Recommended for downhand welding only. When multiple layers are to be run, stringer beads must be run and deposit must have a tight cross checking pattern of 3/8" to 1/2" (10 mm - 13 mm) in order to be successful.

Applications: Gyratory Mantles, Cage Pins, Scrubbers, Crusher Rolls, Sugar Mill Shredder Anvils, Mill Combs, Elevator Screw Flights, Hammers, Knives, Press Rolls

Nominal Composition:

Alloy Content – 34% (Chromium, Carbon, Manganese, Silicon, Molybdenum)

Iron Base

Typical Mechanical Properties:

Hardness:
 2 Passes on mild steel 58-62 HRC
 2 Passes on Mang. steel 51-55 HRC
 On carbon or low alloy steel: Slightly magnetic
 On Mang. steel: Non-magnetic

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11249700	25 lb PS (11.3 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-400	26-30
■ 11313400	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-400	26-30
12022200	200 lb HP (90.7 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-400	26-30
■ 11001000	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-400	26-30
■ 11144100	110 lb QP (50 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-400	26-30
■ 11141700	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-400	26-30
■ 11235400	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-400	26-30
11976900	750 lb POP (340.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	200-400	26-30
11867100	110 lb QP (50 kg)	1/8" (3.2 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-550	31-34
11807700	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-550	31-34

Pairing Stooddy 110 as an underlay with Stooddy 100HC as the overlay on sugar mill hammers and knives. For even greater abrasion and impact resistance, pair Stooddy 111 for the underlay with Stooddy CP2000 for the overlay.



GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 101HC-G, -O

STOODY 101HC is a high chromium-iron alloy recommended for applications subject to severe abrasion and moderate impact and heat. Develops very tight cross checking pattern and is frequently used for applications involving severe metal-to-earth abrasion. Generally limited to 2 layers. Deposits are not machinable or forgeable and can be used in hot wear applications up to 900°F (482°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using either stringer or weave beads. Can be applied to carbon, low alloy, and manganese steels. The small diameter .045" (1.2 mm) and 1/16" (1.6 mm) wires can be run out of position using relatively fast travel speeds and no oscillation. The addition of CO₂ shielding gas with the 1/16" (1.6 mm) diameter wire reduces the amount of spatter and improves its weldability for out of position work.

Applications: Scraper Sides, Cutters, Blades, Ripper Shanks and Teeth, Shovel Bucket Tooth Adapters, Clam Shell Bucket, Bucket Sides and Lips, Tillage Tools, Augers and Auger Flights, Conveyor Screws, Sugar Mill Classification Table Combs, Press Rolls

Nominal Composition:

Alloy Content – 26% (Chromium, Carbon, Manganese, Silicon)
Iron Base

Typical Mechanical Properties:

Base Metal	Layers	Hardness
0.20% C Steel	1	55-58 HRC
0.20% C Steel	2	62-64 HRC

Hardness:

- 1 Pass on mild steel55-64 HRC
- 2 Passes on mild steel59-64 HRC
- On mild steel: Slightly magnetic
- On Mang. steel: Magnetic

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11929200	5 lb PS-LLW (2.27 kg)	0.035" (0.9 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"-5/8"	80-185	15-24
■ 11933400	25 lb PS (11.3 kg)	0.035" (0.9 mm)	98% Ar / 2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2"-5/8" (13-16 mm)	80-185	15-24
■ 11440300	10 lb PS (4.5 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂	1/2"-3/4" (13-19 mm)	150-200	22-26
■ 11436300	33 lb WB (15 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂	1/2"-3/4" (13-19 mm)	150-200	22-26
11874600	50 lb PP (22.7 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂	1/2"-3/4" (13-19 mm)	150-200	22-26
12038300	200 lb NTP (90.7 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂	1/2"-3/4" (13-19 mm)	150-200	22-26
■ 11891500	300 lb NTP (136 kg)	0.045" (1.2 mm)	98% Ar / 2% O ₂	1/2"-3/4" (13-19 mm)	150-200	22-26
11421000	10 lb PS (4.5 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-260	24-28
■ 11304700	33 lb WB (4.5 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-260	24-28
■ 11304800	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-260	24-28
11948100	200 lb HP (90.7 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-260	24-28
■ 12025400	200 lb NTP (90.7 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-260	24-28
11898700	400 lb NTP (181.4 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-260	24-28
11956200	500 lb POP (226.8 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	200-260	24-28
11865500	33 lb WB (15 kg)	5/64" (2.0 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	225-375	24-28
■ 11325200	50 lb PP (22.7 kg)	5/64" (2.0 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	225-375	24-28
11849200	110 lb QP (50 kg)	5/64" (2.0 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	225-375	24-28
■ 11866900	200 lb HP (90.7 kg)	5/64" (2.0 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	225-375	24-28
■ 11901700	500 lb POP (226.8 kg)	5/64" (2.0 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	225-375	24-28
11862500	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	350-450	27-29
11861300	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	350-450	27-29
11873200	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	350-450	27-29



Stoody 600 and Stoody 101HC applied to sugar mill press rolls in Peru improved service life between hardfacing reapplications by 40%.

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3 Open-Arc and Gas-Shielded Wires

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 101AP

STOODY 101AP open arc wire is a high chromium carbide iron base tubular wire. The higher chromium content was specially designed to achieve a minimum of 25% chromium in a two layer weld deposit. Stoody 101AP was formulated to improve out of position horizontal welding when compared to other chrome carbide welding wires. The unique formulation is recommended for applications subject to severe abrasion. The weld deposit develops a tight cross-checking pattern 3/8" - 1/2" (10 mm - 13 mm). The cracking is sometimes referred to as relief cracking. It can be applied to carbon, low alloy, or manganese steels and can be used in hot wear applications up to 900°F (482°C). Deposits can not be machined or forged.

Applications: Pipe I.D. Cladding, Pipe Flange Faces, Copper Smelter Ladles Overlay, Sugar Mill Roll Underlay, Scraper Sides, Cutter, and Blades; Shovel Bucket Tooth Adapters, Crushing and Grinding Equipment, Ripper Shanks and Teeth, Bucket Sides and Lips, Conveyors and Screws, Fan Blades, Sugar Cane Harvesters, Classification Table Combs, Press Rolls, Flanges, Incinerator Exhaust Fans

Structure: Primary Chromium Carbides in an Austenitic Matrix

Typical Mechanical Properties:

Abrasion Resistance Excellent
 Impact Resistance..... Low
 Hardness (2 Layers) on 1020 Carbon Steel60-64 HRC
 Surface Cross Checks Yes
 Magnetic..... Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 12040800	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1/2"- 1" (13-25 mm)	225-275	24-28

STOODY® 101HT

STOODY 101HT is a higher carbon and chromium version of the classic Stoody 100HC alloy. It is recommended for applications subject to severe abrasion, moderate impact, and higher temperatures. It develops a tight 3/8" - 1/2" (10 mm - 13 mm) cross checking pattern. Stoody 101HT is generally limited to two to three layers and can be applied to carbon, low alloy, and manganese steels. Deposits are neither machinable nor forgeable. This alloy can be used in hot wear applications up to 900°F (482°C).

Applications: Gyratory Crusher Chute Liners, Brick Making Hammers, Iron Ore Sintering Furnace Seals, Direct Reduction Iron Ducts (DRI), Iron Ore Pellet Belt Conveyor Pulleys, Wear Plates, Rotary Kiln Discharge Grate Seals, Sugar Mill Hammers, Knives, Press Rolls, Incinerator Exhaust Fans

Structure: Primary Chromium Carbides in an Austenitic Matrix.

Typical Mechanical Properties:

Abrasion Resistance Excellent
 Impact Resistance..... Moderate
 Deposit Layers 2-3
 Hardness on Carbon Steel.....60-65 HRC
 Surface Cross Checks Yes
 Machinability No

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12045500	50 lb PP (22.7 kg)	7/64" (2.8 mm)	Open-arc	1¼"-1½" (32-38 mm)	200-425	25-31
12027200	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1¼"-1½" (32-38 mm)	200-425	25-31

STOODOCOR™ 136

STOODOCOR 136 deposit is an erosion and corrosion resistant alloy deposit. StoodCor 136 is a specially designed complex carbide alloy suited for hardfacing/cladding applications where erosion and corrosion are of equal concern. The ability of this alloy to resist high abrasion in a corrosive environment makes it optimal for hardfacing/cladding pipe, plate and vessels subjected to erosion and corrosion. The wire possesses excellent weldability and can be used for cladding on plate, pipe ID or elbow ID.

Applications: Components subject to a combination of corrosion and wear such as Slurry Pipe, Plate and Vessels found in Mixing, Mining and Quarrying Industries

Nominal Composition: StoodCor 136 is a complex carbide deposit producing chromium and fine primary carbides in an austenitic matrix.

Typical Mechanical Properties:

Corrosion Resistance Good
 Abrasion Resistance Excellent
 Impact Resistance..... Low – Moderate
 Deposit Layers 2 Max.
 Hardness50-58 HRC
 Surface Cross Checks Yes
 Machinability No, Grinding Only

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11992100	33 lb WB (15 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂	5/8"-3/4" (16-19 mm)	225-275	24-27
12012800	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	1"-1¼" (25-32 mm)	425-475	27-29
12003600	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1"-1¼" (25-32 mm)	425-475	27-29

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GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 100HD

STOODY 100HD is a high chromium-iron alloy developed for high deposition rate hardfacing of large surface areas for extreme abrasion resistance. It develops a very tight cross checking pattern. Stooddy 100HD is generally limited to 3 layers. Deposits are not machinable or forgeable and can be used in hot wear applications up to 900° F (482°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using stringer or weave beads. Multiple layers require stringer bead technique and deposits must show a tight 3/8" - 1/2" (10 mm - 13 mm) cross check pattern.

Applications: Wear Plate Manufacturing, Crusher Roll Rebuilding, Large Tillage Tool Repair, Coal Pulverizer Rolls and Grinding Rings.

Nominal Composition:

Alloy Content – 36.5% Chromium, Carbon, Manganese, Silicon)

Iron Base

Typical Mechanical Properties:

Hardness 55-62 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11848200	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	425-650	27-30
11501100	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	425-650	27-30
■ 11484500	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	425-650	27-30
11905600	750 lb POP (340.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	425-650	27-30
11859000	60 lb Coil (27.2 kg)	1/8" (3.2 mm)	Open-arc	1"-1 1/2" (25-38 mm)	450-650	30-34
11435900	200 lb HP (90.7 kg)	1/8" (3.2 mm)	Open-arc	1"-1 1/2" (25-38 mm)	450-650	30-34
11489700	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Open-arc	1"-1 1/2" (25-38 mm)	450-650	30-34

STOODY® PC2009

STOODY PC2009 is a chromium carbide wire designed for applying abrasion resistant deposits inside pipe. Optimized to result in superior weldability for overlaying pipe ID in the flat position and elbows in the horizontal position. Deposits can be ground and can be used in hot wear applications up to 900° F (482°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using stringer or weave beads.

Applications: Pipe ID Cladding



Typical Mechanical Properties:

Hardness 57-60 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12033000	33 lb WB (15 kg)	1/16" (1.6 mm)	Open Arc	3/4"-1" (19-25 mm)	200-250	24-28
12033100	200 lb HP (90.7 kg)	1/16" (1.6 mm)	Open Arc	3/4"-1" (19-25 mm)	200-250	24-28
11993100	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open Arc	1"-1 1/4" (25-32 mm)	450-500	28-29
11994500	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open Arc	1"-1 1/4" (25-32 mm)	450-500	28-29
12033500	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open Arc	1"-1 1/4" (25-32 mm)	450-500	28-29
11993000	600 lb POP (272.2 kg)	7/64" (2.8 mm)	Open Arc	1"-1 1/4" (25-32 mm)	450-500	28-29

Pipe cladding for oil sands application with PC2009

STOODY® PR2009

STOODY PR2009 is a chromium carbide wire designed for the repair of worn ID claddings in pipe elbows. Optimized to result in superior weldability for overlaying pipe ID in the horizontal position. Special deoxidizers within PR2009 make it possible to achieve sound ID claddings when repairing worn chromium carbide overlays hydrocarbon contamination embedded in existing relief cracks.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using stringer or weave beads.

Applications: Repair Hardface Pipe and Elbow ID Cladding

Typical Mechanical Properties:

Hardness 59-62 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11983200	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open Arc	1"-1 1/4" (25-32 mm)	450-500	28-29
11983000	600 POP (272.2 kg)	7/64" (2.8 mm)	Open Arc	1"-1 1/4" (25-32 mm)	450-500	28-29

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GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 100XHC

STOODY 100XHC is a high chromium-iron alloy recommended for applications subject to severe abrasion and moderate impact and heat. Develops very tight cross checking pattern and is frequently used in crushing applications. Generally limited to 2 layers. Deposits are not machinable or forgeable and can be used in hot wear applications up to 900°F (482°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using either stringer or weave beads. Increased deposition can be achieved using straight polarity but weld soundness will suffer. Can be applied to carbon, low alloy, and manganese steels. Recommended for downhand welding only.

Applications: Backhoe Sidecutters, Clinker Grinding Rolls, Catalyst Piping, Crushers, Tool Joints

Nominal Composition:

Alloy Content – 34% (Chromium, Carbon, Manganese, Silicon, Molybdenum)

Iron Base

Typical Mechanical Properties:

Hardness:
 1 Pass on mild steel55-59 HRC
 2 Passes on mild steel60-66 HRC
 1 Pass on Mang. steel.....46-50 HRC
 2 Passes on Mang. steel.....51-55 HRC

On carbon or low alloy steel: Slightly magnetic

On Mang. steel: Non-magnetic

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11370000	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	225-375	24-28
11384700	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1 1/4" (19-32 mm)	225-375	24-28

STOODY® 101HD

STOODY 101HD open arc wire is a higher carbon version of our 100HD. This alloy is ideal for hardface plate applications requiring higher alloy content in 1 or 2 layer deposits. 101HD is normally deposited on low carbon steel plate and used in severe abrasion applications. Deposits are not machinable or forgeable and can be used in hot wear applications up to 900°F (482°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using stringer or weave beads. Limit to 2 layers maximum. For stringer beads use 25-50% step over, for weave beads use 25-30% step over.

Applications: Wear Plate Manufacturing

Nominal Composition:

Alloy Content – 36.9% (Chromium, Carbon, Manganese, Silicon)

Iron Base

Typical Mechanical Properties:

Hardness55-62 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11943400	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1/2"-1" (13-25 mm)	225-275	24-28
11860100	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	400-600	28-32
11937000	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Open-arc	1"-1 1/2" (25-38 mm)	450-650	30-34

STOODY® 101HWP

STOODY 101HWP is a chromium carbide alloy designed to generate primary carbides in the first layer. Exhibits superior wear resistance in both single and double layer overlays for use in one or two layer wear plates. Optimized to result in superior weldability for weave and stringer bead deposits on plate. Deposits are not machinable or forgeable.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using stringer or weave beads.

Applications: Wear Plate Manufacturing

Typical Mechanical Properties:

Hardness58-62 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12013700	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-600	28-32
11993800	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	450-650	29-33

STOODY® 966-G

STOODY 966-G is a molybdenum-tungsten high speed tool steel with a high concentration of uniformly distributed small primary carbides. The presence of the small carbides greatly improve the wear resistance when compared to M-7 tool steel. Stooddy 966-G provides wear resistance greater than or equal to that of conventional chromium carbides but does not cross check when proper preheat and welding procedures are used. It is recommended for parts where cross checking is undesirable. It can be applied crack free without preheat on carbon, 300 series stainless and manganese steels, when proper preheat and interpass temperatures are maintained. Post weld heat treatment may be required for other base metals. The deposit will crack on cast irons. The material is characterized by a high hardness.

Applications: Tillage Tools, Tire Shredders, Hard Banding, Cutting and Shaving knives, Extruder Screws, Shear Blades, Blanking Dies, Piercing Dies, Excellent for cladding high wear areas on equipment

Structure: Small Primary Carbides in a high speed tool steel matrix

Deposit Characteristics:

Abrasion Resistance Excellent
 Impact Resistance..... Moderate
 Deposit Layers2
 Hardness62-67 HRC
 Surface Cross Checks None
 Magnetic (Stainless Steel)..... Slightly
 Magnetic (Carbon Steel / Mang Steel)..... Yes

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11965900	33 lb WB (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	1/2"-5/8" (13-16 mm)	220-250	19-21
11981400	33 lb WB (15 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂	5/8"-3/4" (16-19 mm)	250-300	17-24
11965200	50 lb PP (22.7 kg)	1/16" (1.6 mm)	98% Ar / 2% O ₂	5/8"-3/4" (16-19 mm)	250-300	17-24

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GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 968-G, -O

STOODY 968 is a non-chromium bearing hardfacing welding wire which results in a deposit that has wear resistance and hardness equal to or greater than conventional chromium carbide deposits.

STOODY 968 was specially formulated to eliminate chromium in the wire and still provide outstanding wear resistance. As there is no chromium in the welding wire, the emission of hexavalent chromium during welding is reduced or completely eliminated (depending on the chromium content of the base metal or pre-existing weld deposit).

Stoody 968 provides a wear resistant overlay for applications where hexavalent chromium in welding fumes cannot be reduced by work practice controls.

Applications: Agriculture, Quarrying, Mining

Structure: Small Primary Carbides in an Iron Base Matrix

Deposit Characteristics:

Abrasion Resistance	Excellent
Hardness	66-69 HRC
Impact Resistance.....	Low - Moderate
Deposit Layers	2 Max
Surface Cross Checks	None
Machinability ¹	No, Grinding Only
Magnetic	
on Stainless Steel.....	Slightly
on Carbon Steel	Yes
on Manganese Steel.....	Yes

¹Grind deposit with soft tool steel grinding wheels to prevent burning and heat checking of the surface.

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12010100	33 lb WB (15 kg)	0.045" (1.2 mm)	98/2 Ar-O ₂	1/2"-5/8" (13-16 mm)	150-250	19-24
■ 12010000	33 lb WB (15 kg)	1/16" (1.6 mm)	98/2 Ar-O ₂	5/8" - 1" (16-25 mm)	225-300	20-26
12047400	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open Arc	1"-1 1/4" (25-32 mm)	350-450	26-28

STOODY® 970-G

STOODY 970-G is a non-chromium bearing hardfacing welding wire which results in a deposit that has wear resistance and hardness equal to or greater than conventional chromium carbide deposits.

STOODY 970-G was specially formulated to eliminate chromium in the wire and still provide outstanding wear resistance. As there is no chromium in the welding wire, the emission of hexavalent chromium during welding is reduced or completely eliminated (depending on the chromium content of the base metal or pre-existing weld deposit).

Stoody 970-G provides a wear resistant overlay for applications where hexavalent chromium in welding fumes cannot be reduced by work practice controls.

Applications: Agriculture, Quarrying, Mining

Structure: Small Primary Carbides in an Iron Base Matrix

Deposit Characteristics:

Abrasion Resistance	Excellent
Hardness	67-71 HRC
Impact Resistance.....	Low - Moderate
Deposit Layers	2 Max
Surface Cross Checks	Yes
Machinability ¹	No, Grinding Only
Magnetic	
on Stainless Steel.....	Slightly
on Carbon Steel	Yes
on Manganese Steel	Yes

¹Grind deposit with soft tool steel grinding wheels to prevent burning and heat checking of the surface. If welding on heavy forging or casting skins, grind clean prior to welding.

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11994800	33 lb WB (15 kg)	0.045" (1.2 mm)	98/2 Ar-O ₂	1/2"-5/8" (13-16 mm)	150-250	19-22
■ 11996200	33 lb WB (15 kg)	1/16" (1.6 mm)	98/2 Ar-O ₂	5/8"-3/4" (16-19 mm)	225-300	19-24
■ 11994700	50 lb PP (22.7 kg)	1/16" (1.6 mm)	98/2 Ar-O ₂	5/8"-3/4" (16-19 mm)	225-300	19-24

SA/SUPER 20

SA/SUPER 20 is a very highly alloyed chromium-tungsten-moly-iron wire used for service involving very severe abrasive conditions and hot wear up to 1100°F (593°C). The abrasion resistance of this alloy approaches that of a tungsten carbide. Deposits are not machinable or forgeable and develop a tight cross check pattern.

Welding Procedures/Characteristics: DCEP (reverse polarity) recommended using either stringer or weave beads. Can be applied to carbon, low alloy, and manganese steels. Recommended as a single layer wire and for flat welding only.

Applications: Shredder Wear Parts, Ash Fans, Feed Mill Hammers, Pulverizers

Nominal Composition:

Alloy Content – 38% (Chromium, Molybdenum, Carbon, Tungsten, Manganese, Silicon)

Iron Base

Mechanical Properties Typical Rockwell Hardness:

Hardness:	
1 Layer on mild steel.....	60-65 HRC
1 Layer on Mang. steel.....	58-63 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11456000	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1"-1 1/4" (25-32 mm)	200-250	24-28
11896900	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1"-1 1/4" (25-32 mm)	200-250	24-28
64750755	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	350-500	26-30

Open-Arc and Gas-Shielded Wires

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® CP2000

STOODY CP2000 is a specially formulated chromium carbide alloy designed to produce a high concentration of uniformly distributed small primary chromium carbides in an austenitic matrix. The formulation has been optimized to result in superior weldability for a broad range of single and multiple layer applications. The high concentration of small primary carbides greatly improves wear resistance and toughness over conventional chromium carbide alloys. It can be applied to carbon, low alloy and manganese steels. In special applications such as coal pulverizer rebuilding, it can be applied to cast irons. The deposits can not be machined or forged and can be used in hot wear applications up to 900°F.

Applications: ID Pipe & Elbow Cladding, Hardface Plate Cladding, Gyratory Mantles, Multiple layer hardface build up application on Coal & Cement Pulverizer Rolls & Grinding Rings, Sugar Mill Classification Table Combs, Shredder Anvils, Mill Combs, Elevator Screw Flights, Hammers, Knives, Press Rolls, Roll Flanges, Scrappers, Incinerator Exhaust Fans

Structure: Primary Chromium Carbides in an Austenitic Matrix.



Deposit Characteristic:

Hardness58-64 HRC
 Impact Resistance..... Moderate
 Surface Cross Check Yes
 Machinability No
 Magnetic
 on Carbon Steel..... Slightly
 on Manganese Steel..... No

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11907600	33 lb WB (15 kg)	0.045" (1.2 mm)	Open-arc	1/2"-3/4" (13-19 mm)	175-225	22-26
11946700	200 lb NTP (90.7 kg)	0.045" (1.2 mm)	Open-arc	1/2"-3/4" (13-19 mm)	175-225	22-26
■ 11886500	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	3/4"-1" (19-25 mm)	200-250	24-28
■ 11942000	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc	3/4"-1" (19-25 mm)	200-250	24-28
■ 11962500	200 lb NTP (90.7 kg)	1/16" (1.6 mm)	Open-arc	3/4"-1" (19-25 mm)	200-250	24-28
12025100	400 lb NTP (181.4 kg)	1/16" (1.6 mm)	Open-arc	3/4"-1" (19-25 mm)	200-250	24-28
11876600	50 lb PP (22.7 kg)	5/64" (2.0 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	250-300	25-28
11954900	200 lb HP (90.7 kg)	5/64" (2.0 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	250-300	25-28
11942100	500 lb POP (226.8 kg)	5/64" (2.0 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	250-300	25-28
12038200	50 lb PP (22.7 kg)	3/32" (2.4 mm)	Open-arc	1"-1 1/2" (25-38 mm)	300-500	25-28
■ 11890000	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-650	28-32
■ 11870400	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-650	28-32
■ 11879800	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-650	28-32
11870500	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	450-650	29-33
11947500	750 lb POP (340.2 kg)	1/8" (3.2 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	450-650	29-33

Sugar mill press roll tear drop (Picote) and arcing (Chapisco) with Stooddy CP2000 delivers wear life and abrasion resistance. For even more wear resistance, Stooddy CP2001 can be applied. *Automation welding systems produced by third party, using Stooddy consumables - references available.*

Open-Arc and Gas-Shielded Wires 3

GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 143

STOODY 143 consists of primary chromium carbides and secondary Niobium carbides in an austenitic matrix. Deposits possess high abrasion resistance and maintain hardness up to 1100°F (593°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) is recommended using stringer or weave beads. Can be applied to carbon, low alloy or manganese steels. Limited to three layers maximum.

Applications:

Coal and Steel Industry: Exhaust Fan Blades, Crushers, Coke Pusher Shoes, Wear Plates, Hoppers, Shoots and Screens

Cement and Refractory: Cement Screws, Cement Dryers, Hot Cement Cones, Cement Furnace Parts, Mixer Blades, Presses

Non-Ferrous Metals: Copper Ladels, Zinc Pots, Tin Mill Parts, Copper Bar Guides, Zinc Scrapers

Mining: Wear Plates, Excavator Bucket Teeth, Conveyor Screws, Slurry Pipes

Nominal Composition:

Alloy Content – 37% (Carbon, Chromium, Manganese, Niobium, Silicon)
Iron Base

Typical Mechanical Properties:

Abrasion Resistance Very Good
Impact Resistance Low
Hardness (3 layers) 60 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11877000	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	3/8"-1/2" (10-13 mm)	170-220	24-26
11867800	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	280-550	28-32
11857800	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1"-1 1/2" (25-38 mm)	280-550	28-32

STOODY® CP2001

STOODY CP2001 is a specially formulated chromium carbide alloy designed to produce a high concentration of uniformly distributed small primary chromium carbides and secondary niobium and vanadium carbide in an austenitic matrix. The formulation has been optimized to result in superior weldability for a broad range of single and multiple layer applications. The high concentration of small carbides greatly improves wear resistance and toughness over conventional chromium carbide alloys. It can be applied to carbon, low alloy, and manganese steels. In special applications such as tar sand slurry pipes, coal pulverizer rebuilding, it can be applied to cast irons. The deposits can not be machined or forged.

Applications: ID pipe & elbow cladding, Hardface plate cladding, Gyratory mantles, Multiple layer hardface build up application on coal & cement pulverizer rolls & grinding, Sugar Mill Press Rolls, Scrapers, Incinerator Exhaust Fans

Structure: Primary Chromium Carbides and Secondary Niobium and Vanadium Carbides in an Austenitic Matrix

Deposit Characteristic:

Hardness 63-67 HRC
Impact Resistance Moderate
Surface Cross Check Yes
Machinability No
Magnetic
on Carbon Steel Slightly
on Manganese Steel No

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11931000	25 lb PS-LLW (11.3 kg)	1/16" (1.6 mm)	Open-arc	3/4"-1" (19-25 mm)	200-250	24-28
12024700	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	3/4"-1" (19-25 mm)	200-250	24-28
12048500	50 lb PP (22.7 kg)	5/64" (2.0 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	250-300	25-28
11961200	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-650	28-32
11925000	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-650	28-32
■ 11923400	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	400-650	28-32
11923300	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	450-650	29-33
12026400	750 lb POP (340.2 kg)	1/8" (3.2 mm)	Open-arc	1 1/4"-1 1/2" (32-38 mm)	450-650	29-33

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GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® 145

STOODY 145 is a highly alloyed open arc wire with high abrasion resistance, high corrosion resistance and high hardness at elevated temperatures. The Stoodly 145 alloyed wire contains columbium (niobium), which contributes to its excellent high temperature abrasion resistance up to 1500°F (816°C).

Welding Procedures/Characteristics: DCEP (reverse polarity) is recommended using stringer or weave beads. Can be applied to carbon, low alloy or manganese steels. Limited to two layers maximum.

Applications:

Iron and Steel Industry: Guides, Sinter Plant Parts, Blast Furnace Parts, Slag Rakes, Hot Guide, Hot Ash Elbows, Exhaust Fan Blades, Crushers, Coke Pusher Shows, Hot Screens, Tilt Fingers, Hot Billet Handlers.

Cement and Refractory: Cement Screws, Cement Dryers, Hot Cement Cones, Cement Furnace Parts, Mixer Blades, Presses

Non-Ferrous Metals: Copper Ladles, Slag Ladels, Zinc Pots, Tin Mill Parts, Copper Bar Guides, Zinc Scrapers

Mining: Wear Plates, Excavator Bucket Teeth, Conveyor Screws, Slurry Pipes

Nominal Composition:

Alloy Content – 45% (Carbon, Chromium, Molybdenum, Manganese, Niobium, Tungsten, Vanadium, Silicon)

Iron Base

Typical Mechanical Properties:

Abrasion Resistance Excellent
Impact Resistance..... Low
Hardness (2 layers).....59-61 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12031900	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1"-1¼" (25-32 mm)	200-250	24-28
11944900	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1¼" (19-32 mm)	250-500	26-30
11414300	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1¼" (19-32 mm)	300-550	28-34
11484700	200 lb HP (90.7 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1¼" (19-32 mm)	300-550	28-34
11440200	500 lb POP (226.8 kg)	7/64" (2.8 mm)	Open-arc	3/4"-1¼" (19-32 mm)	300-550	28-34
11949200	200 lb HP (90.7 kg)	1/8" (3.2 mm)	Open-arc	1½"-1¾" (32-45 mm)	400-600	32-34
11871300	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Open-arc	1½"-1¾" (32-45 mm)	400-600	32-34



Stoodly 964AP-G applied to sugar cane harvester shoe.

GROUP 4: METAL TO EARTH FOR EXTREME ABRASION AND LOW IMPACT

STOODY® 130

STOODY 130 wire provides the ultimate wear resistance and the ability to cut earth formations because of the tungsten carbide particles contained in the wire.

Welding Procedures/Characteristics: To maximize the benefits of this open arc wire, the welding current should be kept to an absolute minimum. DCEP (reverse polarity) is recommended using stringer beads in a single layer; relief checks. Bonds readily to carbon and low alloy steels

Applications: Scoop Lips and Teeth, Ripper, Muller Plows Augers, Pug Mill Knives, Chisel Plow, Ammonia Injectors, Auger Flights, Cultivator Chisels, Ditcher Teeth, Swing Hammers, Ensilage Knife, Raymond Mill Plows, Tillage Tools of All Types

Nominal Composition:

Alloy Content – 60% (Tungsten Carbide)
Iron Base

Typical Mechanical Properties:

Matrix Macro Hardness..... 55-61 HRC
Tungsten Carbide Hardness..... 2200-2400 HV
Deposit Layes..... 2 Max.
Surface Cross Checks Yes
On carbon or low alloy steel: magnetic
Not recommended for Mang. steel.
Not forgeable or machinable.

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11413200	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc	1/2" (13 mm)	150-200	17-19
11001100	60 lb Coil (27.2 kg)	7/64" (2.8 mm)	Open-arc	1/2" (13 mm)	300-350	18-22

VANCAR®

VANCAR deposits contain vanadium carbides. Vanadium carbide is close to the wear resistance of tungsten carbide, with superior impact resistance. A unique feature of this product is that the vanadium carbides dissolve and reform in the deposit.

Welding Procedures/Characteristics: An open arc wire for DCEP (reverse polarity) welding that can be applied in multiple layers.

Applications: Ripper Shanks and Teeth, Dozer End Bits, Auger Bits, Tiller Tines, Dry Cement Pump Screw, Ammonia Injector, Pug Mill Knife, Cultivator Chisel, Sugar Cane Harvesters, Hammers, Knives

Nominal Composition:

Alloy Content – 29% (Vanadium, Tungsten, Carbon, Silicon, Manganese, Molybdenum, Nickel)
Iron Base

Typical Mechanical Properties:

Vanadium Carbide Hardness2800-2900 HV
Matrix Hardness59-62 HRC
Deposits are magnetic.
Deposits cannot be flame cut

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11904300	25 lb PS (11.3 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-3/4" (13-19 mm)	150-200	22-26
■ 11420200	33 lb WB (15 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-3/4" (13-19 mm)	150-200	22-26
■ 11420100	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Open-arc or CO ₂	1/2"-3/4" (13-19 mm)	150-200	22-26
■ 11333700	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Open-arc	1"-1 1/4" (25-32 mm)	200-300	25-27

STOODY® 155FC

STOODY 155FC deposit consists of tungsten carbide particles in a nickel silicon boron matrix. This microstructure gives Stooddy 155FC significant abrasion resistance as well as superior toughness and corrosion resistance. Stooddy 155FC provides improved weldability through enhanced wetting, tie-in and arc stability. Stooddy 155FC is well suited for build up and buffer layers when thicker weld deposits are desired and is the ideal underlay for the higher tungsten carbide content of Stooddy 160FC.

Applications: Process Screw Flight Edges, Drill Bits & Stabilizers Build Up, Hardbanding (Open-Hole)

Deposit Characteristic:

Abrasion Resistance Excellent
Matrix Harness Single Layer35-45 HRC
Tungsten Carbide Hardness.....2200-2400 HV
Deposit Layers 4 Maximum
Surface Cross Check No
Machinability No
Grinding Diamond

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 12022600	33 lb WB (15 kg)	1/16" (1.6 mm)	Argon 75-80%, Bal. CO ₂	1/2" - 5/8" (13-16 mm)	130-225	17-18

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

GROUP 4: METAL TO EARTH FOR EXTREME ABRASION AND LOW IMPACT

STOODY® 160FC, 160FC-O

STOODY 160FC deposit consists of tungsten carbide particles in a nickel silicon boron matrix. Due to higher tungsten carbide content, Stooddy 160FC is an ideal hardfacing overlay with a microstructure that delivers superior toughness and resistance to corrosion and fine particle erosion in slurry type applications. It also provides improved weldability through enhanced wetting, tie-in and arc stability.

Applications: Sizing Screens, Stabilizers, Kicker Rings and Bents, Bit Holders, Centrifugal Screws, Dredge Rotary Cutter Heads, Pipe ID Cladding, Hardbanding (Open Hole), Sugar Mill Combs, Incinerator Exhaust Fans

Deposit Characteristic:

Abrasion Resistance Excellent
 Matrix Hardness Single Layer 38-45 HRC
 Tungsten Carbide Hardness 2200-2400 HV
 Deposit Layers 2 Maximum
 Surface Cross Check Microcracking
 Machinability Grinding Only

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 12022500	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2" - 5/8" (13-16 mm)	130-200	16-18
12031600	50 lb PP (22.7 kg)	5/64" (2.0 mm)	5-80% Ar, Bal. CO ₂	1/2" - 5/8" (13-16 mm)	130-200	16-18
12027100	50 lb PP (22.7 kg)	3/32" (2.4 mm)	75-80% Ar, Bal. CO ₂	5/8" - 1" (16-25 mm)	250-325	18-20
12033700	50 lb WB (22.7 kg)	7/64" (2.8 mm)	Open-arc	3/4" - 1" (19-25 mm)	275-355	18-20

STOODY® 160FS

STOODY 160FS deposit consists of spherical fused tungsten carbide particles in a nickel silicon boron matrix. Stooddy 160FS is a premium composite hardfacing overlay with a microstructure that delivers some toughness, shows fair corrosion resistance, and most of all extreme abrasion and fine particle erosion resistance. This alloy incorporates dense spherical fused tungsten carbide grains for superior wear and friction properties over cast and crushed carbides. The matrix alloy also provides improved weldability through enhanced wetting, tie in, and arc stability.

Applications: Dredge Rotary Cutter Heads, Oil Sands Crushers and Screens, Drill Bits, Stabilizers, & Kick Rings, Hardbanding (Open Hole), Tunnel Bore Machine Face Cutters, Brick Plant Extruders & Pug Knives, Anode Paste Mixer Flights & Teeth, Foundry Sand Mixer Blades, Dewatering Press, Centrifuges, and Pump Screws

Deposit Characteristic:

Abrasion Resistance Excellent
 Matrix Hardness 38-45 HRC
 Tungsten Carbide Hardness 2700-3400 HV
 Deposit Layers 2 Maximum
 Surface Cross Check Microcracking
 Machinability Grinding only

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12036200	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"-5/8" (13-16 mm)	130-200	16-18
12033900	50 lb PP (22.7 kg)	3/32" (2.4 mm)	75-80% Ar, Bal. CO ₂	5/8"-1" (16-25 mm)	250-325	18-20

STOODY® 166FS

STOODY 166FS deposit consists of spherical fused tungsten carbide particles in a C276 nickel superalloy matrix. Stooddy 166FS is a premium composite hardfacing overlay with a microstructure that delivers some toughness, shows excellent corrosion resistance, and most of all extreme matrix abrasion and fine particle erosion resistance. This wire incorporates dense spherical fused tungsten carbide grains with hardness up to 3400 HV. Stooddy 166FS also provides outstanding overall corrosion properties, especially in reducing and mildly oxidizing environments as well as under localized attack.

Applications: Hydrometallurgy Centrifuges and Pump Screws, Pigment Micronizers and Cyclones, Chemical Service Seal Rings

Deposit Characteristic:

Abrasion Resistance Excellent
 Matrix Hardness 47-55 HRC
 Tungsten Carbide Hardness 2700-3400 HV
 Deposit Layers 2 Maximum
 Surface Cross Check Microcracking
 Machinability Grinding only

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12036100	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2"-5/8" (13-16 mm)	130-200	16-18

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DRILL STRING HARBANDING

STOODY® HB-56

STOODY HB-56 deposit is a general purpose non-cracking, high hardness, casing friendly hardbanding alloy that offers a balance of impact and abrasion resistance. Can be applied to carbon and low alloy steels with or without tungsten carbide (WC) addition. Deposits are crack free when applied over new or properly rebuilt tool joints using appropriate preheats.

Applications: Hardbanding

Deposit Characteristic:

Abrasion Resistance Good
Impact Resistance..... Good
Hardness56-60 HRC
Deposit Layers 2 Normal

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11987800	33 lb WB (15 kg)	1/16" (1.6 mm)	98% Ar/2% O ₂ or 75-80% Ar, Bal. CO ₂	3/4" - 1" (19-25 mm)	200-350	27-31
■ 12021300	50 lb PP (22.7 kg)	1/16" (1.6 mm)	98% Ar/2% O ₂ or 75-80% Ar, Bal. CO ₂	3/4" - 1" (19-25 mm)	200-350	27-31

STOODY® HB-64

STOODY HB-64 was specifically designed for crack free hardbanding. This specially formulated wear resistant alloy produces a uniform distribution of small primary metal carbides in a martensitic matrix. HB-64 is a very casing friendly hardbanding material due to the weld deposit's low coefficient of friction as well as having excellent resistance to impact and plastic deformation. The alloy is characterized by a high hardness and excellent wear resistance needed for open hole drilling. Deposits are crack free when applied over new or properly rebuilt tool joints using appropriate preheats. HB-64 may not remain crack free if applied over previously cracked, improperly cleaned, or high boron containing hardbanding. Offers improved weldability over many other hardbanding welding wires.

Applications: Hardbanding

Structure: Small Primary Carbides in a Martensitic Matrix

Deposit Characteristic:

Abrasion Resistance..... Excellent
Impact Resistance..... Good
Hardness 61-65 HRC
Deposit Layers2 Maximum
Surface Cross Checks None
Machinability..... Poor
Magnetic on Carbon Steel..... Yes
Hot Wear Applications.....1000°F (538°C)

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 12044300	50 lb PP (22.7 kg)	1/16" (1.6 mm)	98% Ar/2% O ₂ or 75-80% Ar, Bal. CO ₂	1/2" - 5/8" (13-16 mm)	200-420	27-31



STOODY® HB-TI

STOODY HB-Ti deposit has best combination of properties for open hole as well as cased-hole drilling. Deposit has a fine dispersion of titanium carbides in a martensitic matrix for the best combination of erosive and metal-to-metal wear resistance. Designed for open arc welding requiring no gas shielding and therefore suitable for field repairs where access to shielding gases may not be possible or practical.

Applications: Hardbanding (Open Hole & Cased Hole)

Deposit Characteristic:

Abrasion Resistance Very Good
Impact Resistance..... High
Hardness57-61 HRC

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11987700	33 lb WB (15 kg)	1/16" (1.6 mm)	None	3/4" - 1" (19-25 mm)	200-300	22-25

STOODY® HB-NOMAG

Stoody HB-NoMag was specifically designed to be a non-magnetic, crack free hardbanding weld deposit to band non-magnetic down hole tools and equipment. Produces a uniform distribution of small primary metal carbides in a fully austenitic chromium manganese matrix. Deposit useful for rebuilding of manganese, chrome-manganese and nitronic, non-magnetic stainless steel parts subject to severe impact loading combined with abrasion. Abrasion resistance three times superior to that of an austenitic manganese deposit as measured in the ASTM G65 test. Can be applied in multiple layer without spalling with proper welding procedures on austenitic manganese base metal.

Deposit Characteristic:

Abrasion Resistance Excellent
Impact Resistance..... Very Good
Hardness (work hardened)50-53 HRC
Deposit Layers 3 Maximum

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12013800	33 lb WB (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	1/2" - 3/4" (13-19 mm)	200-420	22-32

GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES (cobalt and nickel)

STOODITE® 6-M, 6-O

STOODITE 6-M is the most widely used cobalt alloy having excellent resistance to many forms of mechanical and chemical degradation over a wide temperature range. Particular attributes are its outstanding self mated anti-galling properties, high temperature hardness and high resistance to cavitation erosion.

Welding Procedures/Characteristics: A gas metal arc wire (DCEP) requiring proper preheat, controlled interpass temperatures and cooling rates. Special power supplies (i.e. pulsed arc, etc.) can be used to reduce penetration and base metal dilution. Crack free deposits up to 2 layers.

Applications: Flights of Extrusion Screws, Sinkers Roll Bushings in Steel Mill, Soaking Pit Tong Bit, Shafts

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

1 Layer.....27-33 HRC
2 Layers.....36-39 HRC

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
STOODITE 6-M						
■ 810722182045	25 lb WB, LLW (11.3 kg)	0.045" (1.2 mm)	Argon	1/2"-5/8" (13-16 mm)	180-200	25-27
■ 810722182062	25 lb WB, LLW (11.3 kg)	1/16" (1.6 mm)	Argon	5/8"-3/4" (16-19 mm)	280-300	26-28

Certification to AWS A5.21 ERCCoCr-A

STOODITE 6-O

Part Number	Packaging	Wire Dia.	Shielding Gas	CTWD	Amp	Volts
810642184094	50 lb Coil (22.6 kg)	3/32" (2.4 mm)	Open-arc	3/4"-1" (19-25 mm)	340-360	26-28

Certification to AWS A5.21 ERCCoCr-A

STOODITE® 6-T

STOODITE 6-T is a GTAW and GMAW tubular wire version of a cobalt alloy that produces a medium hardness cobalt-chromium deposit for high temperature applications with good abrasion resistance, good toughness, corrosion resistance, and excellent friction properties. It is the most versatile and widely used cobalt alloy. The fine chromium carbides contained in the deposit provide excellent resistance to many forms of mechanical degradation, including galling and cavitation erosion. It bonds well with all weldable steels, including stainless steels.

Applications: Flights of Extrusion Screws, Offshore Riser Connector Pins, Sour Gas Service, Wellhead Bodies/Plungers, Valve Seats for Petrochemical Service

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

Hardness (2 Layers)35-40 HRC

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12039400	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	Argon	1/2"-5/8" (13-16 mm)	200-300	10-15

Certification to AWS A5.21 ERCCoCr-A



STOODITE® 21-T

STOODITE 21-T is a GTAW tubular wire version of a cobalt alloy that produces a medium hardness cobalt-chromium-molybdenum deposit for high temperature, abrasion, corrosion, and friction applications. The fine chromium and molybdenum carbides contained in the deposit provide excellent resistance to many forms of mechanical degradation, including galling and cavitation erosion. The Stoodite 21-T can be work hardened up to 48 HRC. The Stoodite 21-T has been specifically optimized for the cold and hot wire GTAW (TIG) cladding processes and addresses issues such as unmelted particles and wire tip wandering in the molten pool that could otherwise produce weld defects.

Applications: Forging Dies, Underlays, Sour Gas Service, Wellhead Bodies/Plungers, Valve Seats, Hold Down/Ironing Rings

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

Hardness (2 Layers)29-35 HRC

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
12039400	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	Argon	1/2"-5/8" (13-16 mm)	200-300	10-15

Certification to AWS A5.21 ERCCoCr-E

GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES (COBALT AND NICKEL)

STOODITE® 12-M

STOODITE 12-M is an alloy cored wire for GMAW applications. The composition differs from the bare rod slightly in the silicon, manganese and iron levels in that they are higher. It is more wear resistant than 6 (contains a higher volume of carbides) but with lower impact strengths.

Welding Procedures/Characteristics: A gas metal arc wire (DCEP) requiring strict adherence to correct preheat, interpass temperatures and controlled cooling rates in mandatory to insure crack free deposits. It is more crack-sensitive than Stoodite 6.

Applications: Valve Parts, Pump Parts, Tips of Aircraft Turbine Blades, Chain Saw Bars, Saw teeth, Carpet Knives, Cutter Rolls, Bar Mill Twist Rolls

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

1 Layer.....39-41 HRC
2 Layers.....44-45 HRC

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11927400	25 lb WB, LLW (11.3 kg)	0.045" (1.2 mm)	Argon	1/2" - 5/8" (13-16 mm)	180-200	25-27
■ 811222182062	25 lb WB, LLW (11.3 kg)	1/16" (1.6 mm)	Argon	5/8"-3/4" (16-19 mm)	280-300	23-27

Certification to AWS A5.21 ERCCoCr-B

STOODITE® 1-M

STOODITE 1-M wire has the greatest volume of carbides because of the carbon content producing excellent resistance to abrasion with some sacrifice in toughness. The manganese, silicon, and iron levels are somewhat higher than the other wires.

Welding Procedures/Characteristics: Should be welded with direct current reverse polarity. Two layer deposits are required to achieve hardness. Preheat is necessary to control or minimize cracking.

Applications: Screw Components, Pump Sleeves, Cross Heads, Valves, Pumps, Mixer Rotors, Bodies and Tip Sides, Hydropulper Disc Segments, Soaking Pit - Tong Bits

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

1 Layer.....41-43 HRC
2 Layers.....46-48 HRC

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11455300	25 lb WB, LLW (11.3 kg)	0.045" (1.2 mm)	Argon	1/2"-5/8" (13-16 mm)	180-200	25-27
■ 810222182062	25 lb WB, LLW (11.3 kg)	1/16" (1.6 mm)	Argon	5/8"-3/4" (16-19 mm)	280-300	26-28

Certification to AWS A5.21 ERCCoCr-C

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GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES (COBALT AND NICKEL)

STOODITE® 21-M

STOODITE 21-M is a continuous alloy cored wire for GMAW applications with excellent high temperature strength making it suitable for use on hot die parts. The deposits are inherently resistant to galling, cavitation erosion, and corrosion. Abrasion resistance is lower than the other wires but its impact strength at high temperatures, anti-galling properties and corrosion resistance are outstanding.

Welding Procedures/Characteristics: A gas metal arc wire (DCEP) requiring proper preheat, interpass temperatures and controlled cooling to minimize or produce a crack free deposit.

Applications: Fluid Valve Seats, Tube Mill Piercing Plugs, Hot Shears, Erosion Shields, Forging Dies

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

1 Layer.....	16-19 HRC
2 Layers.....	22-26 HRC
Work Hardened	40-45 HRC

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 812122182045	25 lb WB, LLW (11.3 kg)	0.045" (1.2 mm)	Argon	1/2"-5/8" (13-16 mm)	180-200	25-27
■ 812122182062	25 lb WB, LLW (11.3 kg)	1/16" (1.6 mm)	Argon	5/8"-3/4" (16-19 mm)	280-300	26-28

Certification to AWS A5.21 ERCCoCr-E

STOODY® 60-M

STOODY 60-M semi-automatic wire is a tubular nickel-based hardfacing wire with a nominal hardness of HRC 60. It flows easily onto base metals and yields smooth deposits. Deposits maintain a high level of hardness up to 1200°F (650°C) and resist galling, pitting, and corrosion in addition to abrasion. It can be deposited on low and medium carbon steels, stainless steels, and cast irons.

Welding Procedures/Characteristics: A gas shielded tubular wire for welding with (DCEP). Requires proper preheat, controlled interpass temperatures and cooling rates to achieve crack free deposits. It can be deposited in multiple layers on low and medium carbon steels and cast iron.

Applications: Draw Blocks, Slurry Pipe Elbows, Impeller Screws

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

Abrasion Resistance	Excellent
Impact Resistance.....	Fair
Corrosion Resistance.....	Good
Hardness (2 Layers)	55-60 HRC

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters	
				Amp	Volts
11931700	25 lb WB, LLW (11.3 kg)	0.045" (1.2 mm)	75-80% AR, Bal. CO ₂	175-195	21-23
11931700	25 lb WB, LLW (11.3 kg)	0.045" (1.2 mm)	75-80% AR, Bal. CO ₂	160-200	27-29
11504500	25 lb WB, LLW (11.3 kg)	1/16" (1.6 mm)	Argon	200-240	24-26

Certification to AWS A5.21 ERCNiCr-C

STOODY® C-M

STOODY C-M is a fabricated alloy cored wire for automatic/semi-automatic welding that produces a deposit resistant to high heat and corrosion accompanied by abrasion and/or impact. It has good hardness up to 1200°F (650°C). It is machinable but workhardens.

Welding Procedures/Characteristics: An automatic/semi-automatic wire (DCEP) that can be applied in multiple layers

Applications: Hot Forge Dies, Hot Shear Blades, Forging Hammer Dies, Mill Guided, Shafts

Typical Mechanical Properties:

Deposit hardness (2-Layer):

As deposited	95 HRB
Work Hardened	35 HRC

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
827322282062	25 lb PP (11.3 kg)	1/16" (1.6 mm)	Argon	3/4" (19 mm)	280-310	26-28

STOODY® ALLOYS & FLUXES FOR AUTOMATIC SUBMERGED ARC APPLICATION

Deposit characteristics of Stoodly submerged arc alloys are affected by welding procedure and flux. The data presented here is based on typical deposits made with recommended procedures and proper preheat, interpass temperature and post weld cooling of the work piece. Stoodly submerged arc wires can be applied with AC or DC welding current. When applied with DC welding current either DCEN or DCEP may be used with but one exception—DCEP polarity only is recommended for Stoodly 103CP. Straight polarity produces faster deposition speed while reverse polarity offers smoothest surface appearance. Hardnesses obtained with straight polarity will be slightly higher than those obtained with reverse polarity.

STOODY SAW WIRES & TYPE S FLUX AND ROLL RITE FLUX

Type S and Roll Rite Fluxes are manufactured to Stoodly specifications and are designed specifically for alloy overlays. Use of Type S Flux and Roll Rite Flux with Stoodly automatic submerged arc wires (not listed in this publication - check with customer care for Stoodly branded SAW alloy products) insures designed deposit chemistry. Slag removed is excellent at elevated temperatures. Type S Flux, PN 11008400, is packed in 50 lb (22.7 kg) bags and shipped 3,000 lb (1360.8 kg) to a pallet. Roll Rite Flux, PN 11257000, is packed in 55 lb (25 kg) bags and shipped 2,200 lb (998 kg) to a pallet.

Part Number	Pkg	Flux Type
■ 11008400	50 lb Bag (22.7 kg)	Type S Flux
■ 11257000	55 lb Bag (25 kg)	Roll Rite Flux

STOODY THERMACLAD® WIRES & STOODY R-20 FLUX

Stoodly ThermaClad wires are designed to run in a neutral flux, Stoodly R-20, PN 11810900 in 55 lb (22.7 kg) bag. This wire/flux combination results in a better control of chemistry as the process is less sensitive to welding parameter variations. ThermaClad wires should, in general, be run DCEP. They can be run DCEN under controlled conditions.

Part Number	Pkg	Flux Type
■ 11810900	55 lb Bag (25 kg)	R-20 Flux

Caution: Do not mix wire-flux combinations. i.e. Do not run Stoodly wires with R-20 flux or ThermaClad wires with Stoodly S-Flux. Resulting deposits may crack or will have vastly different properties than those reported in the literature.

POP TURNTABLE

The POP turntable is a device that allows for fixed position wire welding with a Stoodly wire drum, known as a Payoff Pak (POP). The equipment includes a drum table and separate base units that are connected by a bearing. As the welding operation takes place, the POP sitting on the turntable spins allowing the wire to feed without dragging on the inner core or on the outside of the drum. The POP turntable can reduce tangling issues and is suitable for use with the 250 lb (113.4 kg), 500 lb (226.8 kg), and 750 lb (340.2 kg) POP drums.

Part Number	Pkg	Note
■ 106-04-001	Box	Assembly Required



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GROUP 1: BUILD-UP AND JOINING ALLOYS

A. BUILD-UP OF CARBON STEELS

THERMACLAD® 104

THERMACLAD 104 deposit has excellent resistance to impact and plastic deformation. Deposits are machinable with high speed tools, easily machinable with carbide tools, crack-free, and can be flame cut. ThermaClad 104 is ideal for build-up and for underbase to support hardfacing. Maximum deposit thickness is unlimited.

Applications: Steel Mill Roll Build-Up prior to hardfacing, Roll Rebuilding. Build-Up Tractor Rollers, Idlers, Trunnions, and Cable Drums

Deposit Characteristic:

Tensile Strength..... 109 ksi (752 MPa)
Yield Strength..... 98 ksi (676 MPa)
Elongation 23%
Charpy V Notch Impact 45 ft lb (61 J)
Machinability Yes

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11826700	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-29
11880100	60 lb Coil (27 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
12031400	200# HP (91 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
■ 11857500	500# POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11828100	500# POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	28-32

THERMACLAD® ROLL BUILD 3

STOODY® THERMACLAD ROLL BUILD 3 deposit is a low alloy steel designed for an optimum combination of strength and toughness. The low carbon content of the deposit lends to good weldability and the substitutional strengthening lends to excellent mechanical properties that are insensitive to welding conditions as well as roll service conditions. The thickness of the deposit is unlimited.

Applications: Steel Mill Roll Build-Up prior to hardfacing, Roll Rebuilding. Shaft Rebuilding

Deposit Characteristic:

Tensile Strength..... 110 ksi (758 MPa)
Yield Strength..... 96 ksi (662 MPa)
Elongation 25%
Charpy V Notch Impact 117 ft lb (159 J)
Hardness (3 Layers) 22 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
12004200	60 lb Coil (27 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11864000	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11937700	750# POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30

THERMACLAD® 8620

THERMACLAD 8620 is a low alloy steel composition build-up that exhibits an excellent combination of compressive strength and toughness. Deposits are machinable, crack-free, and can be flame cut. Maximum deposit thickness is unlimited.

Applications: Steel Mill Roll Build-Up prior to hardfacing, Roll Rebuilding. Shaft Rebuilding, Sugar Mill Shaft Rebuilding

Deposit Characteristic:

Tensile Strength..... 99 ksi (683 MPa)
Yield Strength..... 85 ksi (586 MPa)
Elongation 24%
Charpy V Notch Impact 102 ft lb (138 J)
Machinability Yes

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11814900	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-29
11826900	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
■ 11908200	750# POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
12018600	750# POP (340 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	28-32

GROUP 1: BUILD-UP AND JOINING ALLOYS

A. BUILD-UP OF CARBON STEELS

THERMACLAD® MULTIPASS 1

THERMACLAD MULTIPASS 1 is a low alloy steel composition build-up that exhibits an excellent combination of compressive strength and toughness. Deposits are machinable, crack-free, and can be flame cut. Maximum deposit thickness is unlimited.

Applications: Steel Mill Roll Build-Up prior to hardfacing, Roll Rebuilding. Shaft Rebuilding.

Deposit Characteristic:

Tensile Strength..... 125 ksi (862 MPa)
Yield Strength..... 112 ksi (772 MPa)
Elongation 19%
Charpy V Notch Impact 75 ft lb (102 J)
Machinability Yes

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11815200	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-29
11849300	200 lb HP (91 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11815400	500# POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11815300	500# POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	28-32

THERMACLAD® MULTIPASS 2

THERMACLAD MULTIPASS 2 is a low alloy steel composition build-up that exhibits an excellent combination of compressive strength and toughness. Deposits are machinable, crack-free, and can be flame cut. Maximum deposit thickness is unlimited.

Applications: Steel Mill Roll Build-Up prior to hardfacing, Roll Rebuilding. Shaft Rebuilding.

Deposit Characteristic:

Tensile Strength..... 114 ksi (786 MPa)
Yield Strength..... 104 ksi (717 Mpa)
Elongation 23%
Charpy V Notch Impact 60 ft lb (81 J)
Machinability Yes

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11830300	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-29
11830500	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11977200	750 lb POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11830400	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	28-32

THERMACLAD 446

THERMACLAD 446 is a submerged arc deposit that dilutes carbon from high carbon base metals to avoid retained austenite.

Applications: Work Rolls, Leveler Rolls, Hot Work Extrusion Rolls, Tool Steel Crane Wheels

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
12046000	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	30-32

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GROUP 1: BUILD-UP AND JOINING ALLOYS

B BUILD-UP AND JOINING OF MANGANESE STEELS

DYNAMANG®-S

DYNAMANG deposit is an austenitic manganese steel containing chromium and some nickel. It produces a tough, high strength deposit that work hardens under impact. It is primarily used for the build up, repair, and joining of manganese steel components in the rock crushing and mining industries. Deposit thickness is unlimited and can be flame cut without difficulty.

Applications: Crusher Rolls, Jaw and Hammer Crushers, Manganese Buckets and Teeth, Dredge Pump Cutters, Shovel Pads, Gyrotory Crusher Mantles

Deposit Characteristic:

Hardness, as Deposited 231 BHN
 Hardness, Work Hardened 42 HRC
 Deposit Layers Multiple
 Surface Cross Checks No
 Machinability No

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
12041800	60 lb Coil (27.2 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	350-400	26-27

D. JOINING AND BUILD-UP OF CAST IRONS

CASTWELD™ Ni55-O/S/G

CASTWELD Ni 55-O/S/G open arc wire is used on worn cast iron parts requiring joining or build up. It has good tolerance for the high phosphorus often found in cast irons. It works well when welding thick sections, and is also recommended for joining cast iron to dissimilar metals. Castweld Ni 55-O/S/G can also be submerged arc welded using a neutral flux. AWS A5.15:90, ENiFeT3-CI.

Applications: Joining, Build Up & Repair of Cast Iron Parts, Engine Blocks & Heads, Cast Iron Universal Joints Welding to Steel Drive Shafts, Pump Housings, Assorted Castings

Deposit Characteristic:

Machinability Poor
 Number of Deposit Layers Unlimited
 Tensile Strength 75 ksi (515 MPa)
 Yield Strength 46 ksi (315 MPa)
 Elongation 18%

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
■ 11858700	33 lb WB (15 kg)	1/16" (1.6 mm)	Stoody R-20	1" -1 1/4" (25-32 mm)	250-300	18-30
■ 11863300	50 lb PP (22.7 kg)	3/32" (2.4 mm)	Stoody R-20	1" -1 1/2" (25-38 mm)	325-400	31-33
11941300	200 lb HP (90.7 kg)	3/32" (2.4 mm)	Stoody R-20	1" -1 1/2" (25-38 mm)	325-400	31-33
11986000	500 lb PP (226.7 kg)	3/32" (2.4 mm)	Stoody R-20	1" -1 1/2" (25-38 mm)	325-400	31-33

CASTWELD™ Ni30-O/S

CASTWELD Ni 30-O/S open arc wire is used on worn cast iron parts requiring joining or build up. It has good tolerance for the high phosphorus often found in cast irons. Castweld Ni 30-O/S can also be submerged arc welded using a neutral flux.

Applications: Joining, Build Up and Repair of Cast Iron Parts, Pump Housings, Assorted Castings

Deposit Characteristic:

Machinability Fair
 Number of Deposit Layers Unlimited
 Hardness, 1 Layer on Cast Iron 29 HRC
 Hardness, All Weld 330 HB

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11962300	50 lb PP (22.7 kg)	3/32" (2.4 mm)	Stoody R-20	1" -1 1/2" (25-38 mm)	325-400	31-33

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GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

STOODY® THERMACLAD 104TJ

STOODY THERMACLAD 104TJ is a submerged arc wire intended for use on oil drilling tool joints. It has excellent resistance to impact and plastic deformation. Deposits are crack-free, can be machined with high speed tools, are readily machinable with carbide tools, and can be flame cut. It can be applied in multiple layers.

Applications: Tool Joints

Deposit Characteristic:

Impact Resistance.....	Excellent
Compressive Strength.....	Excellent
Hardness, As-Welded	
- 2 Layers on 4140	410 BHN
- 6 Layers on 4140	312 BHN
Hardness, Heat Treated	
- 2 Layers After 4 Hours at 1050°F (566°C)	310 BHN
- 6 Layers After 4 Hours at 900°F (482°C)	305 BHN
Surface Cross Checks	No
Magnetic.....	Yes

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11901100	60 lb Coil (27.2 kg)	1.8" (3.2 mm)	Stoody R-20	1"-1½" (25-38 mm)	350-400	28-30
11897800	750 lb POP (340.2 kg)	1.8" (3.2 mm)	Stoody R-20	1"-1½" (25-38 mm)	350-400	28-30

THERMACLAD® 107

THERMACLAD 107 has good compressive strength and resistance to plastic deformation. Excellent impact resistance. Good abrasion resistance in metal to metal wear. Multiple layer, check-free deposits up to ¾" (19 mm) thick can be obtained with proper procedures. Readily machinable with carbide tools. Can be flame cut. Can be used for both build-up and hard-facing on rollers and idlers.

Applications: Rollers, Idlers, Mine Car Wheels, Charging Car Wheels, and Similar Equipment Involving Severe Abrasion in Metal to Metal Wear. Also recommended for tractor rails when used with premium rail rebuilding procedure

Nominal Composition:

Alloy Content 6% (Chromium, Manganese, Silicon, Molybdenum, Carbon)

Iron Base

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11849800	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11867000	200 lb HP (90.7 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	29-32
11868100	500 lb POP (226.8 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	29-32

THERMACLAD® 105B

THERMACLAD 105B has excellent resistance to cold deformation. Good compressive strength and impact resistance. Very good abrasion resistance in metal to metal wear. Multiple layer, check-free deposits are obtained with proper procedures. When more than four layers are required, an under base of 104 is recommended. Readily machinable with carbide tools. Difficult to flame cut. Very consistent in mechanical properties—reasonable changes in cooling rate have little effect on as-deposited hardness.

Applications: Rollers, Idlers, Mine Car Wheels, Charging Car Wheels, and Similar Equipment Involving Severe Abrasion in Metal to Metal Wear. Also recommended for tractor rails when used with premium rail rebuilding procedure

Nominal Composition:

Alloy Content 6% (Chromium, Manganese, Silicon, Molybdenum, Vanadium, Carbon)

Iron Base

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11868000	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Stoody R-20	1"-1½" (25-38 mm)	350-400	28-30
11967800	500 lb POP (226.8 kg)	5/32" (4.0 mm)	Stoody R-20	1"-1½" (25-38 mm)	425-475	28-30

THERMACLAD® 105

THERMACLAD 105 has very good resistance to abrasion in metal to metal wear. Resists cold deformation. Multiple layer, check-free deposits are obtained with proper procedures. When more than three layers are required, an under base of 104 is recommended. Tungsten carbide tools and rigid, well powered equipment are required for machining. Difficult to flame cut. Reasonable changes in post weld cooling rate have little effect on mechanical properties.

Applications: Rollers, Idlers, Mine Car Wheels, Charging Car Wheels, and Similar Equipment Involving Severe Abrasion in Metal to Metal Wear

Nominal Composition:

Alloy Content 7% (Chromium, Manganese, Silicon, Molybdenum, Vanadium, Carbon)

Iron Base

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11967900	500 lb POP (226.8 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	425-475	29-31

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GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

STOODY® THERMACLAD 42

STOODY THERMACLAD 42 is a new improved alloy designed for build up and overlay of undercarriage components. The alloy composition gives an optimum combination of strength, toughness, temper resistance and insensitivity to cooling rate. It also resists metal-to-metal frictional wear. Deposit hardness is approximately 40-42 HRC in two layers.

Deposit Characteristics: The deposits possess excellent resistance to cold deformation, good compressive strength and impact resistance. The deposits are ideally suited for metal-to-metal wear. Multiple layer, check-free deposits up to 1" (25mm) thick can be obtained with proper procedures. The deposits are readily machinable with carbide tools. It can be used for both build-up and hardfacing on rollers and idlers.

Applications: Idlers, Rollers, Crane Wheels, Mine Car Wheels

Nominal Composition:

Low Alloy Steel

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11920000	250 lb HP (113.4 kg)	1.8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
■ 11888200	500 lb POP (226.8 kg)	1.8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11948500	750 lb POP (340.2 kg)	1.8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30

THERMACLAD® 102

The THERMACLAD 102 deposit is of modified H-12 tool steel composition. The high hardness level provides excellent abrasion resistance and will withstand high compressive loading and softening at elevated temperatures. The deposit can be applied crack free when proper welding procedures are followed. The deposit is difficult to flame cut and can be machined using carbide tools. This alloy is not recommended where resistance to fire-cracking is required. When crack-free deposits with high hardness at elevated temperatures are required ThermaClad 102 is the recommended overlay material. It exhibits good metal-to-metal and abrasion resistance.

Applications: Leveler Rolls, Hot Work Rolls.
Bell Seats, Dredge Ladder Rolls, Tool Steel Crane Wheels

Deposit Characteristic:

Abrasion Resistance Excellent
 Thermal Fatigue Resistance..... Poor
 Impact Resistance..... Good
 Compressive Strength..... High
 Hardness 51 HRC
 Machinability (w/ Carbide Tools) Difficult

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11975700	60 lb Coil (27 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1½" (25-32 mm)	300-400	26 -28
11871600	100 lb POP (45 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1½" (25-32 mm)	300-400	26 -28
11905700	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	300-400	26 -28
11879900	60 lb Coil (27 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27 -30
■ 11820400	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27 -30
11812100	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	29 -32

THERMACLAD® 4552

THERMACLAD 4552 is a submerged arc wire with a modified high carbon 420 stainless steel composition. The higher deposit results in enhanced roll life where wear is the primary consideration.

Applications: Leveler Rolls, Scale Breaker Rolls, Wrapper Rolls

Deposit Characteristic:

Abrasion Resistance Excellent
 Thermal Fatigue Resistance..... Fair
 Impact Resistance..... Good
 Compressive Strength..... Good
 Hardness (As Welded)..... 50-55 HRC
 Machinability (w/ Carbide Tools) Difficult

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11824700	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	26-28
12031300	200 lb HP (91 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11825100	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11994600	750 lb POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11825000	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	29-32

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GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

THERMACLAD® 420

THERMACLAD 420 deposit is a martensitic stainless steel. The deposit has good wear resistance and also provides good resistance to fire cracking.

Applications: Hardfacing Continuous Caster Rolls

Deposit Characteristic:

Abrasion Resistance Good
Thermal Fatigue Resistance..... Good
Compressive Strength..... Good
Hardness (3 Layers on 1020 Steel)..... 43-48 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11810400	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	26-28
11947400	750 lb POP (340 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	26-28
11832200	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
■ 11873300	750 lb POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11832300	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	29-32

THERMACLAD® 412

THERMACLAD 412 is a submerged arc stainless wire designed specifically for the steel industry as a weld overlay for continuous caster rolls. The alloy resists the formation of thermal fatigue cracks (fire cracking) during operation. The alloy has good corrosion resistance combined with excellent wear properties, improved hot hardness, and uniform tempering response.

Applications: Hardfacing Continuous Caster Rolls

Deposit Characteristic:

Abrasion Resistance Good
Thermal Fatigue Resistance..... Good
Compressive Strength..... Good
Corrosion Resistance Good
Hardness (As Welded)..... 35-41 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11830700	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-29
11830600	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11832100	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	28-32

THERMACLAD® 417

THERMACLAD 417 is a submerged arc stainless wire designed specifically for the steel industry as a weld overlay for hot strip rolls, pinch rolls, and hot work extrusion rolls. ThermaClad 417 has good oxidation and temper resistance. The alloy has excellent wear properties, improved hot hardness and uniform tempering response. The deposit provides good abrasion resistance and can be applied crack free.

Applications: Pinch Rolls, Hot Work Extrusion Rolls, Hot Strip Rolls, Tool Steel Crane Wheels

Deposit Characteristic:

Abrasion Resistance Good
Thermal Fatigue Resistance..... Good
Corrosion Resistance Fair
Hardness (As Welded)..... 45-53 HRC
Machinability (w/ Carbide Tools)..... Difficult

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11959900	500 lb Coil (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30



Steel mill rolls undergoing rebuild and overlay applications with ThermaClad submerged arc alloys.



GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

THERMACLAD® 423

The THERMACLAD 423 deposit is a modified martensitic stainless steel. It is specifically designed for weld overlay on continuous caster rolls and provides the greatest resistance to thermal fatigue cracking and corrosion. Overlays exhibit excellent wear properties, hot hardness, and uniform tempering response.

Applications: Hardfacing Continuous Caster Rolls, Table Rolls

Deposit Characteristic:

Abrasion ResistanceVery Good
 Thermal Fatigue Resistance..... Excellent
 Compressive Strength.....Good
 Hardness 47 HRC
 Machinability (w/ Carbide Tools)Fair

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11949400	60 lb Coil (27 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-28
11814500	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-28
11937900	750 lb POP (340 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-28
■ 11995200	60 lb Coil (27 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
■ 11808800	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11909000	750 lb POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11831700	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	29-32

THERMACLAD® 423Co

THERMACLAD 423Co is a submerged arc stainless wire designed specifically for the steel industry as a weld overlay for continuous caster rolls. Cobalt has been added to the alloy to further resist the formation of thermal fatigue cracks (fire cracking) during operation. The alloy has good corrosion resistance combined with excellent wear properties, improved hot hardness, and uniform tempering response.

Applications: Hardfacing Continuous Caster Rolls

Deposit Characteristic:

Abrasion ResistanceVery Good
 Thermal Fatigue Resistance..... Excellent
 Impact Resistance.....Good
 Corrosion Resistance.....Good
 Hardness (3 Layer on 1020 Steel).....43-50 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11831400	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-29
11831500	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11831200	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	28-32



GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

THERMACLAD® 423H

THERMACLAD 423H is a submerged arc stainless wire designed specifically for the steel industry as a weld overlay for continuous caster rolls. The increased carbon content provides for a higher initial hardness when compared to ThermaClad 423. The alloy resists the formation of thermal fatigue cracks (fire cracking) during operation. The alloy has good corrosion resistance combined with excellent wear properties, improved hot hardness, and uniform tempering response.

Applications: Hardfacing Continuous Caster Rolls, Table Rolls

Deposit Characteristic:

Abrasion Resistance Excellent
 Thermal Fatigue Resistance..... Good
 Impact Resistance..... Good
 Corrosion Resistance..... Good
 Hardness (3 Layer on 1020 Steel).....48-53 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11831000	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-29
11831100	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11830900	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	450-600	28-32

THERMACLAD® 423L

THERMACLAD 423L is a submerged arc stainless wire designed specifically for the steel industry as a weld overlay for continuous caster rolls. The alloy has good corrosion resistance combined with good wear properties and uniform tempering response.

Applications: Hardfacing Continuous Caster Rolls

Deposit Characteristic:

Abrasion Resistance Good
 Thermal Fatigue Resistance..... Excellent
 Impact Resistance..... Good
 Corrosion Resistance..... Good
 Hardness (3 Layer on 1020 Steel).....42-46 HRC
 Machinability (w/ Carbide Tools).....Fair

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11897900	60 lb Coil (27 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	26-28
11868900	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	26-28
11852700	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30
11873400	750 lb POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	27-30

THERMACLAD® 423N

THERMACLAD 423N deposit is a modified martensitic stainless steel. The wire is specially formulated to introduce nitrogen into a SAW deposit and yet make a sound porosity free weld. It is specifically designed for weld overlay on high wear continuous caster rolls and provides the best resistance to thermal fatigue cracking and corrosion. Overlays exhibit excellent wear properties, hot hardness, and uniform tempering response.

Applications: Hardfacing Continuous Caster Rolls, Table Rolls

Deposit Characteristic:

Abrasion Resistance Very Good
 Thermal Fatigue Resistance..... Excellent
 Corrosion Resistance..... Good
 Compressive Strength..... Good
 Hardness (As Welded)..... 40 HRC
 Machinability (w/ Carbide Tools).....Fair

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11908700	500 lb POP 227 kg	3/32" (2.4 mm)	Stoody R-20	1"-1¼" 25-32 mm	300-400	25-29
11938000	750 lb POP 340 kg	3/32" (2.4 mm)	Stoody R-20	1"-1¼" 25-32 mm	300-400	25-29
12000500	60 lb Coil 27 kg	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" 32-38 mm	400-500	26-30
11899100	500 lb POP 227 kg	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" 32-38 mm	400-500	26-30
11899200	750 lb POP 340 kg	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" 32-38 mm	400-500	26-30

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GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

THERMACLAD® 410

The THERMACLAD 410 is a stainless tubular alloy cored wire designed for SAW deposits using basic neutral flux. The wire provides deposition rates equal to that of solid wires at lower welding currents. This results in lower heat input into the weldment, therefore lowering the work piece distortion. ThermaClad 410 can be used for general purpose applications requiring good strength and corrosion resistance. It can be used for joining 410 stainless steels and alloys of similar composition. **AWS Classification A5.22/A5.22M: 2012 EC410**

Applications: Sugar Mill Press Shafts



Deposit Characteristic:

Corrosion Resistance Good
 Hardness, Annealed 140-150 HB
 Machinability (with Carbide Tools) Yes

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amps	Volts
11608100	25 lb WB (11.3 kg)	1/16" (1.6 mm)	Stoody R-20	5/8"-7/8" (16-22 mm)	180-300	25-26
11266800	33 lb WB (15 kg)	1/16" (1.6 mm)	Stoody R-20	5/8"-7/8" (16-22 mm)	180-300	25-26
11937900	50 lb PP (22.7 kg)	1/16" (1.6 mm)	Stoody R-20	5/8"-7/8" (16-22 mm)	180-300	25-26
11007200	60 lb Coil (27.2 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1 1/4" (25-32 mm)	300-400	25-29
11493000	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	400-500	26-30
11937800	750 lb POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	400-500	26-30
11864900	200 lb POP (90.7 kg)	5/32" (4.0 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	450-600	28-32

THERMACLAD® 440

THERMACLAD 440 is a submerged arc stainless steel wire designed specifically for the steel industry as a weld overlay for continuous caster rolls. The deposit is a modified 410NiMo stainless steel. The alloy resists the formation of thermal fatigue cracks (fire cracking) during service. The alloy has good corrosion resistance combined with excellent wear properties, improved hot hardness, and uniform tempering response.

Applications: Hardfacing Continuous Caster Rolls

Deposit Characteristic:

Abrasion Resistance Good
 Thermal Fatigue Resistance Good
 Compressive Strength Good
 Corrosion Resistance Good
 Hardness (As Welded) 37-43 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11985700	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1 1/4" (25-32 mm)	300-400	25-29
11828700	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	400-500	26-30
11828600	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	450-600	28-32

THERMACLAD® 443

THERMACLAD 443 deposits provide good abrasion resistance, temper resistance and can be applied crack free with appropriate welding procedures. These properties make this alloy appealing for pinch roll applications.

Applications: Pinch Rolls, Wrapper Rolls, Vertical Edger Rolls

Deposit Characteristic:

Abrasion Resistance Good
 Impact Resistance Good
 Compressive Strength High
 Hardness (4 Layer on 1020 Steel) 48-54 HRC
 Machinability (w/ Carbide Tools) Difficult

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
12023200	50 lb PP (22 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	400-500	26-30
11923700	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	400-500	26-30
11976700	750 lb POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	450-600	26-30

THERMACLAD® 445

THERMACLAD 445 is a submerged arc deposit that provides good abrasion resistance along with good resistance to high compressive loading. The composition is that of a modified tool steel that has good machinability when using carbide tools, but is difficult to flame cut.

Applications: Scale Breaker Rolls, Work Rolls, Leveler Rolls, Flaking Rolls, Vertical Edger Rolls, Hot Work Extrusion Rolls. Bells Seats, Tool Steel Crane Wheels

Deposit Characteristic:

Abrasion Resistance Good
 Impact Resistance Good
 Compressive Strength High
 Hardness 48-54 HRC
 Machinability Difficult

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11959500	500 lb Coil (226.8 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	400-500	26-30

GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

THERMACLAD® 454

The THERMACLAD 454 deposit is a modified tool steel. It is specifically designed for weld overlay on rolls in the hot strip mill and provides the greatest resistance to thermal fatigue and abrasion. Overlays exhibit excellent wear properties, hot hardness, and uniform tempering response. The alloy requires a double temper - two temper cycles at eight (8) hours each.

Applications: Pinch Rolls, Vertical Edger Rolls, Scale Breaker Rolls, Wrapper Rolls

Deposit Characteristic:

Abrasion Resistance Excellent
Thermal Fatigue Resistance..... Good
Compressive Strength..... Good
Hardness (As Welded)..... 52 HRC
Machinability (w/ Carbide Tools) Fair

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11911000	750 lb POP (340 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	25-29
11910900	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30

THERMACLAD® 455

THERMACLAD 455 has good resistance to tempering like conventional tool steels. The deposit provides good abrasion resistance and can be applied crack free. ThermaClad 455 has good resistance to thermal fatigue cracking (fire cracking). The combination of these properties makes this alloy ideal for pinch roll applications.

Applications: Pinch Rolls, Vertical Edger Rolls, Straightner Rolls, Hot Work Rolls, Piercing Mill Rolls, Scale Breaker Rolls, Hot Strip Rolls

Deposit Characteristic:

Abrasion Resistance Good
Impact Resistance..... Good
Compressive Strength..... High
Hardness 48-54 HRC
Machinability Difficult

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
12000700	60 lb Coil (27 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11860800	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	400-500	26-30
11851300	500 lb POP (227 kg)	5/32" (4.0 mm)	Stoody R-20	1"-1¼" (25-32 mm)	450-600	28-32

THERMACLAD® 457

THERMACLAD 457 has better resistance to tempering when compared to conventional tool steels. The deposit provides excellent abrasion resistance. It can be applied crack free with good control of preheat and interpass temperature. The combination of these properties makes this alloy ideal for applications involving high temperature and wear.

Applications: Leveler Rolls, Straightner Rolls

Deposit Characteristic:

Abrasion Resistance Good
Impact Resistance..... Good
Compressive Strength..... High
Hardness (As Welded)..... 55-59 HRC
Machinability Difficult

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11853500	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	29-30
11853200	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1"-1¼" (25-32 mm)	380-450	30-31
11896100	750 lb POP (340 kg)	1/8" (3.2 mm)	Stoody R-20	1"-1¼" (25-32 mm)	380-450	30-31

THERMACLAD® 460

THERMACLAD 460 is a molybdenum high speed tool steel similar to AISI M7 grade. This material is characterized by a high hardness and good wear resistance. It can be used at elevated temperatures up to 1000 F (538 C), under conditions of moderate thermal shock.

Applications: Press Rolls, Hot and Cold Dies, Cladding High Wear Areas on Equipment, Building Up Composite Dies and Tools

Deposit Characteristic:

Abrasion Resistance Good
Impact Resistance..... Good
Deposit Layers 2-3
Hardness (As Welded)..... 58-66 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11958600	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1"-1½" (25-38 mm)	350-400	28-30

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GROUP 2: METAL TO METAL WEAR (LOW ALLOY IRON BASED)

THERMACLAD® 630

The THERMACLAD 630 deposit is a modified martensitic stainless steel. It is specifically designed for weld overlay on continuous caster rolls and provides resistance to high temperature and corrosion. The alloy is intended for use in the upper sections of the continuous caster under severe conditions.

Applications: Hardfacing Continuous Caster Rolls (Primarily Segment Zero)

Deposit Characteristic:

Abrasion Resistance Good
Machinability (w/ Carbide Tools) Fair

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11993600	500 lb POP (227 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	300-400	26-28
12016900	500 lb POP (227 kg)	1/8" (3.2 mm)	Stoody R-20	1"-1¼" (25-32 mm)	425-550	28-29

OPEN-ARC STEEL MILL ROLL WIRES

SOS® 423

The SOS 423 deposit is a stabilized martensitic stainless steel. It is a fire-crack resistant alloy that has excellent corrosion and wear resistance. This open arc welding wire is specifically designed for a two-layer overlay on continuous caster rolls. It is designed to be used with SOS 430 as the underlay, and used as a 2-layer overlay in the un-tempered condition for best wear and corrosion resistance. It can be applied using either a weave bead or stringer bead technique. On smaller rolls, the stringer bead technique is preferred.

Applications: Hardfacing Continuous Caster Rolls

Deposit Characteristic:

Abrasion Resistance Excellent
Thermal Fatigue Resistance..... Very Good
Corrosion Resistance Excellent
Hardness (As Welded) 43 HRC

Part Number	Packaging	Wire	Flux	Welding Parameters		
				CTWD	Amp	Volts
12003200	60 lb Coil (27 kg)	3/32" (2.4 mm)	Open Arc	1"-1½" (25-32 mm)	275-350	25-28
11940700	500 lb POP (227 kg)	3/32" (2.4 mm)	Open Arc	1"-1½" (25-32 mm)	275-350	25-28
11949600	500# POP (227 kg)	1/8" (3.2 mm)	Open Arc	1¼"-1½" (32-38 mm)	375-475	26-27

SOS® 430

The SOS 430 deposit is ferritic stainless steel. This open arc wire can be used as a single layer underlay for the SOS 423 wire. The wire is specifically designed for one layer underlay on continuous caster rolls, prior to the applications of the SOS 423 overlay. The wire must not be used to deposit a final overlay on continuous caster rolls. The alloy does not require a post-weld heat treatment or temper.

Applications: One Layer Underlay on Continuous Caster Rolls

Deposit Characteristic:

Abrasion Resistance Fair
Thermal Fatigue Resistance..... Good
Corrosion Resistance Excellent
Hardness (As Welded) 22 HRC

Part Number	Packaging	Wire	Flux	Welding Parameters		
				CTWD	Amp	Volts
12003100	60 lb Coil (27 kg)	3/32" (2.4 mm)	Open Arc	1"-1¼" (25-32 mm)	275-350	25-27
11966100	500 lb POP (227 kg)	3/32" (2.4 mm)	Open Arc	1"-1¼" (25-32 mm)	275-350	25-27

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GROUP 3: METAL TO EARTH FOR MODERATE TO SEVERE IMPACT AND MODERATE TO SEVERE ABRASION

STOODY® CP2000-S

STOODY CP2000-S is a specially formulated chromium carbide alloy designed to produce a high concentration of uniformly distributed small primary chromium carbides in an austenitic matrix. The optimized formulation results in superior weldability for a broad range of single and multiple layer applications. The high concentration of small primary carbides greatly improves wear resistance and toughness over conventional chromium carbide alloys. It can be applied to carbon, low alloy, and manganese steels. The deposit can not be machined or forged. Stooddy CP2000-S can be used in hot wear applications up to 900° (482°).

Applications: Gyrotory Mantles, Bell and Hopper Burden Areas, Iron Ore Belt Conveyor Pulleys

Structure:

Primary Chromium Carbides in an Austenitic Matrix

Deposit Characteristic:

Impact Resistance..... Moderate
 Hardness, Work Hardened..... 58-64 HRC
 Surface Cross Checks Yes
 Machinability No

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
12037800	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Stoody R-20	1¼"-1½" (32-38 mm)	480-500	30-31

STOODY® 103CP

STOODY 103CP has excellent abrasion resistance with moderate impact resistance. Deposit has fine relief check pattern which reduces distortion. Not machinable. Cannot be flame cut. Nominal hardness of two-layer deposit on 1040 steel is 54 HRC.

Applications: Crusher Mantles and Bowl Liners, Pulverizer Rings and Rolls, Steel Mill Guides and other parts subject to extreme abrasion where relief checking can be tolerated

Nominal Composition:

Alloy Content 36% (Carbon, Chromium, Manganese, Silicon)
 Iron Base

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11429100	60 lb Coil (27.2 kg)	1/8" (3.2 mm)	Stoody S	1¼"-1½" (32-38 mm)	350-400	28-30
11429100	110 lb QP (50 kg)	1/8" (3.2 mm)	Stoody S	1¼"-1½" (32-38 mm)	350-400	28-30
11428200	200 lb HP (90.7 kg)	1/8" (3.2 mm)	Stoody S	1¼"-1½" (32-38 mm)	350-400	28-30
11430100	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Stoody S	1¼"-1½" (32-38 mm)	350-400	28-30
11977000	750 lb POP (340.2 kg)	1/8" (3.2 mm)	Stoody S	1¼"-1½" (32-38 mm)	350-400	28-30
11430600	500 lb POP (226.8 kg)	5/32" (4.0 mm)	Stoody S	1¼"-1½" (32-38 mm)	425-475	29-31

STOODY® 143-S

STOODY 143-S deposit consists of primary chromium carbides and secondary niobium carbides in an austenitic matrix. Deposits possess high abrasion resistance and maintain hardness up to 1100°F (593°C).

Applications: Crushers, Coke Pusher Shoes, Wear Plates, Cement Screws, Mixer Blades, Excavator Bucket Teeth, and other high abrasion applications

Nominal Composition:

Alloy Content 36% (Chromium, Niobium, Carbon, Manganese, Silicon)

Iron Base

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11949100	200 lb HP (90.7 kg)	1/8" (3.2 mm)	Stoody R-20	1"-1½" (25-38 mm)	325-425	28-30
11864800	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Stoody R-20	1"-1½" (25-38 mm)	325-425	28-30

STOODY® 145-S

STOODY 145-S deposit consists of primary chromium carbides and secondary niobium, molybdenum, tungsten and vanadium carbides in an austenitic matrix. Deposits possess very high abrasion resistance and maintain hardness up to 1500°F (816°C).

Applications: Crushers, Coke Pusher Shoes, Wear Plates, Cement Screws, Mixer Blades, Excavator Bucket Teeth, and other high abrasion applications

Nominal Composition:

Alloy Content 36% (Chromium, Carbon, Niobium, Molybdenum, Tungsten, Manganese, Vanadium, Silicon)

Iron Base

Part Number	Pkg	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
11918700	60 lb Coil (27.2 kg)	1/8" (3.2 mm)	Stoody R-20	1"-1½" (25-38 mm)	325-425	28-30
11859100	60 lb Coil (27.2 kg)	5/32" (4.0 mm)	Stoody R-20	1"-1½" (25-38 mm)	400-500	28-30

GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES (COBALT AND NICKEL)

STOODITE® 6-S

STOODITE 6-S is the most widely used cobalt alloy having excellent resistance to many forms of mechanical and chemical degradation over a wide temperature range. Particular attributes are its outstanding self mated anti-galling properties, high temperature hardness and high resistance to cavitation erosion.

Welding Procedures/Characteristics: A sub arc wire (DCEP) requiring proper preheat, controlled interpass temperatures and cooling rates. Crack free deposits up to 2 layers.

Applications: Flights of Extrusion Screws, Sinkers Roll Bushings in Steel Mill, Soaking Pit Tong Bit, Shafts

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

1 Layer.....27-33 HRC
2 Layers.....36-39 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
810602184094	50 lb Coil (22.6 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	250-450	25-33

Certification to AWS A5.21 ERCCoCr-A

STOODITE® 12-S

STOODITE 12-S is an alloy cored wire for SAW applications. The composition has higher silicon, manganese, and iron levels thus differing slightly from the bare rod equivalent. STOODITE 12-S is more wear resistant than STOODITE 6-S due to a higher volume of carbides but has lower impact strengths.

Welding Procedures/Characteristics: A SAW (DCEP) requiring strict adherence to correct preheat, interpass temperatures and controlled cooling rates to insure crack free deposits. It is more crack-sensitive than STOODITE 6.

Applications: Valve Parts, Pump Parts, Chain Saw Bars, Saw Teeth, Carpet Knives, Cutter Rolls, Bar Mill Twist Rolls

Can be certified to AWS specifications. Must be requested at time of order.

Typical Mechanical Properties:

1 Layer.....39-41 HRC
2 Layers.....44-45 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
811212184094	50 lb Coil (22.6 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1¼" (25-32 mm)	250-450	25-33

GROUP 5: ABRASION ACCOMPANIED BY CORROSION AND/OR HIGH TEMPERATURES (COBALT AND NICKEL)

STOODITE® 21-S

STOODITE 21-S is an alloy cored wire for SAW with excellent high temperature strength making it suitable for use on hot die parts. The deposits are inherently resistant to galling, cavitation erosion, and corrosion. Abrasion resistance is lower than the other wires but its impact strength at high temperatures, anti-galling properties and corrosion resistance are outstanding.

Welding Procedures/Characteristics: A SAW (DCEP) requiring proper preheat, interpass temperatures and controlled cooling to minimize or to produce a crack free deposit.

Applications: Fluid Valve Seats, Tube Mill Piercing Plugs, Hot Shears, Erosion Shields, Forging Dies

Can be certified to AWS specifications. Must be requested at time of order.

Nominal Composition:

Alloy Content (Chromium, Molybdenum, Iron, Nickel, Manganese, Silicon, Carbon, Tungsten)
Cobalt Base

Typical Mechanical Properties:

1 Layer.....16-19 HRC
2 Layers.....22-26 HRC
Work Hardened40-45 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
812102184094	50 lb Coil (22.6 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1 1/4" (25-32 mm)	250-450	25-33

Certification to AWS A5.21 ERCCoCr-E

STOODY® C-S

STOODY C-S is an alloy cored wire for SAW that produces a deposit resistant to high heat and corrosion accompanied by abrasion and/or impact. It has good hardness up to 1200°F (650°C). It is machinable but workhardens.

Welding Procedures/Characteristics: An SAW wire for DCEP welding that can be applied in multiple layers.

Applications: Hot Forge Dies, Hot Shear Blades, Forging Hammer Dies, Mill Guided, Shafts

Can be certified to AWS specifications. Must be requested at time of order.

Nominal Composition:

Alloy Content (Molybdenum, Chromium, Iron, Silicon, Manganese, Carbon) Nickel Base

Typical Mechanical Properties:

Deposit hardness (2-Layer):
As deposited35 HRC
Work Hardened40 HRC

Part Number	Packaging	Wire Dia.	Flux	Welding Parameters		
				CTWD	Amp	Volts
827322284094	50 lb PP (22.6 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1 1/4" (25-32 mm)	250-300	24-30
11930600	500 lb POP (226.8 kg)	3/32" (2.4 mm)	Stoody R-20	1"-1 1/4" (25-32 mm)	250-300	24-30
11877100	500 lb POP (226.8 kg)	1/8" (3.2 mm)	Stoody R-20	1 1/4"-1 1/2" (32-38 mm)	350-400	28-30

Certification to AWS A5.21 ERCCrMo-5A

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STAINLESS STEEL FLUX CORED WIRES

BRILLIANT® 410NiMo T-1 AP

BRILLIANT 410NiMo T-1 AP stainless steel wires are designed for welding in all positions with Argon/CO₂ gas mixtures. These wires exhibit a spray like arc transfer, easy slag removal and can be welded within a wide range of parameters. AWS classification A5.22/A5.22M:2012 E410NiMoT1-1/-4.

BRILLIANT 410NiMo T-1 AP wires can be used to join martensitic stainless steels such as 410 used in valve and pump manufacturing. These wires can also be used for the repair and joining of CA-6NM castings. Care must be taken in the selection of PWHT when welding Type 410 and similar stainless steels.

Typical All Weld Composition (WT%) - 100% CO₂: C-0.02; Mn-0.2; Si-0.3; Cr-11.6; Ni-4.6; Mo-0.5.

BRILLIANT® 2209 T-1 AP

BRILLIANT 2209 T-1 AP stainless steel wires are designed for welding in all positions. These wires exhibit a spray like arc transfer, easy slag removal and can be welded within a wide range of parameters.

BRILLIANT 2209 T-1 AP wires can be used to weld duplex stainless steels UNS S31803, S32205, and in many cases UNS S32201 and S32304. It can also be used to weld mild and low alloy steels to duplex stainless steels. The composition is balanced to achieve a microstructure of approximately 50% ferrite and 50% austenite in the weld deposit. AWS classification A5.22/A5.22M:2012 E2209T1-1/-4.

Typical All Weld Composition (WT%) - 100% CO₂: C-0.03; Mn-1.3; Si-0.7; Cr-23.0; Ni-9.2; Mo-3.2; Nb-0.03; Cu-0.2; N-0.13; Ferrite, FN-40.

BRILLIANT® 2594 T-1 AP

BRILLIANT 2594 T-1 AP stainless steel wires are designed for welding in all positions. These wires exhibit a spray like arc transfer, easy slag removal and can be welded within a wide range of parameters. Stoodly 2594 T-1 AP wires can be used to weld super duplex stainless steels UNS S32750 and in cases where sulfuric/sulfurous acid are not present, UNS S32550, S32760, and ACI's CD4MCu. It can also be used to weld S32205 or duplex stainless steels to mild steel where toughness is not paramount. The composition is balanced to achieve a microstructure of approximately 45% ferrite and 55% austenite in the weld deposit. AWS classification A5.22/A5.22M:2012 E2594T1-1/-4.

Applications: Duplex Stainless Steel Joining Applications

Typical All Weld Composition (WT%) - 100% CO₂: C-0.03; Mn-0.7; Si-0.4; Cr-24.8; Ni-9.1; Mo-4.0; Nb-0.03; Cu-0.2; W-<0.1; N-0.25; PREN - >40; Ferrite, FN - 43.

Typical Deposit Characteristics:

Tensile Strength..... 134 ksi (880 MPa)
Yield Strength..... 118 ksi (776 MPa)
Elongation 18%
Charpy V-Notch Toughness @ Room Temp. 26 ft lb (35 J)

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters	
				Amp	Volts
11892000	33 lb WB, LLW (15 kg)	0.045 (1.2 mm)	75-80% Ar, Bal. CO ₂	150-220	24-26
11892100	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	190-300	24-27

Certification to AWS A5.22/A5.22M:2012 E410NiMoT1-1/-4

Typical Deposit Characteristics:

Tensile Strength..... 88 ksi (605 MPa)
Yield Strength, ksi (MPa)..... 114 ksi (785 MPa)
Elongation 28%
Charpy V-Notch Toughness @ -40°F (-40°C)..... 44 ft lb (60 J)

Part Number	Pkg	Wire Dia.		
11892000	33 lb WB, LLW (15 kg)	0.045 (1.2 mm)		
11892100	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)		
.045" (1.2 mm)				
Amp	130'	165'	190'	220'
Volts	24	26	26	27
WFS	227	315	445	565
in/min (m/min)	(5.8)	(8.7)	(11.3)	(14.4)
1/16" (1.6 mm)				
Amp	170'	210'	250'	300'
Volts	25	26	27	28
WFS	115	195	245	320
in/min (m/min)	(3.9)	(4.9)	(6.2)	(8.2)

Notes:

CTWD 3/8"-58" (10-16 mm) ¹ Flat and vertical welding ² Flat welding only

Certification to A5.22/A5.22M:2012 E2209T1-1/-4

Typical Deposit Characteristics:

Tensile Strength..... 125 ksi (860 MPa)
Yield Strength..... 100 ksi (690 MPa)
Elongation 25%
Charpy V-Notch Toughness @ -58°F (-50°C)..... 21 ft lb (28 J)

Part Number	Pkg	Wire Dia.		
■ 11998100	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)		
11998000	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)		
.045" (1.2 mm)				
Amp	130'	165'	190'	220'
Volts	24	26	26	27
WFS	227	315	445	565
in/min (m/min)	(5.8)	(8.7)	(11.3)	(14.4)
1/16" (1.6 mm)				
Amp	170'	210'	250'	300'
Volts	25	26	27	28
WFS	115	195	245	320
in/min (m/min)	(3.9)	(4.9)	(6.2)	(8.2)

Notes:

CTWD 3/8"-58" (10-16 mm) ¹ Flat and vertical welding ² Flat welding only

Certification to A5.22/A5.22M:2012 E2594T1-1/-4

STAINLESS STEEL FLUX CORED WIRES

STOODY 308L T-1 AP / BRILLIANT 308L T-1 AP

308L T-1 AP and BRILLIANT 308L T-1 AP stainless steel wires are designed for welding in all positions. These wires exhibit a spray like arc transfer, easy slag removal and can be welded within a wide range of parameters.

Stoody 308L T-1AP / BRILLIANT 308L T-1 AP wires can be used to join AISI 301, 302, 304 commonly used in the chemical industry and food processing applications. AWS classification A5.22/A5.22M:2012 E308LT1-1/-4.

Typical Deposit Chemistry: C-0.03; Mn-0.7; Si-0.7; Cr-19.6; Ni-10.2; Mo-0.2; Nb-0.02; Cu-0.2; N-0.04; Ferrite, FN-7.

Typical Deposit Characteristics:	75-80% Ar, Bal. CO ₂	100% CO ₂
Tensile Strength	88 ksi (610 MPa)	86 ksi (600 MPa)
Elongation (%)	39%	41%
Yield Strength	63 ksi (435 MPa)	60 ksi (415 MPa)

STOODY 308L T-1 AP

Part Number	Pkg	Wire Dia.
11953600	25 lb WB (11.3 kg)	0.035" (0.9 mm)
11819000	33 lb WB (15 kg)	0.045" (1.2 mm)
■ 11819100	33 lb WB (15 kg)	1/16" (1.6 mm)

STOODY BRILLIANT 308L T-1 AP*

Part Number	Pkg	Wire Dia.
11894000	25 lb WB (11.3 kg)	0.035" (0.9 mm)
11910700	33 lb WB (15 kg)	0.045" (1.2 mm)
11909500	33 lb WB (15 kg)	1/16" (1.6 mm)

*BRILLIANT wire products are level layer wound and vacuum packed.

0.035" (0.9 mm)				
Amp	100 ¹	120 ¹	150 ¹	170 ²
Volts	25	26	27	27
WFS	275	374	480	600
in/min (m/min)	(6.9)	(9.5)	(12.2)	(15.3)
0.045" (1.2 mm)				
Amp	130 ¹	165 ¹	190 ¹	220 ²
Volts	24	26	26	27
WFS	227	315	445	565
in/min (m/min)	(5.8)	(8.7)	(11.3)	(14.4)
1/16" (1.6 mm)				
Amp	170 ¹	210 ¹	250 ¹	300 ²
Volts	25	26	27	28
WFS	115	195	245	320
in/min (m/min)	(3.9)	(4.9)	(6.2)	(8.2)

Notes:

CTWD 1/2" 13 mm ¹ Flat and vertical welding ² Flat welding only

Certification to AWS A5.22/A5.22M:2012 E308LT1-1/-4

STOODY 309L T-1 AP / BRILLIANT 309L T-1 AP

309L T-1 AP and BRILLIANT 309L T-1 AP stainless steel wires are designed for welding in all positions. These wires exhibit a spray like arc transfer, easy slag removal and can be welded within a wide range of parameters.

Stoody 309L T-1 AP / BRILLIANT 309L T-1 AP wires can be used to join stainless steels to mild and low alloy steels. It is also used to join stainless steels to mild and low alloy steels. It can be used for a first layer buttering on low alloy steels prior to a second layer of a 308L or similar composition. AWS classification A5.22/A5.22M:2012 E309LT1-1/-4.

Typical Deposit Chemistry: C-0.03; Mn-0.7; Si-0.8; Cr-24.0; Ni-12.5; Mo-0.2; Nb-0.02; Cu-0.2; N-0.04; Ferrite, FN-18.

Typical Deposit Characteristics:	75-80% Ar, Bal. CO ₂	100% CO ₂
Tensile Strength	88 ksi (610 MPa)	86 ksi (600 MPa)
Elongation	34%	38%
Yield Strength	69 ksi (480 MPa)	64 ksi (440 MPa)

STOODY 309L T-1 AP

Part Number	Pkg	Wire in.
11953400	25 lb WB (11.3 kg)	0.035" (0.9 mm)
■ 11819300	33 lb WB (15 kg)	0.045" (1.2 mm)
■ 11819400	33 lb WB (15 kg)	1/16" (1.6 mm)

STOODY BRILLIANT 309L T-1 AP*

Part Number	Pkg	Wire Dia.
11894100	25 lb WB (11.3 kg)	0.035" (0.9 mm)
11910600	33 lb WB (15 kg)	0.045" (1.2 mm)
11909400	33 lb WB (15 kg)	1/16" (1.6 mm)

*BRILLIANT wire products are level layer wound and vacuum packed.

0.035" (0.9 mm)				
Amp	100 ¹	120 ¹	150 ¹	170 ¹
Volts	25	26	27	27
WFS	275	374	480	600
in/min (m/min)	(6.9)	(9.5)	(12.2)	(15.3)
0.045" (1.2 mm)				
Amp	130 ¹	165 ¹	190 ¹	220 ²
Volts	24	26	26	27
WFS	227	315	445	565
in/min (m/min)	(5.8)	(8.7)	(11.3)	(14.4)
1/16" (1.6 mm)				
Amp	170 ¹	210 ¹	250 ²	300 ²
Volts	25	26	27	28
WFS	115	195	245	320
in/min (m/min)	(3.9)	(4.9)	(6.2)	(8.2)

Notes:

CTWD 1/2" 13 mm ¹ Flat and vertical welding ² Flat welding only

Certification to A5.22/A5.22M:2012 E309LT1-1/-4

STAINLESS STEEL FLUX CORED WIRES

STOODY 316L T-1 AP / BRILLIANT 316 T-1 AP

316L T-1 AP and BRILLIANT 316L T-1 AP stainless steel wires are designed for welding in all positions. These wires exhibit a spray like arc transfer, easy slag removal and can be welded within a wide range of parameters.

Stoody 316L T-1 AP / BRILLIANT 316L T-1 AP wires can be used to join AISI 316 and 316L commonly used in the rubber, chemical, petrochemical and dye industries. AWS classification A5.22/A.5.22M:2012 E316LT1-1/-4.

Typical Deposit Chemistry: C-0.03; Mn-0.7; Si-0.7; Cr-18.7; Ni-12.1; Mo-2.6; Nb-0.02; Cu-0.2; N-0.04; Ferrite, FN-6.

Typical Deposit Characteristics:	75-80% Ar, Bal. CO ₂	100% CO ₂
Tensile Strength	88 ksi (610 MPa)	86 ksi (600 MPa)
Elongation	36%	39%
Yield Strength	66 ksi (460 MPa)	62 ksi (430 MPa)

STOODY 316L T-1 AP

Part Number	Pkg	Wire Dia.
11953500	25 lb WB (11.3 kg)	0.035" (0.9 mm)
11819600	33 lb WB (15 kg)	0.045" (1.2 mm)
11819700	33 lb WB (15 kg)	1/16" (1.6 mm)

STOODY BRILLIANT 316L T-1 AP*

Part Number	Pkg	Wire Dia.
11893900	25 lb WB (11.3 kg)	0.035" (0.9 mm)
11910400	33 lb WB (15 kg)	0.045" (1.2 mm)
11910300	33 lb WB (15 kg)	1/16" (1.6 mm)

*BRILLIANT wire products are level layer wound and vacuum packed.

0.035" (0.9 mm)				
Amp	100 ¹	120 ¹	150 ¹	170 ¹
Volts	25	26	27	27
WFS	275	374	480	600
in/min (m/min)	(6.9)	(9.5)	(12.2)	(15.3)
0.045" (1.2 mm)				
Amp	130 ¹	165 ¹	190 ¹	220 ²
Volts	24	26	26	27
WFS	227	315	445	565
in/min (m/min)	(5.8)	(8.7)	(11.3)	(14.4)
1/16" (1.6 mm)				
Amp	170 ¹	210 ¹	250 ²	300 ²
Volts	25	26	27	28
WFS	115	195	245	320
in/min (m/min)	(3.9)	(4.9)	(6.2)	(8.2)

Notes:

CTWD 1/2" 13 mm ¹ Flat and vertical welding ² Flat welding only

Certification to A5.22/A.5.22M:2012 E316LT1-1/-4

SPECIALITY WIRES & COATED ELECTRODES

HYDROLOY® 914

HYDROLOY 914 is a high strength stainless steel alloy designed specifically to combat cavitation erosion in hydropower systems, particularly on turbine runners. The proprietary composition produces the same microstructural deformation characteristics that give more expensive cobalt base alloys their outstanding cavitation resistance.

Applications: Turbine Runners, Pump Components

Alloy Type: High Strength Stainless Steel

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11831800	25 lb WB LLW (11.3 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂	3/8"-1/2" (10-13 mm)	100-140	16-18
11834800	25 lb WB LLW (11.3 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂	3/8"-1/2" (10-13 mm)	100-145	16-18

Coated Electrode

Part Number	Packaging	Dimensions Diameter x Length	Amperage (DC+)
11834400	10 lb Vac Pak (4.5 kg)	1/8" x 14" (3.2 mm x 35.6 cm)	110-125
11831900	10 lb Vac Pak (4.5 kg)	5/32" x 14" (4.0 mm x 35.6 cm)	135-155

THERMAL SPRAY WIRES

STOODY® THERMASPRAY 1334

STOODY THERMASPRAY 1334 is a tubular chromium carbide type spray wire designed for Twin Wire Arc Spray applications. The unique chemical make up gives ThermaSpray 1334 excellent self bonding characteristics to carbon and stainless steels, and aluminum when applied with proper procedures. Wear characteristics and coating adhesion are superior to that of competitive products of similar type.

Applications: Fan Blades, Boiler Tubes, Boiler Tube Shields

Typical Deposit Characteristics:

Avg. Bond Strength..... 4900 psi
Avg. Weight Loss (ASTM G65)..... 0.14 gm

Part Number	Pkg	Wire Dia.	Welding Parameters		
			Spray Distance	Amp	Volts
11874400	25 lb PS (11.3 kg)	1/16" (1.6 mm)	5" - 7" (127-178 mm)	200-300	31-33
11893700	25 lb PS (11.3 kg)	5/64" (2.0 mm)	5" - 7" (127-178 mm)	200-300	31-33
11913300	50 lb PP (22.7 kg)	3/32" (2.4 mm)	5" - 7" (127-178 mm)	200-300	31-33

THERMAL SPRAY WIRES

STOODY® THERMASPRAY 140

STOODY THERMASPRAY 140 is a tubular wire containing tungsten and chromium carbides in a nickel matrix. It can be used for Twin Arc Spray applications and gives excellent wear characteristics when applied with proper procedures.

Applications: Fan Blades, Boiler Tubes, Boiler Tube Shields, Extrusion Screw Encapsulations, Mixer Sleeves, Shaft Journals

Typical Deposit Characteristics:

Avg. Weight Loss (ASTM G65).....0.14 gm
Dimension Loss.....Negligible

Part Number	Pkg	Wire Dia.	Welding Parameters		
			Spray Distance	Amp	Volts
11896300	25 lb PS (11.3 kg)	1/16" (1.6 mm)	5" - 10" (127-254 mm)	280-400	25-35
11900100	25 lb PS (11.3 kg)	5/64" (2.0 mm)	5" - 10" (127-254 mm)	280-400	25-35

STOODY® THERMASPRAY 160

STOODY THERMASPRAY 160 is a tubular wire containing approximately 45% tungsten carbide in a nickel matrix. It can be used for Twin Arc Spray applications and offers superior wear characteristics when applied with proper procedures.

Applications: Fan Blades and Inlet Bells, Boiler Tubes and Shields, Ceramic/Concrete Augers, Rotors and Centrifuges; Pump and Mixer Sleeves, Shaft Journals, Logging Chutes, Feed Screws, and Knife Holders; Chemical Processing Impellers, Augers, and Paddles; Wear Plates, Titanium Dioxide Pigment Sand Mills

Typical Deposit Characteristics:

Avg. Weight Loss (ASTM G65).....0.14 gm
Dimension Loss.....Negligible

Part Number	Pkg	Wire Dia.	Welding Parameters		
			Spray Distance	Amp	Volts
11902200	25 lb PS (11.3 kg)	1/16" (1.6 mm)	5" - 10" (127-254 mm)	280-400	25-35

NICKEL FLUX CORED WIRES

STOODY® 82-T1

STOODY 82-T1 is a gas shielded All Position Flux Cored Wire that meets the requirements of AWS A5.34, Class ENiCr3T1-1/-4.

Applications: Joining nickel-chromium-iron alloys; Clad side of joints in steels clad with nickel-chromium-iron weld metal; Surfacing steel with nickel-chromium-iron weld metal; and Joining Inconel 600, 601 and Incoloy 800 to themselves or to stainless and carbon steels

Typical Deposit Chemistry: Carbon, Manganese, Silicon, Chromium, Iron, Niobium Nickel base. See typical mechanical properties and compositions chart, page 90.

Typical Deposit Characteristics:

Tensile Strength.....89 ksi (614 MPa)
Yield Strength.....58 ksi (400 MPa)
Elongation.....26%

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11872700	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	150-200	25-26
11872600	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	200-250	26-27

STOODY® 182-T1

STOODY 182-T1 is a gas shielded All Position Flux Cored Wire that meets the requirements of AWS 5.34 ENiCrFe3T1-1/-4.

Applications: Joining nickel-chromium-iron alloys; Clad side of joints in steels clad with nickel-chromium-iron weld metal; Surfacing steel with nickel-chromium-iron weld metal; and Joining Alloys 600, 601 and Incoloy 800 to themselves or to stainless and carbon steels

Typical Deposit Chemistry: Carbon, Manganese, Silicon, Chromium, Iron, Niobium Nickel base. See typical mechanical properties and compositions chart, page 90.

Typical Deposit Characteristics:

Tensile Strength.....94 ksi (649 MPa)
Yield Strength.....58 ksi (400 MPa)
Elongation.....35%

Part Number	Pkg	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11916200	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	150-200	25-26
11916100	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	200-250	26-27

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

NICKEL FLUX CORED WIRES

STOODY® A-T1

STOODY A-T1 is a gas shielded All Position Flux Cored Wire that meets the requirements of AWS 5.34 ENiCrFe2T1-1/-4.

Applications: Joining nickel-chromium-iron alloys; Joining nickel steels; and Joining Inconel 600, 601 and Incoloy 800 to themselves or to stainless and carbon steels

Typical Deposit Chemistry: Carbon, Manganese, Silicon, Chromium, Iron, Molybdenum, Niobium, Nickel base. See *typical mechanical properties and compositions chart, page 90.*

Typical Deposit Characteristics:

Tensile Strength.....	89.5 ksi (595 MPa)
Yield Strength.....	51.0 ksi (340 MPa)
Elongation.....	45%
Charpy V-Notch Toughness.....	67 ft lb (92 J) at -320°F (-196°C)
Lateral Expansion.....	46 mils (1.2 mm) at -320°F (-196°C)

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
11896500	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	150-200	25-26
11896700	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	200-250	26-27

STOODY® NiCrMo3-T1

Stoody NiCrMo3-T1 is a gas shielded all position flux cored wire. The wire possesses excellent weldability and can be used in a wide variety of similar and dissimilar welding and cladding applications. The iron content of the all-weld deposit is kept below 1% for applications requiring advanced corrosion resistance. AWS 5.34 ENiCrMo3T1-1/-4.

Applications: Joining nickel-chromium-molybdenum alloys to UNS N06625; Clad side of joints in steel clad with nickel-chromium-molybdenum weld metal; Surfacing steel with nickel-chromium-molybdenum weld metal; Joining steels to nickel based alloys; and, Joining 9% nickel steel for cryogenic applications

Typical Deposit Chemistry: Carbon, Manganese, Silicon, Chromium, Molybdenum, Niobium, Nickel base. See *typical mechanical properties and compositions chart, page 90.*

Typical Deposit Characteristics:

Tensile Strength.....	105 ksi (725 MPa)
Yield Strength.....	68 ksi (470 MPa)
Elongation.....	38%

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 12051400	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	150-200	25-26

STOODY® C276-T1

STOODY C276-T1 is a gas shielded All Position Flux Cored Wire that meets the requirements of AWS 5.34 ENiCrMo4T1-1/4.

Applications: Joining nickel-chromium-molybdenum alloys; Clad side of joints in steels clad with nickel-chromium-molybdenum weld metal; Surfacing steel with nickel-chromium-molybdenum weld metal; and Joining higher molybdenum - high nitrogen containing stainless steels

Typical Deposit Chemistry: Carbon, Manganese, Silicon, Chromium, Molybdenum, Iron, Tungsten, Sulfur, Phosphorus, Nickel base. See *typical mechanical properties and compositions chart, page 90.*

Typical Deposit Characteristics:

Tensile Strength.....	106 ksi (705 MPa)
Yield Strength.....	68 ksi (452 MPa)
Elongation.....	42%

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11953700	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	150-200	25-26
11964300	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	200-250	26-27

STOODY® 622-T1

STOODY 622-T1 is a gas shielded All Position Flux Cored Wire that meets the requirements of AWS 5.34 ENiCrMo10T1-1/-4.

Applications: Joining nickel-chromium-molybdenum alloys; Clad side of joints in steels clad with nickel-chromium-molybdenum weld metal; Surfacing steel with nickel-chromium-molybdenum weld metal; and Joining higher molybdenum - high nitrogen containing stainless steels

Typical Deposit Chemistry: Carbon, Manganese, Silicon, Chromium, Molybdenum, Iron, Tungsten, Nickel base. See *typical mechanical properties and compositions chart, page 90.*

Typical Deposit Characteristics:

Tensile Strength.....	103 ksi (685 MPa)
Yield Strength.....	70 ksi (470 MPa)
Elongation.....	27%

Part Number	Packaging	Wire Dia.	Shielding Gas	Welding Parameters		
				CTWD	Amp	Volts
■ 11953800	33 lb WB, LLW (15 kg)	0.045" (1.2 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	150-200	25-26
11965700	33 lb WB, LLW (15 kg)	1/16" (1.6 mm)	75-80% Ar, Bal. CO ₂ or CO ₂	1/2" (13 mm)	200-250	26-27

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

OXYFUEL TORCH: MANUAL SPRAY POWDERS

Stoody spray powders are specifically designed for enhanced wetting characteristics in hand-held torch applications. These hardfacing powders cover a broad range of wear resistance needs.

STOODY® 60 TG

A nickel-based alloy with outstanding resistance to abrasion, corrosion, and high heat; impact resistance is good. Low coefficient of friction. Applications: pump components, shaft sleeves, thrust collars, guides, and bushings. Finish by grinding.

C	Si	Cr	B	WC	Fe	Ni	Nom. HRC
0.7	4.4	15.0	3.1	-	4.2	Bal.	59

STOODY® 63 TG

A nickel-based alloy with high ductility and workability. Deposits can be hand ground. Applications: used primarily in the glass industry to protect mould rebuilding against abrasion, heat, and corrosion.

C	Si	Cr	B	WC	Fe	Ni	Nom. HRC
0.02	2.8	-	1.6	-	0.4	Bal.	19

STOODY® 64 TG

A nickel-based alloy recommended for applications on parts requiring precise finish machining. Can also be ground. Deposits provide excellent corrosion and heat resistance; very good impact resistance. Applications: pump parts, shafts, valves, and discs.

C	Si	Cr	B	WC	Fe	Ni	Nom. HRC
0.3	3.5	8.8	1.8	-	2.8	Bal.	39

STOODY® 65 TG

A nickel-based alloy with good ductility. Deposits can be machined with carbide tools or ground. Applications: pump parts, dies, extrusion screws, and wear rings.

C	Si	Cr	B	WC	Fe	Ni	Nom. HRC
0.45	4.0	11.9	2.1	-	3.5	Bal.	51

STOODY® 85 TG

A nickel-based tungsten carbide powder. Microstructures exhibit dense deposits of undissolved tungsten carbides embedded in high strength matrix. Provides excellent wear resistance.

Applications: ideal for tillage tools, small mill hammers, bits and augers, etc. Not recommended for metal-to-metal mating parts.

C	Si	Cr	B	WC	Fe	Ni	Nom. HRC
0.4	2.2	8.3	1.7	45	2.6	Bal.	64

STOODY® 86 TG

A nickel-based tungsten carbide powder. Microstructures exhibit dense deposits of undissolved tungsten carbides embedded in high strength matrix. Similar to 85 TG but with increased ratio of tungsten to provide even greater wear resistance. Provides excellent wear resistance. Applications: ideal for tillage tools, small mill hammers, bits and augers, etc. Not recommended for metal-to-metal mating parts.

C	Si	Cr	B	WC	Fe	Ni	Nom. HRC
0.3	1.9	6.0	1.2	60	2.0	Bal.	64

STOODY® 87 TG

A nickel-based tungsten carbide powder. Microstructures exhibit dense deposits of undissolved tungsten carbides embedded in high strength matrix. Similar to 85 TG and 86 TG but with a maximum amount of tungsten to provide the ultimate in wear resistance. Not recommended for metal-to-metal mating parts.

C	Si	Cr	B	WC	Fe	Ni	Nom. HRC
0.2	1.7	5.3	1.1	65	1.8	Bal.	64

STANDARD SIZES & PACKAGING

Part Number	Product	Packaging
■ 11323200	60TG Spray Powder	1 lb (0.45 kg) Bottle
■ 11020500	60TG Spray Powder	5 lb (2.27 kg) Bottle
■ 11174500	63TG Spray Powder	1 lb (0.45 kg) Bottle
■ 11020600	63TG Spray Powder	5 lb (2.27 kg) Bottle
■ 11020700	64TG Spray Powder	5 lb (2.27 kg) Bottle
■ 11020800	65TG Spray Powder	5 lb (2.27 kg) Bottle
■ 11302100	85TG Spray Powder	1 lb (0.45 kg) Bottle
■ 11020900	85TG Spray Powder	5 lb (2.27 kg) Bottle
■ 11334300	86TG Spray Powder	5 lb (2.27 kg) Bottle
■ 11334600	87TG Spray Powder	5 lb (2.27 kg) Bottle



Sugar mill incinerator exhaust fan critical wear zones can be hardfaced with 87 TG oxyfuel torch powder.

Powders and Dropped Carbides

BULK DROPPED CARBIDES & ACCESSORIES

Utilizing the Stoodly MIG/Tungsten Carbide System, bulk carbides can be paired with an appropriate wire to solve a wide range of tough wear problems.

14-24 BORIUM® CS

Crushed sintered tungsten carbide, bonded with cobalt for greater resistance to higher impact loadings, while still providing excellent abrasion resistance.

C	Ni	Fe	Co	Ti	W
5.5	0.3	1.7	8.3	0.1	Bal.

20-30 BULK BORIUM®

Spun cast, crushed tungsten carbide, high density abrasion resistant particles for exceptional wear life in cutting applications.

C	Ni	Fe	Co	Ti	W
4.0	—	0.4	—	—	Bal.

STANDARD SIZES & PACKAGING

Part Number	Product	Packaging
■ 11506100	14-24 Borium CS	50 lb (22.7 kg) Can
■ 11953000	20-30 Bulk Borium	50 lb (22.7 kg) Can



Other mesh sizes available for bulk carbide products. Production lead times may apply. Contact Stoodly sales or customer care for product identification and ordering information. The following Stoodly hardfacing wire products are frequently used with bulk drop carbide applications:

STOODY 964-G

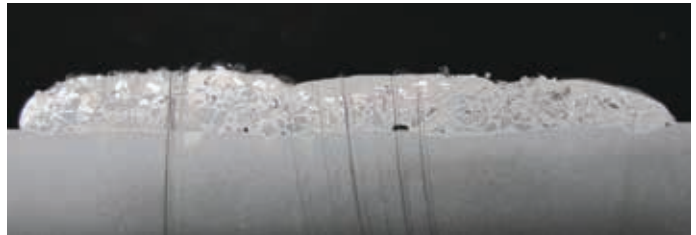
Stoody 964 deposit is a specially formulated wear resistant alloy producing a uniform distribution of small primary carbides in a martensitic matrix. The small carbides provide improved wear resistance over martensitic steel, many tool steels, and some conventional chromium carbide alloys.

STOODY 965-G, 965-O

Stoody 965 deposit is a general purpose hardfacing alloy that offers a good balance of impact and abrasion resistance. Deposits are martensitic and forgeable and can be applied to carbon, low alloy, and manganese steels.

STOODY 966-G

Stoody 966-G deposit is a molybdenum-tungsten high speed tool steel with a high concentration of uniformly distributed small primary carbides that greatly improve wear resistance when compared to M-7 tool steel. Excellent abrasion resistance and moderate impact resistance.



VIBRATORY FEEDER FOR GMAW

The MIG/Tungsten Carbide System, or vibratory feeder, is a simple and reliable method for the introduction of granular tungsten carbide into a welded matrix. The resulting deposits are sound, and deliver dense matrix cross sections filled with tungsten carbide particles for excellent resistance to extreme abrasive environments. The vibratory feed system can be used in either a semi-automatic hand held mode, or set up for mechanized function in high production applications.

PACKAGING & CONTENTS

Part Number	Pkg	Note
■ 123-00-001	Box	Assembly Required

1. Heavy construction, resonance dampened, linear mode, vibratory motor, bulk hopper, brackets, and metering system;
2. MIG gun nozzle attachment bracket, clamp, carbide delivery hopper and drop tube;
3. Full function remote control pendant with on/off indicator light, auto-manual mode switch, carbide feed rate potentiometer, and panel fuse.

Electrical - 115 volt, 1 amp fused line connection, ground fault neutral prong plug, current sensing relay, weld cable mounting block for auto start/stop.



PTA & LASER CLADDING: NICKEL TUNGSTEN CARBIDE POWDER

STOODY® 6030-PLC, -PLS, -PLM

STOODY 6030 is a tungsten carbide (60%) and nickel alloy (40%) composite hardfacing powder that provides extreme abrasion resistance and some impact resistance. Suitable for both plasma transferred arc (PTA) and laser cladding processes, the 6030-PLC formulation incorporates standard cast and crushed eutectic tungsten carbides in a ductile nickel-chrome alloy matrix (Stoody Ni30-PL). The 6030-PLS formulation incorporates spherical tungsten carbides especially suitable for laser cladding. The 6030-PLM formulation incorporates macrocrystalline tungsten carbides more appropriate for high power systems. The carbide weight content (30-65%) as well as the powder grain size can be adjusted within the operational capabilities of each particular process or system.

Applications: Ground engaging tools, Bucket lips and Grader Blades, Crusher Teeth and Hammers, Shovel Latch Bars, Screw Press Flights, Chutes

Typical Powder Characteristics:

Grain Size Distribution	80 x 325 (45-180 µm)
Ni30-PL Matrix Hardness	30-35 HRC
Cast WC/W2C Hardness	2200-2600 VHN
Spherical WC/W2C Hardness	2700-3300 VHN
Macrocrystalline WC/W2C Hardness	1800-2200 VHN

Typical Deposit Characteristics:

Abrasion Resistance	Excellent
Corrosion Resistance	Moderate
Deposit Layers	Up to Two (2)
Microcracking	Expected
Finishing	Diamond Grinding

Part Number	Packaging	Carbide Hard Phase
12035400	10 lb (4.5 kg) Bottle	Cast/Crushed (PLC)
12035500	40 lb (18.2 kg) Carton (4 Bottles)	Cast/Crushed (PLC)
12035800	10 lb (4.5 kg) Bottle	Spherical (PLS)
12035900	40 lb (18.2 kg) Carton (4 Bottles)	Spherical (PLS)
12035600	10 lb (4.5 kg) Bottle	Macrocrystalline (PLM)
12035700	40 lb (18.2 kg) Carton (4 Bottles)	Macrocrystalline (PLM)

STOODY® 6040-PLC, -PLS, -PLM

STOODY 6040 is a tungsten carbide (60%) and nickel alloy (40%) composite hardfacing powder that provides extreme abrasion resistance. Suitable for both plasma transferred arc (PTA) and laser cladding processes, the 6040-PLC formulation incorporates standard cast and crushed eutectic tungsten carbides in a nickel-chrome alloy matrix (Stoody Ni40-PL). The 6040-PLS formulation incorporates spherical tungsten carbides especially suitable for laser cladding. The 6040-PLM formulation incorporates macrocrystalline tungsten carbides more appropriate for high power systems. The carbide weight content (30-65%) as well as the powder grain size can be adjusted within the operational capabilities of each particular process or system.

Applications: Down Hole Drilling Tools - Stabilizers, Bit Holders, Kick Rings, Radial Bearings; Ore Processing - Exhaust Fan Liners, Chutes, Wear Sleeves, Sludge Pumps, Mixing Blades, Centrifuges; Oil Sands - Ground Engaging Tools, Crusher Teeth, Screen Plates, Latch Bars, Slurry Elbows; Cement - Dry Cement Pumps, Classifier Blades, Coupling Shafts, Feed Screws; Brick Making - Extruder Flights, Pug Knives, Crusher Roll Blades, Dies; Pigment - Dry Material Pumps, Cyclones, Micronizers, Feed Pipes, Bag Screen Impact Plates; Steel Mill Guide Rolls, Screw Presses, Anode Paste Mixers, Pulpers, Tunneling Cutters

Typical Powder Characteristics:

Grain Size Distribution	80 x 325 (45-180 µm)
Ni40-PL Matrix Hardness	40-45 HRC
Cast WC/W2C Hardness	2200-2600 VHN
Spherical WC/W2C Hardness	2700-3300 VHN
Macrocrystalline WC/W2C Hardness	1800-2200 VHN

Typical Deposit Characteristics:

Abrasion Resistance	Excellent
Corrosion Resistance	Moderate
Deposit Layers	Up to Two (2)
Microcracking	Expected
Finishing	Diamond Grinding

Part Number	Packaging	Carbide Hard Phase
12024200	10 lb (4.5 kg) Bottle	Cast/Crushed (PLC)
12027500	40 lb (18.2 kg) Carton (4 Bottles)	Cast/Crushed (PLC)
12030900	10 lb (4.5 kg) Bottle	Spherical (PLS)
12031000	40 lb (18.2 kg) Carton (4 Bottles)	Spherical (PLS)
12031100	10 lb (4.5 kg) Bottle	Macrocrystalline (PLM)
12031200	40 lb (18.2 kg) Carton (4 Bottles)	Macrocrystalline (PLM)

Products marked by the "■" symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

Powders and Dropped Carbides

PTA & LASER CLADDING: NICKEL TUNGSTEN CARBIDE POWDER

STOODY® 6050-PLC, -PLS, -PLM

STOODY 6050 is a tungsten carbide (60%) and nickel alloy (40%) composite hardfacing powder that provides extreme abrasion resistance. Suitable for both plasma transferred arc (PTA) and laser cladding processes, the 6050-PLC formulation incorporates standard cast and crushed eutectic tungsten carbides in a nickel-chrome alloy matrix (Stoody Ni50-PL). The 6050-PLS formulation incorporates spherical tungsten carbides especially suitable for laser cladding. The 6050-PLM formulation incorporates macrocrystalline tungsten carbides more appropriate for high power systems. The carbide weight content (30-65%) as well as the powder grain size can be adjusted within the operational capabilities of each particular process or system.

Applications: Down Hole Drilling Tools - Stabilizers, Bit Holders, Kick Rings, Radial Bearings; Ore Processing - Exhaust Fan Liners, Chutes, Wear Sleeves, Sludge Pumps, Mixing Blades, Centrifuges; Oil Sands - Ground Engaging Tools, Crusher Teeth, Screen Plates, Latch Bars, Slurry Elbows; Cement - Dry Cement Pumps, Classifier Blades, Coupling Shafts, Feed Screws; Brick Making - Extruder Flights, Pug Knives, Crusher Roll Blades, Dies; Pigment - Dry Material Pumps, Cyclones, Micronizers, Feed Pipes, Bag Screen Impact Plates

Typical Powder Characteristics:

Grain Size Distribution	80 x 325 (45-180 µm)
Ni50-PL Matrix Hardness.....	45-50 HRC
Cast WC/W2C Hardness	2200-2600 VHN
Spherical WC/W2C Hardness.....	2700-3300 VHN
Macrocrystalline WC/W2C Hardness.....	1800-2200 VHN

Typical Deposit Characteristics:

Abrasion Resistance	Excellent
Corrosion Resistance	Moderate
Deposit Layers	Up to Two (2)
Microcracking.....	Expected
Finishing	Diamond Grinding

Part Number	Packaging	Carbide Hard Phase
12038600	10 lb (4.5 kg) Bottle	Cast/Crushed (PLC)
12038700	40 lb (18.2 kg) Carton (4 Bottles)	Cast/Crushed (PLC)
12039000	10 lb (4.5 kg) Bottle	Spherical (PLS)
12039100	40 lb (18.2 kg) Carton (4 Bottles)	Spherical (PLS)
12038800	10 lb (4.5 kg) Bottle	Macrocrystalline (PLM)
12038900	40 lb (18.2 kg) Carton (4 Bottles)	Macrocrystalline (PLM)

STOODY® 6051-PLC, -PLS, -PLM

STOODY 6051 is a tungsten carbide (60%) and nickel alloy (40%) composite hardfacing powder that provides extreme abrasion resistance. Suitable for both plasma transferred arc (PTA) and laser cladding processes, the 6051-PLC formulation incorporates standard cast and crushed eutectic tungsten carbides in a nickel-chrome alloy matrix (Stoody Ni51-PL). The 6051-PLS formulation incorporates spherical tungsten carbides especially suitable for laser cladding. The 6051-PLM formulation incorporates macrocrystalline tungsten carbides more appropriate for high power systems. The carbide weight content (30-65%) as well as the powder grain size can be adjusted within the operational capabilities of each particular process or system.

Applications: Down Hole Drilling Tools - Stabilizers, Bit Holders, Kick Rings, Radial Bearings; Ore Processing - Exhaust Fan Liners, Chutes, Wear Sleeves, Sludge Pumps, Mixing Blades, Centrifuges; Oil Sands - Ground Engaging Tools, Crusher Teeth, Screen Plates, Latch Bars, Slurry Elbows; Cement - Dry Cement Pumps, Classifier Blades, Coupling Shafts, Feed Screws; Brick Making - Extruder Flights, Pug Knives, Crusher Roll Blades, Dies; Pigment - Dry Material Pumps, Cyclones, Micronizers, Feed Pipes, Bag Screen Impact Plates

Typical Powder Characteristics:

Grain Size Distribution	80 x 325 (45-180 µm)
Ni51-PL Matrix Hardness.....	48-52 HRC
Cast WC/W2C Hardness	2200-2600 VHN
Spherical WC/W2C Hardness.....	2700-3300 VHN
Macrocrystalline WC/W2C Hardness.....	1800-2200 VHN

Typical Deposit Characteristics:

Abrasion Resistance	Excellent
Corrosion Resistance	Fair
Deposit Layers	Up to Two (2)
Microcracking.....	Expected
Finishing	Diamond Grinding

Part Number	Packaging	Carbide Hard Phase
12036500	10 lb (4.5 kg) Bottle	Cast/Crushed (PLC)
12036600	40 lb (18.2 kg) Carton (4 Bottles)	Cast/Crushed (PLC)
12036900	10 lb (4.5 kg) Bottle	Spherical (PLS)
12037000	40 lb (18.2 kg) Carton (4 Bottles)	Spherical (PLS)
12036700	10 lb (4.5 kg) Bottle	Macrocrystalline (PLM)
12036800	40 lb (18.2 kg) Carton (4 Bottles)	Macrocrystalline (PLM)

PTA & LASER CLADDING: COBALT POWDER

STOODITE® Co01-PL

STOODITE Co01-PL is the surfacing powder version of the highest hardness standard cobalt alloy used with chromium carbides that impart outstanding abrasive wear resistance. The addition of tungsten enhances high temperature hardness and matrix toughness for excellent adhesive and solid particle erosion wear resistance. It bonds well with all weldable steels, including stainless steels.

Applications: Screw Flights, Cross Heads, Hydropulper Disc Segments, Soaking Pit-Tong Bits, Mixer Rotors, Bodies, and Tip Sides, Wear Sleeves, Valves and Pumps

Typical Deposit Characteristics:

Abrasion Resistance	Excellent
Impact Resistance.....	Fair
Corrosion Resistance	Good
Hardness (2 Layers)	46-52 HRC
Hot Hardness	Excellent to 1400°F (760°C)
Magnetic.....	No
Surface Cross Checks	Yes
Deposit Layers	2 Maximum
Machinability	Carbide Tools/Grinding

Part Number	Packaging	Grain Size
12034500	11 lb (5 kg) Bottle	100 x 230 (63-150 µm)
12034600	44 lb (20 kg) Carton (4 Bottles)	100 x 230 (63-150 µm)

Products marked by the “■” symbol are typically stocked items. All others manufactured upon customer request - may require a minimum quantity and/or may be subject to production lead time. Contact customer care or your sales representative with any questions.

PTA & LASER CLADDING: COBALT POWDER

STOODITE® Co06-PL

STOODITE Co06-PL is the surfacing powder version of a cobalt alloy that produces a medium hardness cobalt chromium deposit for high temperature applications with good abrasive wear and good impact resistance. It is the most versatile and widely used cobalt alloy. Chromium carbides contained in the deposit provide excellent resistance to many forms of chemical and mechanical wear degradation, including galling and cavitation erosion. It bonds well with all weldable steels, including stainless steels.

Applications: Extrusion Screw Flights, Sinkers Roll Bushings in Steel Mills, Shafts and Wear Sleeves, Valve Seats and Seal Ring

Typical Deposit Characteristics:

Abrasion Resistance Good
Impact Resistance..... Good
Corrosion Resistance..... Good
Hardness (2 Layers) 35-43 HRC
Hot Hardness Excellent
Magnetic..... No
Surface Cross Checks No
Deposit Layers 2 Maximum
Machinability Carbide Tools

Part Number	Packaging	Grain Size
12034700	11 lb (5 kg) Bottle	100 x 230 (63-150 µm)
12034800	44 lb (20 kg) Carton (4 Bottles)	100 x 230 (63-150 µm)

STOODITE® Co12-PL

STOODITE Co12-PL is the surfacing powder version of a cobalt alloy that produces a high hardness cobalt chromium deposit for high temperature applications with good abrasive wear associated with corrosion. Chromium carbides contained in the deposit provide excellent resistance to many forms of chemical and mechanical wear degradation, including galling. It bonds well with all weldable steels, including stainless steels.

Applications: Valve and Pump Parts, Chain Saw Bars and Saw Teeth, Aircraft Turbine Blades, Cutter Rolls and Bar Twist Rolls

Typical Deposit Characteristics:

Abrasion Resistance Excellent
Impact Resistance..... Good
Corrosion Resistance..... Good
Hardness (2 Layers) 44-45 HRC
Hot Hardness Excellent
Magnetic..... No
Surface Cross Checks No
Deposit Layers 2 Maximum
Machinability Carbide Tools

Part Number	Packaging	Grain Size
12034900	11 lb (5 kg) Bottle	100 x 230 (63-150 µm)
12035000	44 lb (20 kg) Carton (4 Bottles)	100 x 230 (63-150 µm)

STOODITE® Co21-PL

STOODITE Co21-PL surfacing powder is a low carbon austenitic cobalt type alloy with excellent work hardenability, high temperature strength, and impact resistance. These deposits are quite stable during thermal cycling, making them a favorite for hot die materials. Resistance to galling (self-mated), corrosion, and cavitation erosion make Stoodie Co21-PL a good choice for valve trim on steam and fluid control valve bodies and seats. It bonds well to all weldable steels, including stainless steels.

Applications: Steam Valves, Hot Shears, Chemical and Petrochemical Valves, Hydro-Turbine Cavitation Repair, Forging Dies, Piercing Plugs

Typical Deposit Characteristics:

Abrasion Resistance Fair
Impact Resistance..... Excellent
Corrosion Resistance..... Good
Hardness (2 Layers) 22-32 HRC
Work Hardened 40-45 HRC
Hot Hardness Excellent
Magnetic..... No
Surface Cross Checks No
Deposit Layers 2 Maximum
Machinability Carbide Tools

Part Number	Packaging	Grain Size
12035100	11 lb (5 kg) Bottle	100 x 230 (63-150 µm)
12035200	44 lb (20 kg) Carton (4 Bottles)	100 x 230 (63-150 µm)

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General Information

STANDARDS & EQUIVALENCE - OPEN-ARC & GAS SHIELDED WIRE

GROUP 1: BUILD UP - O/G WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody Build-Up			MF 1-250-P	TFe1	1125-B5/B7
SOS 430			MF 5-250-CPT	TZFe7	1620-B7
Stoody Dynamang			MF 7-200-KP	TFe9	1215-B7
Stoody Nicromang			MF 7-200-KP	TFe9	1215-B7
Stoody Nicromang Plus			MF 7-250-KP	TFe9	1215-B7
Foundry Co-Mang			MF 7-200-KP	TFe9	1215-B7
Stoody Trackwear			MF 7-250-KP	TFe9	1215-B7
Stoody 110			MF 7-200-KPR	TFe9	1715b-B7
Stoody 111			MF 7-300-GKP	TZFe9	Specialty
Stoody 120			MF 7-200-KP	TZFe9	Specialty
Versalloy AP-G			MF 9-200-CNPZ	TFe11	1315-B5
SOS 307 (Modified)			MF 9-200-CNPZ	TFe11	1315-B7
Castweld Ni-55-O/G	A5.15	ERNiFeT3-CI	EN ISO 1071: T C NiFe-CI 3		
Castweld Ni-30-O/G	A5.15	Specialty	Specialty		
Castweld Ni-99-G	A5.15	ERNi-CI	EN ISO 1071: T C Ni-CI		

GROUP 2: METAL TO METAL WEAR - O/G WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody Super Build-Up			MF 1-40-P	TFe1	1435-B5/B7
Stoody 105-G/O			MF 1-45-GT	TFe1	1445-B5/B7
Stoody 102-G/O			MF 3-50-GT	TFe3	1550-B5/B7
Stoody Rail End 932-O			MF 1-400-GP	TFe1	1135-B7
Stoody M7-G			MF 4-60-PST	TFe4	1560-B5
Stoody 965-G/O			MF 6-60-GP	TFe8	1855-B5/B7
Stoody 965 AP-G			MF 6-60-GP	TFe8	1855-B5/B7
Stoody 964-G			MF 6-60-GT	TZFe8	1965-B5
Stoody 966-G			MF 6-65-GT	TZFe8	Specialty
Stoody HB-56			MF 6-55-GP	TFe4	1855-B5
Stoody HB-64			MF 6-60-GT	TZFe8	1965-B5
Stoody HB-Ti			MF 6-60-GP	TFe8	1955-B7
Stoody HB-NoMag			MF 7-50-GKNP	TZFe9	Specialty
SOS 414N			MF 5-45-CGT	TZFe7	Specialty
SOS 423			MF 5-50-CGT	TFe7	Specialty
SOS 438			MF 5-45-CGT	TZFe7	Specialty

STANDARDS & EQUIVALENCE - OPEN-ARC & GAS SHIELDED WIRE

GROUP 3: METAL TO EARTH MODERATE/ SEVERE IMPACT & ABRASION - O/G WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody 965-G/O			MF 6-60-GP	TFe8	1855-B5/B7
Stoody 965 AP-G			MF 6-60-GP	TFe8	1855-B5/B7
Stoody 117			MF 6-40-GK	TZFe6	1845-B7
Stoody 600			MF 6-60-GP	TFe8	1960-B7
Stoody 670			MF 6-55-GP	TFe8	1955-B7
Stoody 964-G, AP-G			MF 6-60-GT	TZFe8	1965-B5
Stoody 133			MF 10-40-GT	TFZe14	2140-B7
Stoody 131			MF 10-45-GT	TFe14	2245-B7
Stoody 132			MF 10-50-G	TZFe14	2250-B7
Stoody 121			MF 10-50-G	TZFe14	2250-B7
Stoody 134			MF 10-55-GZP	TZFe14	2360-B7
Stoody 101HC			MF 10-60-G	TZFe14	2360-B5/B7
Stoody 101HT			MF 10-60-GZ	TZFe14	2360-B7
Stoody 101HD			MF 10-60-G	TZFe14	2360-B7
Stoody 101HWP			MF 10-60-G	TZFe14	2360-B7
Stoody 101HDB			MF 10-65-G	TZFe14	2365-B7
Stoody 100HC			MF 10-60-G	TFe14	2360-B7
Stoody 100XHC			MF 10-60-G	TZFe14	2360-B7
Stoody 100HD			MF 10-60-G	TZFe14	2360-B7
Stoody 135			MF 10-60-GZ	TFe14	2360-B7
Stoody CP2000			MF 10-60-G	TZFe14	Specialty
Stoody PC-2009			MF 10-60-G	TZFe14	2360-B7
Stoody PR-2009			MF 10-60-G	TZFe14	2360-B7
Stoody 101AP			MF 10-60-GZ	TZFe14	2360-B7
Stoodcor 136			MF 10-60-G	TZFe14	Specialty
Stoody 143			MF 10-60-G	TFe15	2460-B7
Stoody SA Super 20			MF 10-60-GZ	TZFe14	2465-B7
Stoody 145			MF 10-60-GZ	TFe16	2460-B7
Stoody CP2001			MF 10-60-GZ	TFe16	Specialty
Stoody 966-G			MF 6-65-GT	TZFe18	Specialty
Stoody 968-O			Specialty	TFe13	Specialty
Stoody 970-G			Specialty	TZFe13	Specialty

STANDARDS & EQUIVALENCE - OPEN-ARC & GAS SHIELDED WIRE

GROUP 4: METAL TO EARTH EXTREME ABRASION & LOW IMPACT - O/G WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody VANCAR-O			Specialty	Specialty	Specialty
Stoody 130-O			MF 21-60-G	TFe20	3460-B7
Stoody 140			MF 21-55-CG	TNi20	3655-B5
Stoody 155FC			MF 21-45-CG	TNi20	Specialty
Stoody 160FC/FS			MF 21-45-CG	TNi20	3645-B5
Stoody 160FC-O			MF 21-45-CG	TNi20	3645-B7
Stoody 166FS			MF 21-45-CG	TNi20	3645-B7

GROUP 5: ABRASION & CORROSION / HIGH TEMPERATURE - O/G WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoodite 1-M	A5.21	ERCCoCr-C	MF 20-55-CGTZA	TCo3	4350-BS
Stoodite 6-M	A5.21	ERCCoCr-A	MF 20-45-CGTZA	TCo2	4240-BS
Stoodite 12-M	A5.21	ERCCoCr-B	MF 20-50-CGTZA	TCo3	4245-B5
Stoodite 21-M	A5.21	ERCCoCr-E	MF 20-350-CKTZ	TCo1	4130-B5
Stoody 60-M	A5.21	ERCNiCr-C	MF 22-60-CGTZ	TNi3	5260-B5
Stoody C-M	A5.21	ERCNiCrMo-5A	MF 23-200-CKPTZ	TNi2	5415-B5

STANDARDS & EQUIVALENCE - SUBMERGED ARC WIRE

GROUP 1: BUILD UP - SAW WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
ThermaClad DynaMang-S			UP 7-200-KP	TFe9	1215-B7
Stoody / ThermaClad 104			UP 1-250-P	TFe1	1125-B1
Stoody / ThermaClad 104TJ			UP 1-300-P	TFe1	1130-B1
ThermaClad 8620			UP 1-200-P	TZFe1	1120-B1
ThermaClad Multipass 1			UP 1-300-P	TFe1	1130-B1
ThermaClad Multipass 2			UP 1-200-P	TZFe1	1120-B1
ThermaClad Roll Build 3			UP 1-200-P	TZFe1	1120-B1
Castweld Ni-55-S	A5.15	ERNiFeT3-CI	EN ISO 1071:T C NiFe-CI 3		
Castweld Ni-30-S	A5.15	Specialty	Specialty		

STANDARDS & EQUIVALENCE - SUBMERGED ARC WIRE

GROUP 2: METAL TO METAL WEAR - SAW WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
ThermaClad 107			UP 1-40-P	TFe1	1440-B1
ThermaClad 105			UP 1-45-P	TFe1	1445-B1
ThermaClad 105B			UP 1-40-P	TFe1	1440-B1
ThermaClad 42			UP 1-40-P	TFe1	1440-B1
ThermaClad 445			UP 3-45-GPT	TZFe3	1440-B1
ThermaClad 453			UP 3-45-GPT	TFe3	Specialty
ThermaClad 102			UP 3-50-GPT	TFe3	1550-B1
ThermaClad 420			UP 5-45-CGT	TFe7	1645-B1
ThermaClad 4552			UP 5-50-CGT	TFe7	1650-B1
ThermaClad 412			UP 5-40-CGT	TFe7	Specialty
ThermaClad 423			UP 5-50-CGT	TFe7	Specialty
ThermaClad 423Co			UP 5-50-CGT	TZFe3	Specialty
ThermaClad 423H			UP 5-50-CGT	TFe7	Specialty
ThermaClad 423L			UP 5-45-CGT	TFe7	Specialty
ThermaClad 423N			UP 5-40-CGT	TZFe7	Specialty
ThermaClad 438			UP 5-45-CGT	TZFe7	Specialty
ThermaClad 440			UP 5-40-CGT	TFe7	Specialty
ThermaClad 630			UP 5-40-CGT	TZFe7	Specialty
ThermaClad 417			UP 5-50-GPT	TFe8	1550-B1
ThermaClad 443			UP 6-50-CGT	TZFe8	1550-B1
ThermaClad 454			UP 3-55-GPT	TFe8	1550-B1
ThermaClad 455			UP 6-50-GPT	TFe8	1550-B1
ThermaClad 457			UP 4-60-GPT	TZFe8	Specialty

GROUP 3: METAL TO EARTH MODERATE/ SEVERE IMPACT & ABRASION - SAW WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody 103CP			UP 10-55-G	TFe14	2360-B1
Stoody CP2000-S			UP 10-60-G	TZFe14	Specialty
Stoody 143-S			UP 10-60-GZ	TFe15	2460-B1
Stoody 145-S			UP 10-60-GZ	TFe16	2460-B1

STANDARDS & EQUIVALENCE - SUBMERGED ARC WIRE

GROUP 5: ABRASION & CORROSION / HIGH TEMPERATURE - SAW WIRES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoodite 1-S	A5.21	ERCCoCr-C	UP 20-55-CGTZ	TCo3	4350-B1
Stoodite 6-S	A5.21	ERCCoCr-A	UP 20-40-CGTZ	TCo2	4240-B1
Stoodite 12-S	A5.21	ERCCoCr-B	UP 20-50-CGTZ	TCo3	4245-B1
Stoodite 21-S	A5.21	ERCCoCr-E	UP 20-350-CKTZ	TCo1	4130-B1
Stoody C-S	A5.21	ERCNiCrMo-5A	UP 23-200-CKPTZ	TNi2	5415-B1

STANDARDS & EQUIVALENCE - SMAW COATED ELECTRODES

GROUP 1: BUILD UP - COATED ELECTRODES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody Build-Up			E 1-250-P	EFe1	1125-A4
Stoody Dynamang			E 7-200-KP	EFe9	1215-A4
Stoody Nicromang			E 7-200-KP	EFe9	1215-A4
Stoody Nicromang Plus			E 7-250-KP	EFe9	1215-A4
Foundry Co-Mang			E 7-200-KP	EFe9	1215-A4
Stoody Trackwear			E 7-250-KP	EFe9	1215-A4
Stoody 2110			E 7-200-KPR	EFe9	1715b-A4
Versalloy Plus			E 9-200-CNPZ	EFe11	1315-A4
Castweld 55	A5.15	ENiFe-CI-A	EN ISO 1071: E C NiFe-CI 3		
Castweld 56	A5.15	ENiFe-CI	EN ISO 1071: E C NiFe-CI 3		
Castweld 57	A5.15	Specialty	Specialty		
Castweld 99	A5.15	ENi-CI	EN ISO 1071: E C Ni-CI 3		

GROUP 2: METAL TO METAL WEAR - COATED ELECTRODES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody 1105			E 1-45-PT	EFe1	1445-A4
Stoody 1102			E 3-50-GT	EFe3	1550-A4
Stoody Rail End 932			E 1-400-GP	EFe1	1135-A4

STANDARDS & EQUIVALENCE - SMAW COATED ELECTRODES

GROUP 3: METAL TO EARTH MODERATE/ SEVERE IMPACT & ABRASION - COATED ELECTRODES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody Self-Hardening			E 6-55-GP	EFe8	1855-A4
Stoody 33			E 6-40-GT	EZFe14	2140-A1
Stoody 31			E 10-45-GT	EFe14	2245-A1
Stoody 19			E 10-50-GP	EZFe14	2250-A4
Stoody 21			E 10-55-G	EZFe14	2350-A1
Stoody 35			E 10-55-G	EFe14	2355-A4
Stoody CTS			E 10-60-G	EFe14	2360-A1
Stoody 2134			E 10-60-G	EFe14	2360-A1
Stoody SuperChrome			E 10-60-G	EZFe14	2360-A1
Stoody XHC			E 10-65-G	EZFe14	2565-A4
Stoody Super 20			E 10-60-GZ	EZFe15	2465-A4
Stoody 45			E 10-60-G	EFe16	2460-A4

GROUP 4: METAL TO EARTH EXTREME ABRASION & LOW IMPACT - COATED ELECTRODES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
AC-DC Borod			E 21-65-G	EFe20	3465-A1
AC-DC Tube Borium			E 21-65-G	EFe20	3265-A1
Stoody VANCAR-E			Specialty	Specialty	Specialty
Stoody 160-E			E 21-45-CG	ENi20	3645-A1

GROUP 5: ABRASION & CORROSION / HIGH TEMPERATURE - COATED ELECTRODES	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoodite 1	A5.13	ECoCr-C	E 20-55-CGTZ	ECo3	4350-A3
Stoodite 6	A5.13	ECoCr-A	E 20-40-CGTZ	ECo2	4240-A3
Stoodite 12	A5.13	ECoCr-B	E 20-50-CGTZ	ECo3	4245-A3
Stoodite 21	A5.13	ECoCr-E	E 20-350-CKTZ	ECo1	4130-A3
Stoody 50	A5.13	ENiCr-B	E 22-50-CGTZ	ENi3	5250-A3
Stoody C	A5.13	ENiCrMo-5A	E 23-200-CKPTZ	ENi2	5415-A3

STANDARDS & EQUIVALENCE - GTAW - OFW BARE RODS

GROUP 3: METAL TO EARTH MODERATE/ SEVERE IMPACT & ABRASION - BARE RODS	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoody BTS			G 10-60-GP	TFe14	2355-C1

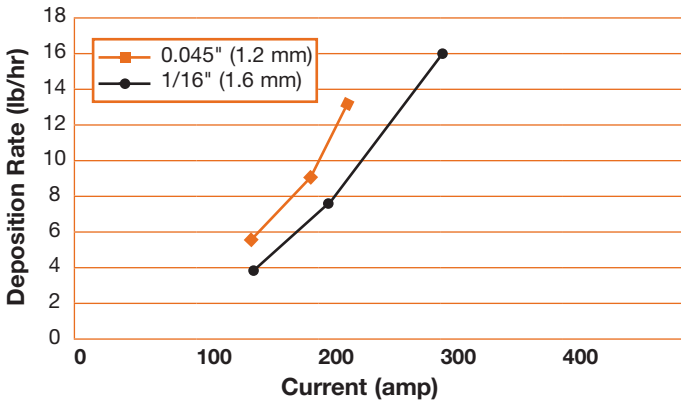
GROUP 4: METAL TO EARTH EXTREME ABRASION & LOW IMPACT - BARE RODS	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Bare Borod			G 21-65-G	TFe20	3465-C1
Acetylene Tube Borium			G 21-65-G	TFe20	3365-C1
Tube Borium H			G 21-65-G	TFe20	3465-C1
Horseshoe Borium			G 21-65-G	TFe20	3265-C1
TB-2954			G 21-65-G	TFe20	3565-C1
Stoody VANCAR-G			Specialty	Specialty	Specialty

GROUP 5: ABRASION & CORROSION / HIGH TEMPERATURE - BARE RODS	NORTH AMERICA		EUROPE		AUSTRALIA
	AWS CLASS	AWS TYPE	DIN 8555	EN 14700	AS/NZS 2576
Stoodite 1	A5.21	ERCoCr-C	G/TIG 20-55-CGTZ	RCo3	4350-C1
Stoodite 6	A5.21	ERCoCr-A	G/TIG 20-40-CGTZ	RCo2	4240-C1
Stoodite 6H	A5.21	ERCoCr-A	G/TIG 20-40-CGTZ	RCo2	4240-C1
Stoodite 12	A5.21	ERCoCr-B	G/TIG 20-50-CGTZ	RCo3	4245-C1
Stoodite 21	A5.21	ERCoCr-E	G/TIG 20-350-CGTZ	RCo1	4130-C1
Stoody 50	A5.21	ERNiCr-B	G/TIG 20-50-CGTZ	RNi3	5250-C1
Stoody 60	A5.21	ERNiCr-C	G/TIG 20-60-CGTZ	RNi3	5260-C1

NICKEL BASED FLUX CORED WIRES

DEPOSITION RATES

Voltage: 25-26 volts
CTWD: 3/8-1/2" (9-12 mm)



TYPICAL APPLICATIONS

Stoody Nickel Based Flux Cored Wires are used predominantly in applications where solid wires and manual electrodes have been replaced, resulting in improved deposition rates and job efficiency:

- Welding of 9% nickel steel for LNG tanks
- Cladding of reactor vessels
- Joining nickel alloys
- Dissimilar metal welding
- Welding of high molybdenum austenitic stainless steels in scrubber fabrication

PACKAGING

Stoody Nickel Based Flux Cored wires are vacuum packaged and are available on 33 lb (15 kg) layer level wound wire spools.

TYPICAL WIRE COMPOSITIONS AND MECHANICAL PROPERTIES

Product Classification	82-T1	182-T1	A-T1	NiCrMo3-T1	C276-T1	622-T1
AWS A5.34/ A5.34M:2013 AWS Format	ENiCr3T1-1/-4	ENiCrFe3T1-1/-4	ENiCrFe2T1-1/-4	ENiCrMo3T1-1/-4	ENiCrMo4T1-1/-4	ENiCrMo10T1-1/-4
ISO Format	TNI 6082-11/-14	TNI 6182-11/-14	TNI 6133-11/-14	TNI 6625-11/-14	TNI 6276-11/-14	TNI 6022-11/-14
C	0.04	0.03	0.03	0.02	0.02	0.02
Mn	3.0	5.4	2.5	0.1	0.4	0.5
Si	0.4	0.3	0.3	0.1	0.2	0.2
Cr	19.0	16.0	15.0	21.0	15.4	21.3
Ni	Bal	Bal	Bal	Bal	Bal	Bal
Mo	--	--	1.9	8.5	15.6	13.8
Nb	2.5	2.0	1.9	3.3	--	--
W	--	--	--	--	3.8	3.1
Fe	1.7	7.5	1.5	0.3	5.2	5.0
Yield Strength, ksi (MPa)	58 (400)	58 (400)	51 (340)	68 (470)	68 (450)	70 (470)
Tensile Strength, ksi (MPa)	89 (615)	94 (650)	89.5 (595)	105 (725)	106 (705)	103 (685)
Elongation, (%)	26	35	45	38	42	27
Charpy Impact Energy at -320°F (-196°C),ft-lb (joules)	--	78 (109)	67 (92)	43 (59)	31 (42)	--
Part Number, 0.045" (1.2 mm)	11872700	11916200	11896500	12051400	11953700	11953800
Part Number, 1/16" (1.6 mm)	11872600	11916100	11896700	—	11964300	11965700

Other products available:

- ENiCrMo13-T1 for welding or cladding with Alloy 59.
- ENiCrMo14-T1 for welding or cladding with Inconel® Alloy 686.

STOODITE® (COBALT) - COMPARATIVE & TEST DATA

COMPARATIVE HOT HARDNESS, DPH (KG/MM²)*

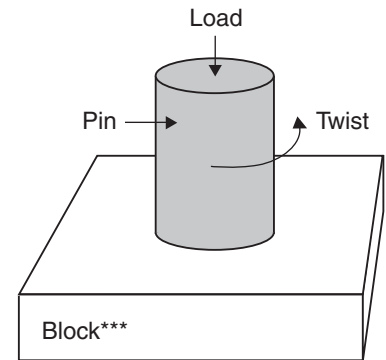
Alloy	DEPOSITION METHOD	RT.	TEST TEMPERATURE, DEGREE F (DEGREE C)			
			800 (427)	1000 (536)	1200 (649)	1400 (760)
STOODITE 1	Oxy Acetylene	620	475	440	380	260
	Gas Tungsten Arc	620	510	465	390	230
STOODITE 6	Oxy Acetylene	450	350	295	265	180
	Gas Tungsten Arc	390	300	275	260	185
STOODITE 12	Gas Tungsten Arc	435	345	325	285	245
STOODITE 21	Gas Tungsten Arc	285	130	135	140	110
Stoody 50	Gas Tungsten Arc	530	440	375	230	95
Stoody 60	Oxy Acetylene	680*	510	440	245	110
Stoody C	Gas Tungsten Arc	195	190	185	170	145

+ Tested in vacuum furnace hot-hardness unit, 1590 G load with 136 deg. sapphire indenter.
* Measured with Kentron unit 1590 g load with 136 deg. diamond indenter.

GALLING TEST DATA

Pin Material**	THRESHOLD GALLING STRESS* KSI (MPa) BLOCK MATERIAL			
	1020 STEEL	TYPE 316 STAINLESS	STOODITE 6	Stoody C
STOODITE 1	18 (124)	18 (124)	>72 (496)	-
STOODITE 6	36 (248)	18 (124)	>72 (496)	9 (62)
STOODITE 12	36 (248)	18 (124)	>72 (496)	-
STOODITE 21	18 (124)	18 (124)	>72 (496)	-
Stoody 50	18 (124)	9 (62)	36 (248)	18 (124)
Stoody 60	18 (124)	18 (124)	18 (124)	9 (62)
Stoody C	18 (124)	18 (124)	18 (124)	9 (62)

* Stress at which pin and block show visual signs of material transfer (galling) after one revolution of the pin.
** Pins machined from undiluted GTA weld metal.



***Blanchard ground surface.

COMPARATIVE AVERAGE ABRASIVE WEAR DATA*

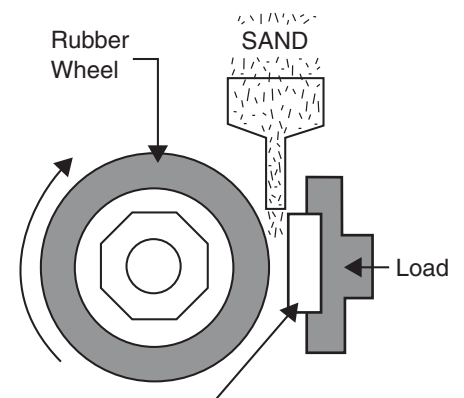
A combination of low wear coefficient and a high hardness is desirable for good wear resistance. Pin Material**	OXY ACETYLENE		GAS TUNGSTEN ARC	
	VOL. LOSS, MM ³	WEAR COEFFICIENT**	VOL. LOSS, MM ³	WEAR COEFFICIENT**
STOODITE 1	8	2.5 x 10 ⁻⁴	52	16.2 x 10 ⁻⁴
STOODITE 6	29	6.2 x 10 ⁻⁴	64	13.0 x 10 ⁻⁴
STOODITE 12	12	2.7 x 10 ⁻⁴	57	14.1 x 10 ⁻⁴
STOODITE 21	-	-	86	12.2 x 10 ⁻⁴
Stoody 50	18	5 x 10 ⁻⁴	12	3.0 x 10 ⁻⁴
Stoody 60	12	5 x 10 ⁻⁴	11	3.0 x 10 ⁻⁴
Stoody C	-	-	105	11.0 x 10 ⁻⁴

* Tested for 2000 revolutions at a load of 30 lb (13.6 kg) using a 9 inch (229 mm) diameter rubber wheel and dry sand.

** The wear coefficient (K) was calculated using the equation:

$$K = \frac{V}{P \cdot L \cdot h}$$

where V = Wear volume (mm³);
P = Load (kg);
L = Sliding distance (mm);
h = Diamond pyramid hardness



Wheel Test Specimen
(Forced against rotating wheel)

STOODITE® (COBALT) - COMPARATIVE & TEST DATA

COMPARATIVE CORROSION RESISTANCE DATA*

Corrosion resistance is an important parameter in some applications. Comparative data for corrosion resistance for both weak and strong acids is provided.

ALLOY	MEDIA	GAS TUNGSTEN ARC DEPOSITS				
		ACETIC ACID	FORMIC ACID	NITRIC ACID	PHOSPHORIC ACID	SULFURIC ACID
		30% BOILING	80% BOILING	65% 150°F (66°C)	50% 150°F (66°C)	5% 150°F (66°C)
STOODITE 1		G	-	S	E	E
STOODITE 6H		E	E	U	E	E
STOODITE 12		G	E	E	E	E
STOODITE 21		E	E	E	E	E
STOODY 50		U	S	U	-	U
STOODY 60		U	G	U	-	U
STOODY C		E	E	S	-	E

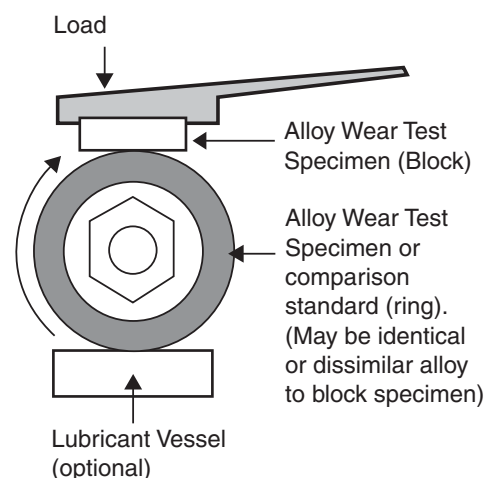
* Five-24 hour test periods. Determined in laboratory tests. It is recommended that samples be tested under actual plant conditions.

CODE: E - Less than 5 mpy (<0.13 mm/y)
G - 5 -20 mpy (0.13 - 0.51 mm/y)
S - 20 - 50 mpy (0.51 - 1.27 mm/y)
U - More than 50 mpy (>1.27 mm/y)

COMPARATIVE AVERAGE ADHESIVE WEAR DATA*

ALLOY	DEPOSITION METHOD	VOLUME LOSS, mm ³			
		90 lb (40.9 kg) Load	150 lb (68.2 kg) Load	210 lb (95.5 kg) Load	300 lb (136.3 kg) Load
STOODITE 1	Oxyacetylene	0.61	0.61	0.66	0.82
STOODITE 6	Oxyacetylene	1.03	2.57	9.54	18.8
STOODITE 6H	Gas Tungsten Arc	1.19	-	11.38	-
STOODITE 12	Oxyacetylene	0.9	2.39	-	18.4
STOODITE 21	Gas Tungsten Arc	2.5	5.2	10.3	14.5
STOODY 50	Gas Tungsten Arc	0.2	0.3	0.3	0.4
Stoody 60	Gas Tungsten Arc	0.11	0.15	0.18	0.27
Stoody C	Gas Tungsten Arc	0.3	0.4	2.3	-

* Average of two or more tests in air against a case-hardened SAE 4620 steel ring (Rockwell C-63). Ring rotated at 80 rpm. Total sliding distance - 2.2 x 10⁵ mm



STOODITE® (COBALT) - APPLICATION REFERENCE

METALS THAT CAN BE HARDFACED

ALLOY	EASILY
Low & Medium Carbon Steels (up to 0.40 % C)	Can be hardfaced by all welding processes with excellent results. Preheating and post-heating not generally required except with large masses of metal and where cracking must be avoided.
Higher Carbon Steels (0.40 % C and above)	Can be hardfaced by all welding processes. Preheating and post-heating advisable in many cases. Stress relief is highly beneficial. Parts heat-treated to high hardness should be annealed before hardfacing.
Low Alloy Steels	Can be hardfaced by all welding processes. Use same procedure as for straight carbon steels of similar carbon content. These steels have good strength and provide excellent support for hardfacing deposits.
Nickel	Oxyacetylene and tungsten inert gas arc processes preferred. Avoid overheating of base metal to prevent porosity and dilution of the weld deposit. The non-ferrous, hardfacing alloys are preferred in applications involving corrosion.
Monel®	Should be preheated before hardfacing (approximately 1200°F) and stress relieved afterward. Close control of heat input essential to prevent cracking.
Chrome Nickel Stainless Steels (Excluding free machining or titanium bearing grades)	Can be hardfaced by all welding processes. Oxyacetylene produces undiluted deposits. Reduce excess acetylene flame when corrosion resistance of base metal is an important factor.
Type 347 Stainless Steel	Can be hardfaced by all welding processes. Oxyacetylene produces undiluted deposits. Reduce excess acetylene flame when corrosion resistance of base metal is an important factor. Better suited for corrosion resistance than unstabilized types.
11-14 % Manganese Steel	Use arc welding only. Keep base metal cool by skip welding. Deposit short beads. Peening is highly beneficial with manganese steel electrodes.
ALLOY	WITH SOME DIFFICULTY
Cast Iron	Oxyacetylene - Preferred on small parts. Preheat, post heat and slow cool will minimize cracking tendencies. Lower melting hardfacing alloys like Stoody 50 and Stoody 60 will tend to show lower dilution.
Type 321 Stainless Steel	Inert gas arc process preferred. Oxyacetylene deposits tend to be porous. Avoid overheating base metals. Substitute type 347 is possible.
Straight Chrome Stainless Steel Type 400	Can be hardfaced by all welding processes. Careful attention to preheat and interpass temperature required. Special cooling procedure essential to obtain crack free deposits. Heat treated parts should be annealed before hardfacing.
Tool & Die Steels - Water Hardening Types W1, W2, W4; Oil Hardening Types O1, L2, L7; Air Hardening Types A2; Hot Work Types H11, H12, H13	Can be hardfaced by all welding processes. Heat treated parts should in most cases be annealed before hardfacing. Careful attention to preheat, interpass, and post heating temperatures are essential. Controlled cooling required. Stress relief is highly beneficial. Heat treatment of base metal after hardfacing is sometimes desirable.

STOODITE® (COBALT) - APPLICATION REFERENCE

PREHEATING METALS CHART

Preheating the part being fabricated may be necessary to prevent cracks in the base metal. The amount of preheat depends upon the carbon content and the alloy of the base metal. Higher carbon metals require higher preheat. The temperatures recommended in the chart are minimum for each base metal. Preheating the part being hardfaced may also be necessary to prevent cracks in the deposit.

METAL GROUP	CARBON CONTENT %	RECOMMENDED PREHEAT °F
Standard Carbon Steels	.10 - .30	200 - 300
	.30 - .45	300 - 500
	.45 - .80	500 - 800
Carbon Molybdenum Steels	.10 - .30	300 - 500
	.30 - .35	500 - 800
Manganese Steels (13xx) 12% Manganese	Up to .35	300 - 600
	.35 - .50	500 - 900
	1.25	Usually Not Required*
High Tensile Steels	Up to .20	200 - 500
	.20 - .40	500 - 700
Nickel Steels (2xxx Type)	.10 - .20	200 - 500
	.20 - .40	400 - 700
Medium Nickel - Chromium (3xxx Type)	Up to .30	400 - 700
	.30 - .50	700 - 1100
Molybdenum Bearing Chromium and Chromium Steels (4xxx Type)	Up to .20	400 - 600
	.20 - .40	600 - 900
Low Chromium (2%) Molybdenum Steels	Up to .15	400 - 700
	.15 - .25	500 - 800
Medium Chromium (5-8%) Molybdenum Steels	Up to .15	500 - 900
	.15 - .25	600 - 900
High Chromium Steels (4xx Type)	Up to .10	300 - 500
High Chromium Nickel Stainless Steels (3xx Type)	Up to .10	Usually Not Required. But May be Desirable to Remove Chill

* When welding outdoors in extremely cold weather, 11% - 13% manganese steel parts should be warmed to 100 - 200°F (38 - 93°C). Under normal conditions 11% - 13% manganese steel should not be preheated and welding temperatures over 500°F (260°C) should be avoided for prolonged periods.

STOODITE® (COBALT) - APPLICATION REFERENCE

GAS TUNGSTEN ARC WELDING (GTAW)

Gas tungsten arc deposition is particularly suitable for reactive substrate and produces clean deposits not excessively diluted with the substrate. The heat of the process is more localized than the oxyacetylene flame. It is a useful alternative to oxyacetylene depositing when large components or difficult base metals are involved. Some iron pick-up from the base metals occurs in the first layer but when the proper technique is adhered to there should be little softening or other reduction in properties.

DC electrode negative (straight polarity) is always used with the largest tungsten electrode possible to minimize tungsten contamination of the weld pool.

SHIELDED METAL ARC WELDING (SMAW)

Shielded metal arc deposition is another way to apply hardfacing weld deposits and uses coated electrodes. These electrodes make application quick and produce smooth, sound deposits. Weldability is excellent and electrodes can be applied either AC or DC; however, reverse polarity DC is preferred. The coating on the electrode transfers to the weld bead in the form of a tight slag sheath protecting the bead against atmospheric oxygen. Upon cooling, the slag coating will loosen and fall away from the bead.

RECOMMENDED CURRENT SETTINGS (SMAW)

DIAMETER - in (mm)	AMPERAGE	
	*DC MODE	AC MODE
1/8 (3.2)	85 - 110	90 - 120
5/32 (4.0)	120 - 150	135 - 160
3/16 (4.8)	150 - 175	160 - 180
1/4 (6.4)	200 - 250	220 - 270

* Reverse polarity, medium arc length

GAS METAL ARC WELDING (GMAW)

Gas metal arc welding provides the fastest welding process of the methods referenced herein. By the use of welding parameters, the dilution of the deposit can be kept at relatively low amounts. The deposits are similar to shielded metal arc deposits with higher deposition rates and much higher deposition efficiency.

MANUAL OXYACETYLENE WELDING (OFW)

Manual oxyacetylene deposition is a commonly used process. Anyone familiar with general welding practice should have no difficulty in learning to hardface. The technique is simple, although it is different from fusion welding. Only the surface of the base metal in the immediate being hardfaced is brought to the melting temperature. Then the hardfacing rod is melted and spread over the surface of the base metal. The melted rod should not mix with the base material but should bond with the surface to become a layer of new metal. This concept is critical since excessive penetration and dilution degrade the properties of both the deposit and the base metal.

The oxyacetylene process is preferred for small parts. Cracking can be minimized by using adequate preheat, post heat and slow cooling.

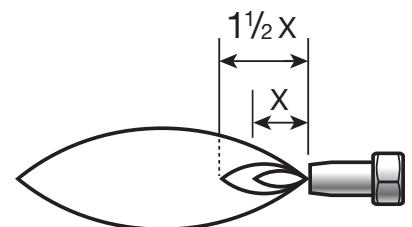
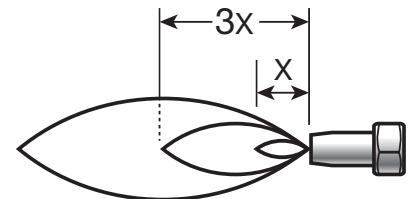
Flame adjustment is important in the oxyacetylene process. The pale core of the oxyacetylene flame is called the inner cone; the bluish burning area is the outer envelope of the flame.

When the oxygen-to-acetylene mixture has a one-to-one ratio, the flame adjustment is known as "neutral." When there is an excess of acetylene, there is a third zone between the inner cone and the outer envelope that has an intermediate whitish color. This zone is called the "excess acetylene" feather.

The amount of excess acetylene is expressed in terms of the length of the inner cone. If the total feather is twice as long as the cone, it is called a 2X flame. If the feather is three times as long as the inner cone, it is a 3X flame. A 3X flame is normally used for oxyacetylene surfacing when using cobalt-base rods.

RECOMMENDED FLAME (OFW)

ALLOY	FLAME
Stoodite 1	3X
Stoodite 6	3X
Stoodite 12	3X
Stoody 50	1X
Stoody 60	1½X



PART NUMBER INDEX

PRODUCT	PAGE NO.	PRODUCT	PAGE NO.	PRODUCT	PAGE NO.
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309L T-1 AP / BRILLIANT 309L T-1 AP	74	STOODY 100HC	43	STOODY A-T1	77
316L T-1 AP / BRILLIANT 316L T-1 AP	75	STOODY 100HD	46	STOODY C276-T1	77
60 TG	78	STOODY 100XHC	47	STOODY C	29
63 TG	78	STOODY 101AP	45	STOODY C-M	57
64 TG	78	STOODY 101HC	44	STOODY C-S	72
65 TG	78	STOODY 101HD	47	STOODY HB-56	54
85 TG	78	STOODY 101HT	45	STOODY HB-64	54
86 TG	78	STOODY 101HWP	47	STOODY HB-NoMag	54
87 TG	78	STOODY 102-G	36	STOODY HB-Ti	54
AC-DC BOROD®	23	STOODY 102-O	36	STOODY CP2000	49
AC-DC TUBE BORIUM®	23	STOODY 103CP	70	STOODY CP2000-S	70
ACETYLENE TUBE BORIUM	23	STOODY 105-G & 105-O	36	STOODY CP2001	50
BARE BOROD	23	STOODY 110 or 110MC	33	STOODY NiCrMo3-T1	77
BRILLIANT® 2209 T-1 AP	73	STOODY 1102	16	STOODY PC2009	46
BRILLIANT 2594 T-1 AP	73	STOODY 1105	16	STOODY PR2009	46
BRILLIANT 410NiMo T-1 AP	73	STOODY 111-O & 111-G	33	STOODY R-20 FLUX	58
BTS	20	STOODY 117	40	STOODY ROLL RITE FLUX	58
BUILD-UP	30	STOODY 120	33	STOODY SOS 307 MOD.	34
BUILD-UP AP-G	30	STOODY 121	41	STOODY TB-2954	24
BUILD-UP LH	12	STOODY 130	52	STOODY TB-20062	24
CASTWELD™ 55	15	STOODY 131	41	STOODY THERMASPRAY 140	76
CASTWELD 57	15	STOODY 133	41	STOODY THERMASPRAY 160	76
CASTWELD 99	15	STOODY 134	42	STOODY THERMASPRAY 1334	75
CASTWELD Ni 30-G	35	STOODY 135	42	STOODY TYPE S FLUX	58
CASTWELD Ni 30-O	35	STOODY 143	50	STOODY XHC	22
CASTWELD Ni 30-O/S	61	STOODY 143-S	70	SUPER 20	22
CASTWELD Ni 55-O/G	34	STOODY 145	51	SUPER BUILD-UP	36
CASTWELD Ni 55-O/S/G	61	STOODY 145-S	70	THERMACLAD® 102	63
CTS	21	STOODY 155FC	52	THERMACLAD 104	59
DYNAMANG	31	STOODY 160-E	25	THERMACLAD 104TJ	62
DYNAMANG-S	61	STOODY 160FC	53	THERMACLAD 105	62
FOUNDRY CO-MANG®	13	STOODY 160FS	53	THERMACLAD 105B	62
FOUNDRY CO-MANG-O	32	STOODY 166FS	53	THERMACLAD 107	62
HORSESHOE BORIUM®	24	STOODY 182-T1	76	THERMACLAD 410	67
HYDROLOY® 914	75	STOODY 19	18	THERMACLAD 412	64
M7-G	37	STOODY 21	19	THERMACLAD 417	64
NICROMANG®	12	STOODY 2110	14	THERMACLAD 42	64
NICROMANG PLUS	13	STOODY 2134	21	THERMACLAD 420	64
NICROMANG PLUS	31	STOODY 31	19	THERMACLAD 423	65
NICROMANG FROG	13	STOODY 33	18	THERMACLAD 423Co	65
NICROMANG FROG	31	STOODY 35	20	THERMACLAD 423H	66
POP TURNTABLE	58	STOODY 45	22	THERMACLAD 423L	66
RAIL END 932	17	STOODY 50	28	THERMACLAD 423N	66
RAIL END 932-O	37	STOODY 60	29	THERMACLAD 440	67
SA MANGANESE	32	STOODY 60-M	57	THERMACLAD 443	67
See TRACKWEAR		STOODY 600	40	THERMACLAD 445	67
SA/SUPER 20	48	STOODY 622-T1	77	THERMACLAD 446	60
SELF HARDENING (SHIP)	18	STOODY 6030-PLC	80	THERMACLAD 454	68
SOS 423	69	STOODY 6030-PLM	80	THERMACLAD 455	68
SOS 430	69	STOODY 6030-PLS	80	THERMACLAD 457	68
STOODCOR™ 136	45	STOODY 6040-PLC	80	THERMACLAD 4552	63
STOODITE® 1	27	STOODY 6040-PLM	80	THERMACLAD 460	68
STOODITE 1-M	56	STOODY 6040-PLS	80	THERMACLAD 630	69
STOODITE 12	27	STOODY 6050-PLC	81	THERMACLAD 8620	59
STOODITE 12-M	56	STOODY 6050-PLM	81	THERMACLAD MULTIPASS 1	60
STOODITE 12-S	71	STOODY 6050-PLS	81	THERMACLAD MULTIPASS 2	60
STOODITE® 21	28	STOODY 6051-PLC	81	THERMACLAD ROLL BUILD 3	59
STOODITE 21-M	57	STOODY 6051-PLM	81	TRACKWEAR® - coated	14
STOODITE 21-S	72	STOODY 6051-PLS	81	TRACKWEAR	32
STOODITE 21-T	55	STOODY 670	40	TUBE BORIUM® H	24
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STOODITE 6-M	55	STOODY 964-G	38, 43	VANCAR E	25
STOODITE 6-S	71	STOODY 964 AP-G	38, 42	VANCAR G	25
STOODITE 6-T	55	STOODY 965 AP-G	39	VERSALLOY® AP-G	34
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PACKAGING - DETAILS & ORDERING INFORMATION

BARE CAST RODS	WEIGHT	DEPTH	OUTER DIA. (O.D.)
Plastic Tube	5 lb (2.27 kg)	14-13/16" (37.6 cm)	1 -3/4" (4.5 cm)

MANUAL RODS & ELECTRODES	WEIGHT	BOX WIDTH	BOX HEIGHT	BOX DEPTH
Vacuum Package (Vac Pak) Box	5 lb (2.27 kg)	14-5/8" (37.2 cm)	4-7/16" (11.3 cm)	2-1/8" (5.4 cm)
Vacuum Package (Vac Pak) Box	10 lb (4.5 kg)	14-5/8" (37.2 cm)	4-7/16" (11.3 cm)	2-1/8" (5.4 cm)
Box - 14" (35.6 cm) Product	10 lb (4.5 kg)	15" (38.1 cm)	4-1/4" (10.8 cm)	2-1/16" (5.4 cm)
Box - 18" (45.7 cm) Product	10 lb (4.5 kg)	19-1/8" (48.6 cm)	4-5/16" (11.0 cm)	2-1/4" (5.7 cm)
Box - 28" (71.1 cm) Product	10 lb (4.5 kg)	29-1/4" (74.3 cm)	1-1/2" (3.8 cm)	4" (10.2 cm)
Carton - 14" (35.6 cm) Product	50 lb (22.7 kg)	15-13/16" (40.2 cm)	9-9/16" (24.3 cm)	6-13/16" (17.3 cm)
Carton - 18" (45.7 cm) Product	50 lb (22.7 kg)	19-7/8" (50.5 cm)	9-1/4" (23.5 cm)	7-1/4" (18.4 cm)
Bulk Package - 14" (35.6 cm) Product	60 lb (27.2 kg)	15-7/16" (39.2 cm)	6" (15.2 cm)	5-7/8" (14.9 cm)
Bulk Package - 18" (45.7 cm) Product	60 lb (27.2 kg)	18-3/4" (47.6 cm)	5-1/4" (13.3 cm)	5-1/4" (13.3 cm)
Bulk Package - 28" (71.1 cm) Product	60 lb (27.2 kg)	29-3/4" (75.6 cm)	4-1/4" (10.8 cm)	4-7/16" (11.3 cm)

WIRE - BOXED SPOOLS & WIRE BASKETS	PRODUCT WEIGHT	BOX WIDTH	BOX HEIGHT	BOX DEPTH	OUTER DIA. (O.D.)	INNER DIA. (I.D.)
Plastic Spool (PS) Box - Cardboard	5 lb (2.27 kg)	8-1/4" (21 cm)	8-1/2" (21.6 cm)	2-3/4" (7 cm)	7-7/8" (20 cm)	3-3/4" (9.5 cm)
Plastic Spool (PS) Box - Cardboard	10 lb (4.5 kg)	8-1/4" (21 cm)	8-1/2" (21.6 cm)	2-3/4" (7 cm)	7-7/8" (20 cm)	3-3/4" (9.5 cm)
Plastic Spool (PS) Box - Cardboard	25 lb (11.3 kg)	12-3/16" (31 cm)	13" (33 cm)	4-5/8" (11.8 cm)	11-3/4" (29.9 cm)	7-1/2" (19.1 cm)
Plastic Spool (PS) Box - Cardboard	33 lb (15 kg)	12-3/16" (31 cm)	13" (33 cm)	4-5/8" (11.8 cm)	11-3/4" (29.9 cm)	7-1/2" (19.1 cm)
Wire Basket (WB) Box - Cardboard	25 lb (4.5 kg)	12-3/16" (31 cm)	13" (33 cm)	4-5/8" (11.8 cm)	11-3/4" (29.9 cm)	7-1/2" (19.1 cm)
Wire Basket (WB) Box - Cardboard	33 lb (15 kg)	12-3/16" (31 cm)	13" (33 cm)	4-5/8" (11.8 cm)	11-3/4" (29.9 cm)	7-1/2" (19.1 cm)
Polypak (PP) Box - Cardboard	50 lb (22.7 kg)	16-7/8" (42.9 cm)	17-1/4" (43.8 cm)	4-5/8" (11.8 cm)	16-7/8" (42.9 cm)	12-1/2" (31.8 cm)
Coil (Cardboard Core) Box - Cardboard	60 lb (27.2 kg)	16-7/8" (42.9 cm)	17-1/4" (43.8 cm)	4-5/8" (11.8 cm)	16-1/2" (41.9 cm)	12" (30.5 cm)



33 lb. Wire Basket



50 lb. Polypak



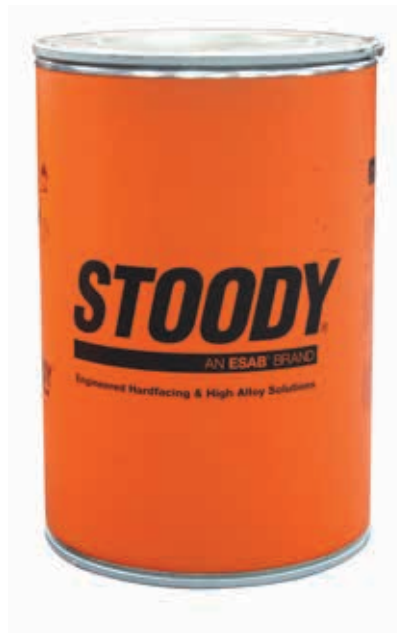
60 lb. Coil

PACKAGING - DETAILS & ORDERING INFORMATION

WIRE - DRUMS	WEIGHT	HEIGHT	OUTER DIA. (O.D.)
No Twist Pak (NTP)	Varies	32-1/4" (81.9 cm)	20 -7/8" (53 cm)
Quarter Pak (QP)	110 lb (50 kg)	15" (38.1 cm)	23 -7/8" (60.6 cm)
Half Pak (HP)	200 lb (90.7 kg)	15" (38.1 cm)	23 -7/8" (60.6 cm)
Payoff Pak (POP)	500 lb (226.8 kg)	31-1/2" (80 cm)	23 -7/8" (60.6 cm)
Payoff Pak (POP)	750 lb (340.2 kg)	35" (88.9 cm)	23 -7/8" (60.6 cm)



200 lb. Half Pak



750 lb. POP

PTA POWDER - BOXED BOTTLES	WEIGHT	BOX WIDTH	BOX HEIGHT	BOX DEPTH
Single Pack - Plastic Bottle Box - Cardboard	10 lb (4.5 kg)	3-1/4" (8.3 cm)	8-5/8" (21.9 cm)	3-1/4" (8.3 cm)
		3-5/8" (9.2 cm)	9-5/8" (24.5 cm)	3-1/2" (8.89 cm)
Standard Pack (4) - Plastic Bottles Box - Cardboard	40 lb (18.2 kg)	3-1/4" (8.3 cm)	8-5/8" (21.9 cm)	3-1/4" (8.3 cm)
		7-1/4" (18.4 cm)	9-1/2" (24.1 cm)	7-1/4" (18.4 cm)

Technical Ordering Data

AWS A5.01, "Welding Consumables – Procurement of Filler Metals and Fluxes", is recommended for customers ordering AWS materials. Chemical analysis and calculated ferrite for each lot of AWS materials are available without charge (Testing Schedule "H"). Testing Schedules I, J, or K, or other special requirements must be requested at the time the order is placed (including actual chemical analyses for non-AWS materials).

Test Charges - Call Customer Care for Current Pricing

- All Weld Metal Tensile Test with Radiography
- Fillet Weld Tests (per position and current type)
- Longitudinal Face Bend Test
- All Weld Metal Tensile Test with AWS Post Weld Heat Treatment and Radiography
- Charpy V Notch Impact Test

PACKAGING - DETAILS & WARNINGS

COATED ELECTRODE SIZE	COATED ELECTRODE LENGTH	STANDARD SHIPPING CONTAINER WEIGHT	UNITS IN STANDARD PACKAGING	UNIT CONTAINER
3/32" (2.4 mm)	9" (231 mm)	30 lb (13.6 kg)	6	5 lb (2.27 kg)
1/8" (3.2 mm), 5/32" (4.0 mm), 3/16" (4.8 mm), 1/4" (6.4 mm), 5/16" (7.9 mm)	14" (356 mm)	60 lb (27.2 kg)	6	10 lb (4.54 kg)

PALLET WEIGHTS FOR STOODY® PRODUCTS

ITEM	PALLET WEIGHT
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Manual Rods & Electrodes	
10 lb (4.5 kg) Vacuum Packages	1440 lb (653 kg)
10 lb (4.5 kg) Boxes	1440 lb (653 kg)
60 lb (27.2 kg) Bulk Packages	1800 lb (816 kg)

Note: Bare cast rods come in 5 lb (2.27 kg) tubes

Stainless Steel, Cobalt and Nickel Wires	
25 lb (11.3 kg) Spools	600 lb (272 kg)
33 lb (15 kg) Wire Baskets	792 lb (359 kg)
50 lb (22.7 kg) PP	1200 lb (544 kg)
60 lb (27.2 kg) Coils	1440 lb (653 kg)

Submerged Arc Wires	
33 lb (15 kg) Wire Baskets	792 lb (359 kg)
50 lb (22.7 kg) PP	1200 lb (544 kg)
60 lb (27.2 kg) Coils	1440 lb (653 kg)
500 lb (226.8 kg) POP	500 lb (227 kg)
110 lb (50 kg) QP	220 lb (100 kg)
200 lb (90.7 kg) HP	400 lb (181 kg)

PACKAGING

5 lb and 10 lb plastic spools measure 2" I.D. x 8" O.D.
25 lb and 33 lb wire baskets measure 2" I.D. x 12" O.D.
50 lb Polypaks and 60 lb coils have 12" I.D.

Packaging Abbreviations

HP = Half Pak (200 lb)	PP = Polypak
LLW = Level Layer Wound	PS = Plastic Spool
NTP = No Twist Pak	QP = Quarter Pak (110 lb)
POP = Payoff Pak (500 lb)	WB = Wire Basket

METRIC CONVERSION CHART

0.035" = 0.9 mm	7/64" = 2.8 mm
0.045" = 1.2 mm	1/8" = 3.2 mm
0.052" = 1.3 mm	5/32" = 4.0 mm
1/16" = 1.6 mm	3/16" = 4.8 mm
5/64" = 2.0 mm	1/4" = 6.4 mm
3/32" = 2.4 mm	5/16" = 8.0 mm
1 lb = 0.4536 kg	

WARNING Protect yourself and others. Before you use this product, read and understand this label, the appropriate Safety Data Sheet (SDS), the manufacturer's instructions and your employer's safety practices. The SDS is available upon request from your distributor, your employer.

HEAT RAYS (INFRARED RADIATION from flame or hot metal), from oxyfuel process can injure eyes. ELECTRIC SHOCK can kill. ARC RAYS can injure eyes and burn skin. FUMES AND GASES can be hazardous to your health.


- Keep your head out of fumes. The primary entry route for welding fumes and gases is by inhalation. Short-term over-exposure to welding fumes may result in fever, dizziness, nausea, or dryness or irritation of nose, throat or eyes and may aggravate pre-existing respiratory conditions. Long term

over-exposure to welding fumes may harm your respiratory function and pulmonary function and may lead to siderosis (iron deposits in the lungs). Manganese over-exposure may affect the central nervous system, resulting in impaired speech and movement. OSHA considers chromium and nickel compounds carcinogens.

- Use enough ventilation and exhaust at the arc (flame) to keep fumes and gases from your breathing zone and general area. If you are concerned about the ventilation of your work area, request that your employer conduct appropriate testing.
- Wear correct eye, ear, and body protection.
- Do not permit electrically live parts to touch skin, clothing or gloves. Insulate yourself from work and ground.
- IN CASE OF EMERGENCY:** Immediately call for medical aid. Employ first aid techniques recommended by the Red Cross.

- See American National Standard Z49.1 Safety In Welding, Cutting and Allied Processes, published by the American Welding Society, PO Box 351040, Miami, FL 33135; OSHA Safety and Health Standards. 29 CFR 1910, available from the US Government Printing Office, Washington, DC 20402.

THIS INFORMATION IS INTENDED FOR THE END USER OF THIS PRODUCT DO NOT REMOVE OR OBSTRUCT THIS INFORMATION



WARNING
Cancer and Reproductive Harm
www.P65Warnings.ca.gov
Wash hands after handling.





ESAB / esab.com



U.S. Customer Care: 800-426-1888
Canada Customer Care: 877-935-3226
International Customer Care: 940-381-1212



2102A / NA / English / 04-03-19 / Note: Specifications subject to change without notice. Products may vary from those pictured.