POSTALLOY®

POSTALLOY WELDING PRODUCTS

HARD SURFACING
BUILD-UP
TOOL STEEL
REPAIR

Postle Industries continues to grow and expand because of our dedicated staff, expanded research and manufacturing capabilities. We are continually developing new hardfacing products to conquer the causes of wear – abrasion, impact, erosion, friction, heat and cavitation. Whether you're extending the life of new OEM parts or rebuilding equipment already in service-we can help. Our expert engineering support and quality products will extend part life and lower your operating costs.

Our Goal

The goal of hardfacing technology is to improve productivity, reduce down time and reduce the cost of replacement parts by extending the service life of parts and equipment.

At Postle, we strive for product and technical leadership. In order to assure success time after time, we consistently focus our time and energy on providing welding products that are of the highest quality and welding know-how that is second to none. Every effort is made to provide welding alloys with maximum performance that are user friendly.

Postalloy Alloy Cored Wires

While we offer a wide variety of products for use with different welding processes, our hardfacing wires remain the focus of our business. They are characterized by high deposition rates, great out-of-position weldability, terrific welder appeal, low smoke volume and unsurpassed wear protection. We offer a full range of chemistries and sizes to meet any application. Our hardfacing wires are produced on state of the art equipment, ensuring consistent chemistries from the smallest size to the largest. Nothing is sacrificed - no short cuts are taken.

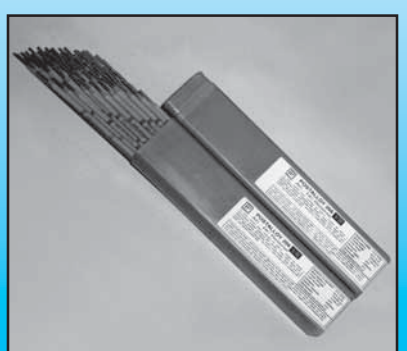
Postalloy Electrodes

Postle offers a complete line of Hard Surfacing and Repair Welding Electrodes. In addition to their excellent physical and wear resistant properties, they are unsurpassed for consistently smooth operation.

"We not only offer products that protect and extend the life of your equipment, We raise the bar on extended product protection and shelf-life."

Electrode Package

Resealable plastic box with patented moisture absorbing packet



Spool Package

Moisture proof wrapping directly on wire enclosed in a plastic bag

Drum Package

Tangle-free wire feeding insert

TABLE OF CONTENTS

General Website **www.postle.com**
Hardbanding **www.hardbandingsolutions.com**
Tungsten Carbide **www.tungstencarbidehardfacing.com**

POSTALLOY®

www.hardfacetechnologies.com

Complete Hardfacing Resource

TUNGSTEN CARBIDE

Weld hardfacing is a fast and easy method for applying tungsten carbide to parts and equipment exposed to wear.
For more information, visit www.tungstencarbidehardfacing.com

GENERAL HARDFACING

POSTALLOY 2832-SPL (open-arc)

A premium chromium carbide alloy that has a high volume fraction of carbides dispersed in a hard matrix. For applications involving high abrasion and mild or moderate impact. Deposits polish in service and are heat resistant up to 1000°F (531°C). Use on carbon and low alloy steels, manganese steels and cast iron.

TYPICAL APPLICATIONS:

Scraper blades, road ripper teeth, bucket sides and bottoms, auger flights, screw conveyors, mixer blades, slag handling equipment, bucket teeth, fan blades, tampers, coal feeder screws, pug mill paddles, grizzley bars, and chutes.

SPECIFICATIONS:

Wire Type: **2832-SPL** Metal-cored, open-arc. Deposits are slag-free

Weld Deposit Properties: Hardness: 58 - 62 Rc
Deposit Thickness: 2 layers Deposits cannot be flame cut
Deposit will check-crack to relieve stresses

Standard Sizes: **2832-SPL** .045", 1/16", 7/64"

For detailed product information, please request data sheet 2832S.
Alternate arc welding electrode – Postalloy 214 and 215HD

Auger overlayed with 2832-SPL

POSTALLOY 2820-SPL (open-arc)

A chromium carbide hardfacing alloy that produces a controlled microstructure of specially sized carbides in a very tough matrix. For applications involving high impact combined with abrasion. Weld metal is tougher than conventional chromium carbide alloys with fewer stress relieving check-cracks.

TYPICAL APPLICATIONS:

Most applications involve high impact and crushing, such as the final overlay on crusher jaws, cone and roll shells, hammer mill hammers, impact breaker bars and pulverizing hammers.

SPECIFICATION:

Wire Type: Metal-cored, open-arc. Deposits are slag-free

Weld Deposit Properties: Hardness: 47 - 52 Rc
Deposit Thickness: 2 - 4 layers
Deposits cannot be flame cut
Deposits will check crack to relieve stresses

Standard Sizes: .045", 1/16", 7/64"

For detailed product information, please request data sheet 2820S
Alternate arc welding electrode – Postalloy 214

Crusher Roll hardfaced with 2820-SPL after application of Postalloy 2865-FCO

POSTALLOY 2898-SPL (gas-shielded) and 2898-FCO (open-arc)

A general purpose , low chromium self-hardening hardfacing alloy. Best balanced chemisty of impact and abrasion resistance. Postalloy 2898 is very tough with excellent resistance to chipping and spalling. Deposits will retain their hardness and maintain a good cutting edge up to 1100°F(595°C). May be applied crack-free.

TYPICAL APPLICATIONS:

Hot-shear blades, forging dies, grippers dies as well as earth abrasion applications such as tillage tools, dozer blades, bucket teeth, augers.

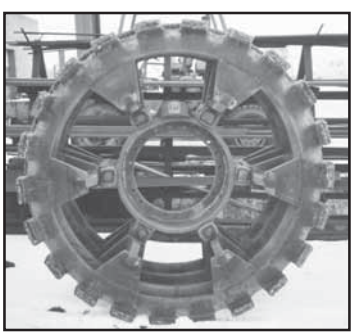
SPECIFICATIONS:

Wire Type: **2898-SPL** Metal-cored, Gas shielded. Deposits are slag-free
2898-FCO Flux-cored, Open arc. Deposits have thin slag

Weld Deposit Properties: Hardness: 55 - 59 Rc
Maximum Deposit Thickness: 2 - 3 layers
Deposits can be flame cut

Standard Sizes: **2898-SPL** .035", .045", 1/16"
2898-FCO .045", 1/16", 7/64"

For detailed product information, please request data sheet 2898FCO, 2898G, 2898S
Alternate arc welding electrode – Postalloy 21



	Hardness 2 layers	Surface cross checking	Number layers	Metal cored no slag	Flux cored	Slag	Open arc	Gas shielded	Flamecut	Compatible electrode
2820-SPL	47-52 Rc	yes	3 to 5	yes	no	none	yes	yes	no	NA
2898-FCO	56-59 Rc	none	multiple	no	yes	yes	yes	no	yes	21
2898-SPL	55-59 Rc	none	multiple	yes	no	none	no	yes	yes	21
2832-SPL	58-62 Rc	yes	1 to 2	yes	no	none	yes	yes	no	214

Brick and Clay
Crusher Plows
Disintegrator Bars
Hammer Mill Hammers
Muller Plows
Roll Crusher Teeth
Muller Tires
Tube Mill Components

Concrete and Cement
Cement Chutes
Centrifugal Pump Impeller
Centrifugal Pump Casings
Drag Chain Components
Pulverizer Mill Roll Heads

Construction and Earthmoving
Compactors
Road Ripper Teeth
Tampers
Trencher Teeth

Crushing-Screening-Grinding
Cage Crushers
Clinker Grinder Rolls
Pulverizer Mill Rolls and Rings
Sizing Screens
Final Overlay On:
Crusher Hammers
Crusher Jaws
Crusher Roll Shells
Gyratory Crusher Components
Hammermill Rotary Discs
Pulverizing Hammers
Rotary Impact Crusher Components

Dredging
Dredge Bucket Lips
Dredge Cutter Head and Teeth
Dredge Pump Impellers
Dredge Spud Points
Pipeline Wyes and Elbows
Retard Rings

Iron and Steel
Fan Blade Spiders
Grizzley Bars
Side Guards
Sinter Breakers
Skip Car Loader Hopper

Lumber and Paper
Chipper Discs
Chipper Machine Bed Plates
Hog Anvils
Hog Rotors
Hog Teeth
Paper Breaker Roll
Pump Beater Blades
Pump Casings
Pump Impellers

Mining
Drag Line Bucket Lips and Teeth
Dragline Scrapers
Duck Bills
Grizzley Bars
Ore Chute Arc Doors
Ore Chute Baffle Plates
Wheel Excavator Buckets and Teeth

Power Plants
Coal Pulverizer Rolls

MAXIMUM ABRASION RESISTANCE

POSTALLOY 299-SPL (open-arc)

POSTALLOY 299-SPL is an open-arc hardfacing overlay that utilizes a specially formulated tungsten carbide to produce a "highly feathered" microstructure that is unusually hard and more abrasion resistant than standard tungsten carbide hardfacing wires. Operates at lower than normal currents to minimize dilution, and help develop its high hardness and unique microstructure in the first layer. For extreme earth abrasion resistance with little or no impact.

SPECIFICATIONS:

Wire Type: Metal-cored, open-arc. Deposits are slag-free

Weld Deposit Properties: Hardness: Tungsten Carbide - 2300 HV
Deposit Thickness: 2 layers maximum
Deposits will readily relief check-crack

Standard Sizes: 1/16"

For detailed product information, please request data sheet 299S

CHROME FREE

POSTALLOY 2836-SPL (open-arc)

POSTALLOY 2836-SPL is a high hardness multi-carbide hardfacing alloy that resists severe abrasion, including high stress grinding, low stress scratching and gouging abrasion. It maintains its hardness and wear resistance up to 1400°F (760°C). The chemistry is highly tolerant of dilution. One layer will easily outwear two layers of ordinary chrome carbides and in some applications the wear is equal to tungsten carbide.

TYPICAL APPLICATIONS:

Blast furnace charging equipment, sinter plant parts, coke crusher segments, tong bits, slag ladles, ash fans, solid waste shredder parts, agricultural implements, cement mill parts, brick making equipment, cereal grinding equipment, conveyor screws, mixer paddles, wear bars and wear plates.

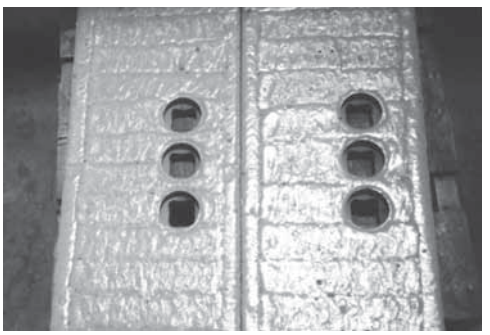
SPECIFICATIONS:

Wire Type: Metal-cored, open-arc. Deposits are slag-free.

Weld Deposit Properties: Hardness: 62–67 Rc
Deposit Thickness: 2 layers
Cannot be flame-cut
Deposits will check-crack to relieve stresses

Standard Sizes: .045", 1/16", 7/64"

For detailed product information please request data sheet 2836S.
Alternate arc welding electrode – Postalloy 218HD



Dozer end bits overlayed with 2836-SPL

POSTALLOY 2832-SPL (open-arc) and DURACHROME-G (gas-shielded)

A premium chromium carbide alloy that has a high volume fraction of carbides dispersed in a hard matrix. For applications involving high abrasion and mild or moderate impact. Deposits polish in service and are heat resistant up to 1000°F (531°C). Use on carbon and low alloy steels, manganese steels and cast iron.

TYPICAL APPLICATIONS:

Scraper blades, road ripper teeth, bucket sides and bottoms, auger flights, screw conveyors, mixer blades, slag handling equipment, bucket teeth, fan blades, tampers, coal feeder screws, pug mill paddles, grizzley bars, and chutes.

SPECIFICATIONS:

Wire Type: **2832-SPL** Metal-cored, open-arc. Deposits are slag-free
Dura Chrome-G Metal-cored, gas-shielded only. Deposits are slag-free

Weld Deposit Properties: Hardness: 58 - 62 Rc
Deposit Thickness: 2 layers
Deposits cannot be flame cut
Deposit will check-crack to relieve stresses

Standard Sizes: **2832-SPL** .045", 1/16", 7/64"
Dura Chrome-G .045", 1/16"

For detailed product information, please request data sheet 2832-SPL or DURACHROME G.
Alternate arc welding electrode – Postalloy 214 and 215HD

Auger overlayed with 2832-SPL

POSTALLOY 2834-SPL (open-arc)

A high chromium hardfacing alloy that produces a high volume fraction of wear resistant chromium carbides in a tough alloy matrix that is designed for high abrasion or abrasion combined with moderate impact.

TYPICAL APPLICATIONS:

Tampers, coal pulverizing hammers, grizzley bars, screw conveyors, bulldozer blades, dragline buckets, and teeth, road rippers, scraper blades, dredge bucket lips, dredge pump side plates, dredge cutter head & teeth, cement chutes, clamshell bucket lips, crusher jaws, crusher cones, gyratory crusher mantles.

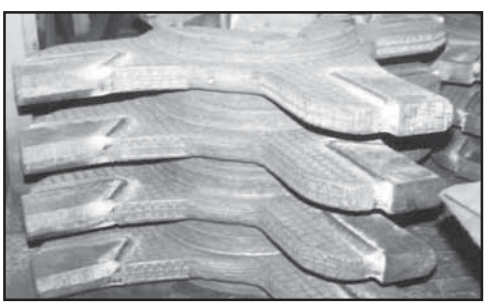
SPECIFICATION:

Wire Type: Metal-cored, open-arc. Deposits are slag-free

Weld Deposit Properties: Hardness: 55 - 60 Rc
Deposit Thickness: 2 to 3 layers
Deposits cannot be flame cut
Deposits will check-crack to relieve stresses

Standard Sizes: .045", 1/16", 7/64"

For detailed product information, please request data sheet 2834S.
Alternate arc welding electrode – Postalloy 214 and 215HD



Sinter Breaker overlayed with 2834-SPL

	Hardness 2 layers	Abrasion index	Impact index	Surface cross chceking	Number layers	Metal cored no slag	Slag	Open arc	Gas shielded	Flamecut	Compatible electrode
299-SPL	TungCarbide	10	3	yes	1	yes	none	yes	yes	no	219HD
2836-SPL	62-66 Rc	8	2	yes	2	yes	none	yes	yes	no	218HD
2832-SPL	58-62 Rc	6	3	yes	2	yes	none	yes	yes	no	214 or 215HD
DuraChrome-G	58-62 Rc	6	3	yes	2	yes	none	no	yes	no	
2834-SPL	55-60 Rc	5	4	yes	2 to 3	yes	none	yes	yes	no	214 or 215HD

Abrasion Index: 1-10;
10 most abrasion resistant;
1 least abrasion resistant.
Impact Index: 1-10;
10 most impact resistant;
1 least impact resistant.

MANGANESE HIGH IMPACT/BUILD-UP WIRES

These alloys are very tough and work-harden under impact. As they wear, the weld surface becomes hard, but underneath, it remains tough. Deposits have excellent impact resistance and do not chip or spall off. Abrasion resistance continually improves as the weld work-hardens. Multiple layers can be applied without cracking. For added abrasion resistance, products like Postalloy 2820, 2832, 2834, 2836 can be applied on top of these alloys.

POSTALLOY 285-SPL (gas-shielded)

Postalloy 285-SPL is a high alloy austenitic manganese steel welding wire for joining, build-up or hardfacing. Produces high-strength, crack resistant deposits that are tough, ductile and work-harden very rapidly. The high yield strength reduces mushrooming from impact. 285-SPL is a gas-shielded, metal-cored wire. **Smoke volume is very low compared to open-arc wires.**

TYPICAL APPLICATIONS:

- Build-up and overlay of railroad manganese crossovers and frogs.
- Build-up under more abrasion resistant alloys on crusher jaws, cone and roll shells, hammer mill hammers, pulverizing hammers, clam shell buckets lips, dragline and power shovel bucket lips and teeth, sizing screens, grizzley bars.

SPECIFICATIONS:

Wire Type: **285-SPL** Metal-cored, Gas-shielded. Weld deposits are slag-free.

Standard Sizes: **285-SPL** .045", 1/16"

For detailed product information, please request data sheet 285-SPL.
Alternative welding electrode - Postalloy 207

Weld Deposit Properties:

Tensile Strength:	135,000 psi
Yield Strength:	90,000 psi
Elongation:	30%
Hardness as deposited:	15 - 20 Rc
work-hardened:	50 - 55 Rc
Flame Cut:	Difficult
Machinability:	non-machinable
Surface Cross-Checking:	none
Magnetic:	no

POSTALLOY 2850-FCO (flux-cored, open-arc)

Work-hardening austenitic manganese steel flux-cored wire, alloyed with chromium and nickel to improve weld deposit properties. It is designed for build-up, hard-facing and fabricating of manganese steel. Deposits are very tough, and work-harden from impact quicker rapidly.

TYPICAL APPLICATIONS:

- Crusher jaws, roll shells, gyratory crusher mantels, hammer mill hammers and impact breaker bars, railroad track components.

SPECIFICATIONS:

Wire Type: Flux-cored, open-arc

Standard Sizes: .045", 1/16", 7/64"

For detailed product information, please request data sheet 2850FCO.
Alternate arc welding electrode – Postalloy 205

Weld Deposit Properties:

Tensile Strength:	120,000 psi
Yield Strength:	75,000 psi
Elongation:	45%
Hardness as deposited:	15 - 20 Rc
work-hardened:	50 - 55 Rc
Flame Cut:	yes
Machinability:	non-machinable
Surface Cross-Checking:	none
Magnetic:	no

POSTALLOY 2865-FCO (flux-cored open-arc)

Postalloy 2865-FCO is a flux-cored hardfacing wire that deposits fully austenitic chromium/maganese weld metal . It can be used equally well for joining and build-up/surfacing of carbon, low alloy and manganese steels. Weld deposits have an excellent combination of weld metal strength, ductility and hardness. Work-hardens rapidly under repeated impact. Deposits have very good frictional wear properties and are ideal for railroad applications requiring metal-to-metal wear resistance. Ideal as a cushioning or buffer layer on manganese steel parts that will be repeatedly rebuilt. Since it will not embrittle until 1000°F (538°C), it will act as an insulator to the manganese base metal in helping it keep below 500°F (260°C) during the welding operation.

TYPICAL APPLICATIONS:

- Fabricating manganese steels, manganese to mild or low alloy steels, other dissimilar combinations.
- Build-up and overlay of railroad crossovers and frogs. Gyratory crusher mantles, crusher rolls and jaws, cone and roll shells, hammer mill hammers, pulverizing hammers, dragline and power shovel bucket lips and teeth, sizing screens, grizzley bars, steel mill wobblers.

SPECIFICATIONS:

Wire Type: Flux-cored, Open-arc

Standard Sizes: .045", 1/16", 7/64"

For detailed product information please request data sheet 2865FCO
Alternate arc welding electrode — Postalloy 207

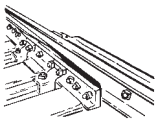
Weld Deposit Properties:

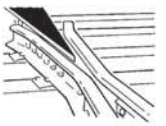
Tensile Strength:	122,000 psi
Yield Strength:	80,000 psi
Elongation:	40%
Hardness as deposited:	15 - 20 Rc
work-hardened:	50 - 55 Rc
Flame Cut:	no
Machinability:	non-machinable
Surface Cross-Checking:	none
Magnetic:	no

Use 285-SPL as a metal-cored, gas-shielded wire, when a slag-free deposit is required on manganese. Gas-shielded. Low smoke volume.

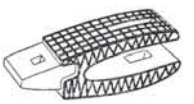
Use 2850-FCO for welding manganese. Weld deposits can be flame cut. Open arc.

Use 2865-FCO for welding on manganese steels, and carbon and low alloy steels. Weld Deposits cannot be flame cut. Open arc.


Switch Points


Frogs


Clamshell Bucket Lips


ManganeseTooth Adaptors


Manganese Shovel Boot Heels

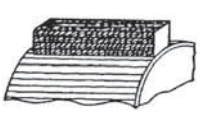

Manganese Track Pads


Crusher Mantle


Grizzley Bars


Cage Crusher


Crusher Hammer

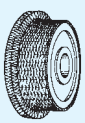

Rotors & Impeller Bars

HARDFACING ALLOY & MACHINABLE BUILD-UP WIRES

Good corrosion, abrasion and metal-to-metal wear resistance. Deposits polish in service to reduce friction and minimize wear of the mating surface. Will withstand high compressive loads. The higher the hardness the better the wear resistance. These alloys are machinable. Deposit thickness is unlimited with proper preheat, postheat and interpass temperature.

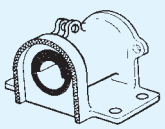
Applications include pins, journals, gears, shafts, sprockets, wheels, trunnions, cable sheaves, dredge parts, shovel and tractor components, trencher parts.

	hardness	deposit thickness	notes	machinability
Metal-cored, Gas Shielded - no slag to remove				
Sizes available .045" and 1/16"				
2891-SPL	21-25 Rc	unlimited		A
2892-SPL	34-39 Rc	unlimited		B
2893-SPL	40-45 Rc	unlimited		C
2896-SPL	45-48 Rc	unlimited	preheat may be required	D
2871-SPL	46-49 Rc	unlimited	preheat may be required	D
2826-SPL	56-59 Rc	unlimited	preheat required	E-grind
Flux-cored, Gas Shielded - easy releasing slag				
2235-FCG	33-38 Rc	unlimited		B
2742-FCG	38-43 Rc	unlimited	preheat may be required	C
2747-FCG	44-49 Rc	unlimited	preheat may be required	D
2755-FCG	53-57 Rc	unlimited	preheat may be required	E-grind
Solid wire, Gas Shielded - no slag to remove				
2435-SPL	33-38 Rc	unlimited	for bore welding applications	B



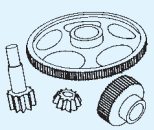
Mine Car Wheels

Top Carrier Roll



Ladder Roll Bearing Box

Drive Sprockets



Gears

Idlers

BUILD-UP/CUSHION WIRES

Many hardfacing alloys over 50 Rc have a limited deposit thickness or the number of layers that may be applied. If a greater thickness is required than what is recommended for the alloy, a build-up or cushion alloy should be used. Postle offers 3 different alloy wires for this purpose.

2850-FCO - A work-hardening austenitic manganese steel to be used as a build-up and cushion on manganese steel base materials. It produces a tough, high strength deposit that work-hardens under impact.

Open Arc
Hardness as deposited - 20 Rc
Work-Hardens up to 55 Rc
Sizes .045" (1.2mm) 1/16" (1.6mm) 7/64" (2.8mm)

2865-FCO - A work-hardening high chrome-manganese to be used as a buildup and cushion on manganese and low alloy steels. Good toughness and wear resistance. Deposits work-harden under impact.

Open Arc
Hardness as deposited - 20 Rc
Work-Hardens up to 55 Rc
Sizes 1/16" (1.6mm) 7/64" (2.8mm)

2892-FCO - A low alloy steel wire for build-up and cushioning mild and low alloy steels. The weld metal has good compressive strength.

Open Arc
Hardness as deposited - 30-35 Rc
Sizes .045" (1.2mm) 1/16" (1.6mm) 7/64" (2.8mm)

SEVERE ABRASION NON-CRACKING

POSTALLOY 2826-SPL

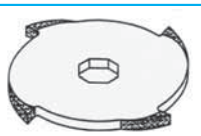
POSTALLOY 2826-SPL is a martensitic tool steel type alloy with numerous tightly packed carbides for excellent abrasion resistance under high impact. Deposits are smooth and free of any slag. One layer deposits exhibit wear characteristics that you would expect from chromium carbide hardfacing products. An excellent choice for severe wear applications requiring crack-free weld deposits.

Wire Type:
Metal-cored, gas-shielded
Deposits are slag-free

Weld Deposit Properties:
Average Hardness: 55-60 Rc
Maximum overlay: Unlimited with proper procedures
Non-machinable: Must be ground

Standard Sizes:
.045" (1.2mm), 1/16" (1.6mm)

CUTTING EDGES



Postalloy 2898-SPL deposits a tool steel chemistry in the hardness range of 55-60Rc. Offers a good combination of wear resistance, extreme compression and toughness. Maintains edge under moderate to severe cutting and shredding.

Wire Type:
Metal-Cored, Gas-Shielded

Weld Deposit Properties:
Hardness: 55 -60 Rc
Maximum overlay: 2 - 3 layers
Machinability: Must be Ground

Standard Sizes:
.045", 1/16"

For detailed product information please request data sheet for 2898S.

SuperEdge deposits a moly-tungsten high speed tool steel for severe cutting and shredding. Weld deposits contain microcarbides resulting in superior wear resistance, plus strength and hardness stability at elevated temperatures.

Wire Type:
Metal-Cored, Gas-Shielded

Weld Deposit Properties:
Hardness: 60 - 65 Rc
Good Hot Hardness up to 1150F
Maximum overlay: 2 - 3 layers
Machinability: Must be Ground

Standard Sizes:
.045", 1/16"

For detailed product information please request data sheet for SuperEdge.

POSTALLOY CF-27 - CHROME FREE (OPEN-ARC)

POSTALLOY CF-27 is chrome-free, high hardness, chromium-free hardfacing overlay designed for applications involving general abrasion or abrasion combined with mild impact.

CHROME FREE

Typical Applications:
Cultivator sweeps, bag packer screws, cement chutes, induced draft fan, feeder screws, brick augers, mixer paddles, bulldozer blades, grader blades, classifier flights, coal chutes, shovel buckets, undercutter bits, screw conveyors.

Wire Type:
Metal-cored, open-arc or gas shielded.
Deposits are slag-free

Weld Deposit Properties:
Hardness: 60-65Rc
Maximum Thickness: 2 layers
Deposits are non-machinable
Deposits will check-crack to relieve stresses

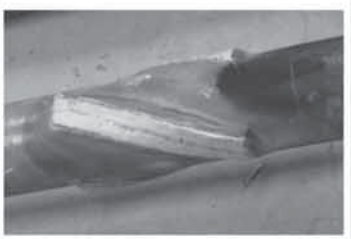
Standard Sizes:
.045", 1/16"

TUNGSTEN CARBIDE

Tungsten Carbide is one of the hardest and toughest of all carbides and weld hardfacing is a fast and easy method for applying tungsten carbide to parts and equipment exposed to wear. Its versatility and flexibility cannot be surpassed. Tungsten Carbide is an ideal material when confronting severe abrasion applications, and Postle offers a variety of products to insure success. Tungsten Carbide Hardfacing will reduce wear in the mining and processing of ores and minerals, agriculture, construction and mining ground engaging tools, drilling for oil and gas or horizontal directional drilling, tunneling, and recycling. The following are typical hardfaced applications with Tungsten Carbide.

Surfacing Mining	**Deep Mining**	**Mineral Processing**	**Construction/Earthmoving**	**Tunneling**
Bucket Wheel Excavator Teeth	Longwall Miners	Chutes	Ground Engaging Tools	Horizontal Directional Drilling Equipment
Shovel Teeth	Continuous Miners	Hammers	Cutting Edges	Wear Parts
Dragline Teeth	Feeder Breakers	Crushers	Dozer Blades	Augers
Dozer Link Pads	Cutter Drums	Screens	Grader Blades	
	Crushing Hammers	Screw Conveyors	Trencher Teeth	
Agriculture	**Recycling**	**Processing**	**Drilling**	
Sugar Mill Rolls	Tub Grinding Hammers	Mixing and Blending	Drill Bits	
Mill Hammers	Grinders	Screw Conveyors"	Stabilizers	
Subsoilers	Shredders	Paddles	Drill Collars	

Arc Welding

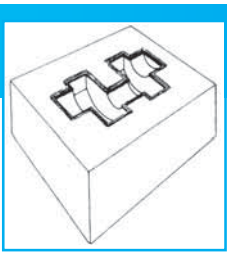
WIRE **Postalloy 299-SPL** is an open-arc hardfacing overlay that utilizes a specially formulated tungsten carbide to produce a "highly feathered" microstructure that is unusually hard and more abrasion resistant than standard tungsten carbide hardfacing wires. For extreme earth abrasion resistance with mild impact. Size Available: 1/16".	**Properties**: Hardness: Tungsten Carbide - 2400 HV Deposit Thickness 2 layers maximum	
WIRE **Postalloy PS-10** is a nickel base hardfacing wire designed to resist severe abrasion in combination with excellent corrosion resistance, frictional wear resistance, and high temperature resistance up to 1100ºF (565ºC). Weld deposit contains over 60% Fused Tungsten Carbide in a Nickel-Chrome-Silicon-Boron matrix. Resistance to abrasion, especially fine particle abrasion is outstanding. Sizes Available: 1/16".	**Properties**: Hardness: Tungsten Carbide - 2400 HV Deposit Thickness: 1 layer maximum	
ELECTRODE **Postalloy 219HD** is a special tubular hardfacing electrode. Weld deposits contain tungsten carbide in a chromium rich matrix for added wear and corrosion protection. Sizes Available:1/4" and 3/8".	**Properties:** Hardness: Matrix 55 – 60 Rc Tungsten Carbide 2400 HV 2 layers maximum	

Oxy-Acetylene

POWDER The Puddle Spray Process with **CP63070** tungsten carbide powder offers the ultimate in abrasion resistance for parts that were previously difficult to coat with conventional hard surfacing processes. May be applied to cast iron, carbon and low alloy steel, and stainless. Deposits can be ground to a knife edge without particle pullout. **CP63070** is a nickel base alloy powder saturated with super hard, cobalt-free tungsten carbide. Resistance to abrasion, even fine particle abrasion from sand, dust, cement or flyash is outstanding.	**Properties**: Hardness: Tungsten Carbide 2400 HV Deposit Thickness: 1 layer maximum Maximum build-up .060" (1.6 mm)	
SOLID ROD **Postalloy 14TC** - Designed for oxy-acetylene application. A nickel base alloy powder saturated with super hard, cobalt-free tungsten carbide. Resistance to corrosion and abrasion, even fine particle abrasion from sand, dust, cement or flyash is outstanding. Sizes Available – 1/8" and 3/16"	**Properties**: Hardness Matrix - 60Rc Tungsten Carbide 2400 HV	
TUBE ROD Postalloy Tungsten Carbide and Chromium Carbide bare tube rods are designed for oxyacetylene. They are a good choice if you need to apply a highly abrasive resistant, thin deposit with minimal weld dilution. Most alloys can be applied with minimal or no crosschecking. For product selection and individual data sheets, please consult our product application engineering group. Sizes Available – 1/8" through 3/16"	**Properties:** Refer to individual data sheets.	

WIRE For severe abrasion, the tungsten carbiding embedding process with **Postalloy PS-98** Tool Steel Matrix Hardfacing Wire offers the ultimate in wear protection and is economical to apply. It consists of a vibratory feeder and utilizes a standard semi-automatic MIG Gun that delivers metered tungsten carbide particles to a molten weld pool. The result is a weld deposit filled with tungsten carbide surrounded in a 58 Rc tool steel matrix.	**Properties:** Hardness: Tungsten Carbide - 2400 HV PS98 – 58 Rc Deposit Thickness: 1 layer maximum	

TOOL STEEL-FORGING DIE & METAL FORMING APPLICATIONS



These alloy wires are designed with a very efficient deep penetrating flux/slag system that pulls contaminants out of the molten weld metal and absorbs them into the slag. The resulting weld metal has a very low level of interstitial contaminants and ultra low level of macro contaminants. Weld metal deposited with these alloys provides very consistent mechanical properties that yield consistent, reproducible results.

Flood Welding Wires

Postalloy 2225-FCG - an iron base alloy that produces a tough, nickel/chrome/moly weld deposit for build-up and repairing cracked or fractured steels with up to 140,000 psi tensile strength. Preferred for use on forging hammer bases, columns, rams, sow blocks, die shanks and die holders.	Hardness as welded: Tensile Strength: Yield Strength: Elongation:	28-33 Rc 140,000 PSI 117,000 PSI 17%	Available Sizes: 1/16", 3/32",1/8" (1.6, 2.4, 3.2 mm)
Postalloy 2235-FCG - an iron base alloy that produces a wear resistant nickel/chrome/moly weld deposit. For weld repairing cracked or fractured steels with up to 180,000 psi tensile strength. Excellent choice for forging applications where welding of rams, sow blocks, die shanks, die holders, and filling in complete impressions, is required.	Hardness as welded: Tensile Strength: Yield Strength: Elongation:	33-38 Rc 180,000 PSI 148,000 PSI 15%	Available Sizes: 1/16", 3/32",1/8" (1.6, 2.4, 3.2 mm)

Hot-Working Tool Steel Wires

Postalloy 2742-FCG - An iron base low-carbon chrome/moly/tungsten hot-work tool steel used when machinability in the "as-welded" condition is required - very good thermal fatigue resistance. Excellent resistance to heat-checking when subjected to water quenching. Uses include the repair of spalled or heat-checked areas on hydraulic press and drop hammer forging dies; filling in complete impressions that are to be recut to dimensions; worn areas on rams and sow blocks.	Hardness: Wire type: Available Sizes:	38-43 Rc flux-cored, gas-shielded 1/16", 3/32", 1/8" (1.6, 2.4, 3.2 mm)
Postalloy 2747-FCG - A tough iron base chrome/nickel/moly hot-work tool steel alloy. Alloy chemistry is balanced to provide weld metal with maximum wear resistance while still being machinable. Deposits reach maximum hardness as deposited and can be tempered to a lower hardness if desired. Weld deposits are shock-resistant, and are highly resistant to heat-checking, oxidation and wear. Excellent choice for repair of deformed, broken, spalled or heat checked areas of hydraulic press and drop hammer forging dies. For filling medium deep impressions that are to be re-cut to dimensions.	Hardness: Wire type: Available Sizes:	44-49 Rc as-welded 44-47 Rc as tempered flux-cored, gas-shielded 1/16", 3/32", 1/8" (1.6, 2.4, 3.2 mm)
Postalloy 2755-FCG - An iron base chrome/moly/tungsten/vanadium hot-work tool steel that resists wear from shock, heat checking, scaling and erosion at high temperatures. Excellent edge retention under high compression loads. Uniform heat-treatment response and good dimensional stability. Use for repair and reclamation of upsetter, forging, and coining dies; trimmers, shear blades and punches and many other hot-working applications.	Hardness: Wire type: Available Sizes:	54-57 Rc flux-cored, gas-shielded 1/16", 3/32", 1/8" (1.6, 2.4, 3.2 mm)

High Alloy Hot-Working Alloys Wires

Postalloy 286-FCO - an iron base high chromium, nickel, moly alloy designed for applications involving high temperature wear, impact, metal-to-metal wear and thermal shock. Weld deposits work-harden in service and provide outstanding impact and wear resistance up to 1100°F(595°C), and are fully machinable. Applications include shear blades, tong bits, hot metal ladles, mill guides, hot-forming tools, extrusion dies.	Hardness: Wire Type: Available Sizes:	as deposited 15-20 Rc. work-hardens up to 45 Rc flux-cored, open-arc .045", 1/16"(1.2, 1.6 mm)
Postalloy 2521-SPL - the toughest of all cobalt alloys. Will resist deformation from severe impact at high temperatures - up to 1500°F(816°C). Weld deposits are machinable and exhibit superior resistance to heat-checking, spalling, and chipping and erosion in areas where heat tends to build-up. Applications include forging dies, hot trim dies, hot extrusion dies, hot shear blades, punches.	Hardness: Wire Type: Available Sizes:	as deposited 20-25 Rc. work-hardens up to 45 Rc metal-cored, gas shielded .045", 1/16"(1.2, 1.6 mm)
Postalloy 2808-FCG - a nickel base alloy with an excellent combination of toughness, resistance to thermal shock, frictional metal-to-metal wear and heat resistance. Machinable deposits are especially resistant to deformation from repeated impact at high temperatures - up to 1500°F(816°C). Weld deposits work-harden in service, providing good wear resistance and will not chip, crack or spall. Applications include overlaying forging dies and hot extrusion dies, trimmers and punches, ingot tong bits, hot metal handling equipment, hot shear blades, and blast-furnace bleeder valves.	Hardness: Wire Type: Available Sizes:	as deposited 15-20 Rc. work-hardens up to 45 Rc flux-cored, gas-shielded .045", 1/16"(1.2, 1.6 mm)

COBALT & NICKEL BASE HARD SURFACING ALLOYS
FLUX-CORED WIRES, BARE RODS, FLUX-COATED ELECTRODES

Cobalt Base Alloys

Postalloy 2501: Conforms to AWS CoCr-C. A high hardness cobalt base alloy with outstanding resistance to abrasion, oxidation, erosion and corrosion. Deposits are harder than 2506 and 2512, and is especially recommended for metal-to-metal wear. Deposits are highly resistant to galling, retain their high hardness at red heat, and recover full hardness after exposure to temperatures as high as 1500°F(816°C) The higher hardness also means a greater tendency to relief check upon cooling. Deposits are non-machinable. Uses include the overlay of extrusion screw conveyors, valve systems and bearings.	Hardness (2 layers) Bare Rods: 48 - 53 Rc Arc Welding: 48 - 53 Rc Available Forms **B** - Bare Solid Rods-1/8, 5/32, 3/16 **E** - Flux-Coated Electrodes – 1/8, 5/32, 3/16 **SPL** - Metal-Cored, Gas-Shielded Wire - .045, 1/16
Postalloy 2506: Conforms to AWS CoCr-A. Cobalt base alloy with excellent resistance to mechanical wear and corrosion over a wide temperature range. It retains an effective hardness even up to 1500°F(816°C). Offers outstanding self-mating, anti-galling properties and it is effective when abrasion is accompanied by thermal shock or impact. Deposits are machinable. Crack-free deposits can be made with proper preheat, postheat and interpass temperature. Uses include overlays on valves, hot shear blades, punches, chain-saw bars.	Hardness (2 layers) Bare Rods: 40 - 45 Rc Arc Welding: 40 - 45 Rc Available Forms **B** - Bare Solid Rods-.045, 1/16, 3/32, 1/8, 5/32, 3/16 **E** - Flux-Coated Electrodes – 1/8, 5/32, 3/16 **SPL** - Metal-Cored, Gas-Shielded Wire - .045, 1/16
Postalloy 2512: Conforms to AWS CoCr-B. Slightly harder and more wear resistant than 2506, but its impact resistance is somewhat lower. Also tougher to machine. Weld deposits also have a greater tendency to relief check if welding procedures are not closely monitored. Uses include overlays on screw conveyors and augers in the rubber and plastic industry, gas and diesel engine components, extrusion screws and various valves.	Hardness (2 layers) Bare Rods: 43 - 46 Rc Arc Welding: 43 - 46 Rc Available Forms **B** - Bare Solid Rods-.045, 1/16, 3/32, 1/8, 5/32, 3/16 **E** - Flux-Coated Electrodes – 1/8, 5/32, 3/16 **SPL** - Metal-Cored, Gas-Shielded Wire - .045, 1/16
Postalloy 2521: Cobalt base alloy offering good strength and toughness at elevated temperatures. It resists oxidizing and reducing atmospheres up to 2100°F(1149°C). Postalloy 2521 also provides excellent resistance to corrosive environments, and outstanding resistance to cavitation and thermal shock. Deposits have very little tendency to relief check and are fully machinable. Uses include overlays on hot extrusion and forging dies, trimmers, punches and hot shear blades, and components in molten zinc baths (galvanizing).	Hardness (2 layers) Bare Rods: as deposited 20 – 25 Rc work-hardens to 45 Rc Arc Welding: as deposited 20 – 25 Rc work-hardens to 45 Rc Available Forms **B** - Bare Solid Rods –1/8, 5/32, 3/16 **E** - Flux-Coated Electrodes – 1/8, 5/32, 3/16 **SPL** - Metal-Cored, Gas-Shielded Wire - .045, 1/16

Nickel – Chromium – Boron Alloys – Metal-Cored Wires

Weld deposits of these alloys consists of borides and chromium carbides in a nickel matrix for excellent resistance to low stress abrasion and metal-to-metal wear. The high nickel and chromium content gives these weld deposits good heat and corrosion resistance.

- Excellent sliding, metal-to-metal wear resistance with unusually good resistance to galling.
- Very good resistance to atmospheric, steam and salt water corrosion.
- Excellent heat resistance - deposits maintain their hot-hardness up to 1000°F(538°C).
- Deposits are non-sparking, non-heattreatable, and non-magnetic.

TYPICAL APPLICATIONS:
Shafts, sleeves, pump parts, impellers, bushings, gauges, guides, cams, rocker arms, screw flights, seal rings, splines, roll guides, lathe centers, conveyor guides.

POSTALLOY 2812-SPL - Deposits are fully machinable and crack-free.	Hardness - 35 to 40 Rc Wire type: metal-cored, gas-shielded (slag-free) Available Sizes: .045, 1/16
POSTALLOY 2813-SPL - Best for applications involving abrasion with moderate impact. Deposits are best finished by grinding and can be applied crack-free with proper preheat.	Hardness - 45 to 50 Rc Wire type: metal-cored, gas-shielded (slag-free) Available Sizes: .045, 1/16
POSTALLOY 2814-SPL - Best for severe wear and abrasion, and applications involving metal-to-metal wear. Deposits will relief-check.	Hardness - 55 to 60 Rc Wire type: metal-cored, gas-shielded (slag-free) Available Sizes: .045, 1/16

POSTALLOY 53-SPL SOLID WIRE

SOLID GMAW WELDING WIRE
BUILD-UP, OVERLAY & JOINING CAST IRON

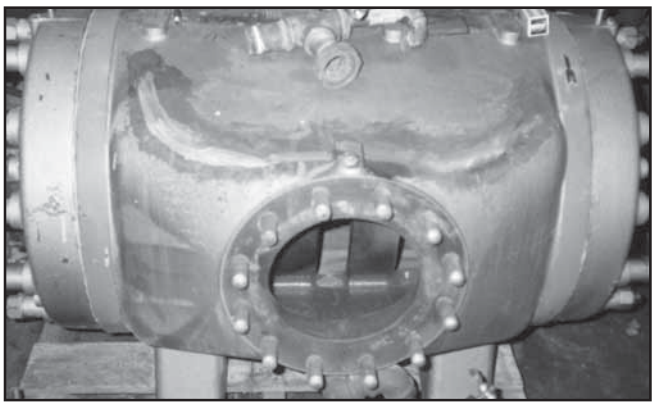
Postalloy 53-SPL is designed for joining and overlaying various types of cast iron, such as ductile, nodular, gray, and ni-resist. Also for welding cast iron and cast iron to steel or stainless steel.

The unique chemistry of **Postalloy 53-SPL** provides weld deposits that are fully machinable, Under normal circumstances, if dilution is kept to a minimum, there is no undercutting and weld deposits can be machined through the fusion zone, even with high speed steel tooling.

Tensile Strength: 60,000 psi
Hardness: 100 -150BHN

Standard Sizes: .045”

For detailed product information, please request data sheet 53S
Alternate arc welding electrode – Postalloy 51



FORMULAS FOR DETERMINING WEIGHT OF WELD METAL DEPOSITED

Squares and Rectangles	Length x Width x Depth x (.3) = Weight of Weld Deposit.
Cylinders	3.1416 x Diameter x Depth x (.3) = Weight of Weld deposit

Weight of Weld deposit - Flat Work.
To estimate total weight of deposit, multiply weight per square inch by the number of square inches to be overlayed. Factor in deposit efficiency of the process to estimate amount of welding alloy needed.

Thickness of Deposit	1/8	1/4	3/8	1/2	3/4
Pounds Per Square Inch	.038	.075	.113	.150	.225

To determine the amount of welding alloy required, multiply the above answer by the deposit efficiency of the welding process.

Stick Electrode	65 - 70%	Metal Core Wire	95 - 98%
Bare TIG	98%	Flux-Cored Wire	85 - 90%

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Complete Hardfacing Resource

REBUILDING FLAT COMPONENTS

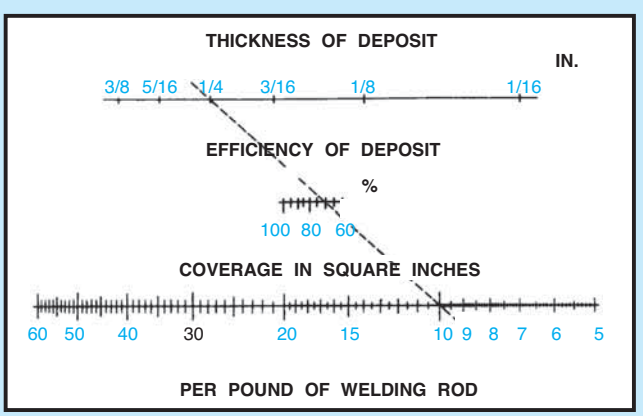
How to determine how many square inches one pound of filler metal will cover.

Place a straight edge on the thickness of deposit required and the efficiency of the process bring used - read the coverage in square inches per pound of welding consumable.

Example: A deposit of 1/4” is required on a 36” x 48” part (1728 in^2) using a stick electrode that is 70% efficient.

By using the monograph, you can determine that one pound of this welding electrode will cover 10 square inches with a 1/4” thick deposit.

The part to be hard surfaced is 1728 square inches, so 173 pounds of this welding electrode would be the minimum required.



JOINING CARBON and ALLOY STEELS

POSTALLOY 3044-FCG

WELDING LOW, MEDIUM & HIGH CARBON STEELS, LOW ALLOY STEELS AND WEAR PLATE OUTSTANDING WELDABILITY IN ALL POSITIONS

Postalloy 3044-FCG is a high strength, gas-shielded, flux-cored welding wire designed for "all position" welding of crack sensitive carbon and alloy steels, low alloy steels such as Jalloy, T-1, HY-90, SS-100, and 400, 500 and 600 brinell wear plate.

In addition to offering excellent physical properties, weld deposits of 3044-FCG are highly crack resistant and can be used on weld joints under high restraint. Very good low temperature notch toughness. For some applications, preheating can even be reduced or eliminated.

Tensile Strength: 106,000 psi
Yield Strength: 89,000 psi
Elongation: 23%
Charpy V Notch @ 0°F: 55 ft. lbs.

The Superior Benefits of 3044-FCG are:
Deposits are "X-Ray" quality
All-Position weldability
Use for single or multi-pass welding
Deposits can be flame cut
Welds are exceptionally smooth and spatter-free

Bucket fabricated with 3044-FCG.

Bucket prepped for repair welding with 3044-FCG.

TYPICAL APPLICATIONS:

Postalloy 3044-FCG should be used for fabricating structural shapes such as "I" and "H" beams, channels, plates and pipe. Ideal for fabricating wear plate. Excellent for use on construction and mining equipment such as dozer blades, buckets, crane and shovel booms. Also for truck and bus frames.

Standard Sizes: .045", 1/16" and 3/32"

For detailed product information, please request data sheet 3044G
Alternate arc welding electrode – Postalloy 305

POSTALLOY 30-FCG & 30-SPL

JOINING ALL STEELS INCLUDING CRACK SENSITIVE TYPES, POSTALLOY 30-FCG IS OUTSTANDING FOR WELDING IN ALL POSITIONS

POSTALLOY 30-FCG (flux-cored, gas-shielded) and **30-SPL** (solid) are high strength, ductile, crack resistant welding alloys specifically designed for welding problem steels such as low alloy, high carbon or crack sensitive tool steels. Ideal for welding dissimilar steels - low alloy, spring steels, carbon steels, tool steels.

EXCELLENT JOINING CHARACTERISTICS - With a combination of balanced alloy chemistry, high strength and crack resistance, the capability to weld dissimilar problem steels is outstanding.

CARBON HAS NO ADVERSE AFFECTS - Brittle, carbon rich areas, the cause of most problems associated with welding higher carbon steels, are eliminated when using this alloy.

ACTS AS A SHOCK ABSORBER DURING OPERATION - deposits do not respond to heat-treatment and remains ductile, it has the ability to withstand heavy impact or shock loading.

Tensile Strength: 120,000 psi
Elongation: 35%
Machinable with Carbide Tools
Deposits cannot be flame cut

Standard Sizes:

30-FCG .045"

30-SPL .035" and .045"

For detailed product information, please request data sheet 30G or 30S
Alternate arc welding electrode – Postalloy 30 or 301

POSTALLOY 306-FCO

MILD AND LOW ALLOY STEELS SELF-SHIELDED, OPEN-ARC WIRE

Postalloy 306-FCO is a medium carbon, high strength flux-cored open-arc wire designed for butt, fillet and lap welding of low carbon and low alloy steels. Recommended for single and multi-pass welding applications in all positions. Use on steel thicknesses from 16 gauge up to 3/4". When welding steels over 1/2" a preheat of 300°F(149°C) is recommended.

It is a versatile, easy to use welding wire with excellent operator appeal. Without the need for shielding gas, Postalloy 306-FCO is ideal for welding applications in which the addition of gas is impractical, or where windy and other adverse conditions prevail. It is not recommended for low temperature applications..

Tensile Strength: 100,000 psi.
Elongation: 22%
Smooth arc action and low spatter
Ideal for high deposition requirements.
Excellent out-of-position weldability.

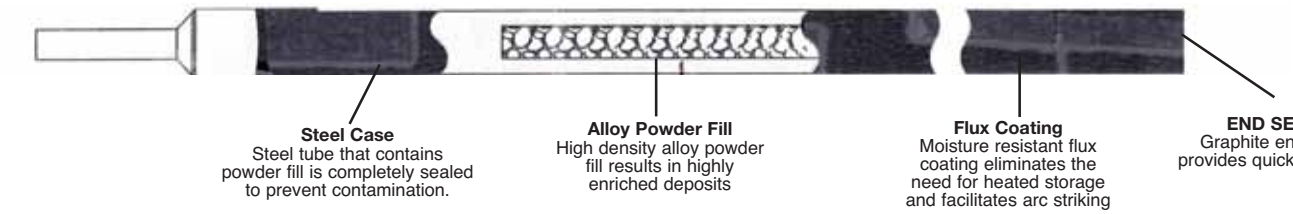
TYPICAL APPLICATIONS:

Postalloy 306-FCO should be used for fabricating structural shapes such as "I" and "H" beams, channels, plates and pipes. Installation of wear plates, maintenance of mining and construction equipment, fabrication of hoppers and tanks.

Standard Sizes: .045", 1/16"

For detailed product information, please request data sheet 306FCO

Postalloy High Deposition, All-Position Tubular Hardfacing Electrodes



Postalloy HD Tubular Welding Electrodes, available in 1/4" 3/8" and 1/2" diameter (6 mm. 8 mm, 12 mm), are a unique concept in hardface welding technology. They are designed for use with standard electrode holders. A very thin flux-coating emits extremely low smoke volume and provides a very stable arc over wide amperage settings. The 1/4" (6 mm) electrode may be used as low as 80 amps and easily used for vertical and overhead hardfacing applications. The 1/2" (12 mm) diameter electrode may be used up to 425 amps for covering large areas at high deposition rates. As a tubular electrode, they are filled with the highest percentage of carbide forming alloys to provide the best possible wear resistance. They offer:

- High deposition rates - up to 3 times faster than ordinary electrodes.
- Ease of use on either AC or DC welding equipment.
- High metal recovery - no slag to remove - over 90% efficient. Ordinary electrodes waste up to 40%.
- Easy vertical down welding with 1/4" (6 mm).
- Low amperage - less distortion and base metal dilution.
- Moisture resistant coating - even under severe weather or high humidity.

Postalloy 215HD - High Abrasion

Weld deposits contain extra high percentages of chromium carbides producing an overlay that is highly resistant to abrasion with mild or moderate impact. Weld deposits are smooth as deposited and take on a high polish to resist sliding particle abrasion. Hot hardness up to 1000°F (538°C). Use on carbon and alloy steels, manganese steel, stainless steel.

Hardness as deposited.....58-62 Rc
Deposit thickness.....2 - 3 passes
Relief checks readily to prevent stress build-up.
Cannot be flame cut.
Sizes: 1/4", 3/8", 1/2"
Also available as a semi-automatic wire-
POSTALLOY 2832-SPL or Durachrome-G.

Postalloy 217HD - Severe Abrasion

Postalloy 217HD is a modified Chromium Carbide tubular electrode alloyed with Niobium and Molybdenum. The microstructure has very fine carbides which improves wear, erosion and impact resistance over traditional Chromium Carbides. Weld overlays of 217HD offer excellent protection from severe abrasion with mild or moderate impact.

Hardness as deposited.....60-65 Rc
Deposit thickness.....1 - 2 passes
Relief checks readily to prevent stress build-up.
Cannot be flame cut.
Sizes: 1/4", 3/8", 1/2"

Postalloy 218HD - Severe Abrasion & High Heat

Postalloy 218HD produces a multi-carbide weld deposit, containing an inter-connected network of tungsten, chromium, vanadium, molybdenum and columbium carbides. Weld overlays of 218HD offer the best combination of protection from high stress grinding, low stress scratching and gouging abrasion, even at temperatures up to 1400°F(760°C). This alloy is dilution tolerant, providing a very high single pass hardness for maximum abrasion resistance in one layer.

Hardness as deposited.....63 - 66 Rc
Deposit thickness.....1 - 2 passes
Relief checks readily to prevent stress build-up.
Cannot be flame cut.
Sizes: 1/4", 3/8", 1/2"
Also available as a semi-automatic wire-**POSTALLOY 2836-SPL**

Postalloy High Deposition, All-Position Tubular Hardfacing Electrodes

Postalloy 219HD - Extreme Abrasion

When protection with tungsten carbide is needed, Postalloy 219HD is an ideal choice. Weld deposits contain tungsten carbide in a chromium rich matrix for added wear and corrosion protection.

Hardness .....64-68 Rc
Deposit thickness.....2 layers
Relief checks readily to prevent stress build-up.
Cannot be flame cut.
Sizes: 1/4", 3/8"
Also available as a semi-automatic wire-**POSTALLOY 299-SPL**

Postalloy 220HD - Extreme Abrasion

Postalloy 220HD is a proprietary blend of Tungsten Carbide with a small addition of Chromium Carbide. It produces a very smooth weld deposit with improved impact resistance over pure Tungsten Carbide. This unique blend of Tungsten Carbide in a Chromium rich matrix helps provide a high polish in service to reduce the coefficient of friction. Weld overlays of 220HD offer excellent protetion from severe abrasion with limited impact.

Hardness .....63-68 Rc
Deposit thickness.....2 - 3 passes
Relief checks readily to prevent stress build-up.
Cannot be flame cut.
Sizes: 1/4", 3/8"

FLUX-COATED ELECTRODES ABRASION & IMPACT RESISTANT

POSTALLOY 21

POSTALLOY 21 is a self-hardening martensitic alloy designed for general abrasion and impact. With the proper welding procedures (i.e. preheat, postheat), deposits will be crack-free. The alloy chemistry provides a sound weld deposit with excellent resistance to chipping and spalling.

Hardness as Deposited..... 56-60 Rc
Deposit Thickness .....2-3 passes
Deposits are non-machinable.

POSTALLOY 21 is designed for use on carbon and low alloy steels. It can be used out-of-position and it can be applied with all types of AC or DC equipment.

TYPICAL APPLICATIONS: Excavator parts, tamping tools, screw conveyors, elevator bucket lips, muller tires, mining, earthmoving and construction equipment - bucket lips and teeth, dozer and grader blades, grader end bits, post hole augers, wear areas on clamshell, dragline and shovel buckets.

SIZES:	1/8 (3.2mm),	5/32 (4.0mm),	3/16 (4.8mm)
AMPERAGES:	110-130,	130-160,	150-250

Also available as a semi-automatic wire -
POSTALLOY 2898-FCO or 2898-SPL

POSTALLOY 214

Postalloy 214 is a high chromium carbide hard face electrode for high abrasion and mild impact applications. Deposits take on a high polish producing excellent frictional and sliding abrasion resistance. Use on carbon and alloy steels, stainless steels, manganese steels and cast iron.

Heat and Corrosion Resistant - Corrosion resistance is equal to straight chromium stainless steels and it retains its hardness up to 1000°F (538°C).

Hardness .....up to 60 Rc
Deposit Thickness .....1/4" (6.4mm) or 2 or 3 layers
Relief checks readily to help prevent stress build-up.

POSTALLOY 214 offers good out-of-position characteristics on either AC or DC, on any type machine. Fast deposition rate and easy slag removal. It produces minimum dilution for high first pass hardness and deposits are extremely smooth - almost ripple-free.

TYPICAL APPLICATIONS:
Farm implements, asphalt and concrete mixer paddles, road ripper teeth, ditch digger teeth, conveyor screws, dredge pump impellers, dust fan blades, crushing and pulverizing tools, grader blades, muller tires, feed screws.

SIZES:	1/8 (3.2mm),	5/32 (4.0mm),	3/16 (4.8mm)
AMPERAGES:	90-130,	100-150,	140-190

Also available as a semi-automatic wire -
POSTALLOY DuraChrome-G, 2832-SPL, or **2834-SPL**

POSTALLOY 205

Ideal for use on manganese steel - Under severe impact, such as hammering or pounding, deposits quickly become tougher and harder, and will not spall or mushroom. Postalloy 205 may be used alone, as a combination build-up and hardfacing alloy or used as a build-up and cushion prior to overlaying with a more abrasion resistant overlay, such as 213, 214.

Tensile Strength .....125,000 psi
Yield Strength .....80,000 psi
Elongation 34%
Hardness as deposited.....15-22 Rc
Work-Hardens up to .....55 Rc
Deposit Thickness.....as required
Machinability .....poor
Weld deposits can be flamecut.

TYPICAL APPLICATIONS:
Coal crushing segments, dipper teeth and lips, pulverizing hammers, shovel tracks, crusher pads, guard rails, shovel idler wheels, shovel drive sprockets, bucket teeth, grizzly bars, gear teeth, railway frogs and switches.

SIZES: 1/8 (3.2mm), 5/32 (4.0mm), 3/16 (4.8mm)
AMPERAGES: 90-125, 120-150, 140-175

Also available as a semi-automatic wire - **POSTALLOY 2850-FCO.**

POSTALLOY 206HD

Postalloy 206HD is a high chromium, nickel, moly alloy electrode that produces deposits with excellent strength and elongation, combined with a high degree of toughness. Weld deposits work-harden in service and provide outstanding impact resistance. The austenitic structure of the weld deposit allows it to be used for joining, as well as a cushion layer prior to hardfacing with a harder, more wear resistant alloy. Weld deposits are machinable and corrosion resistant.

Use on carbon and alloy steels, stainless and manganese steels and joining dissimilar combinations.

Tensile Strength .....100,000 psi
Yield Strength.....78,000 psi
Elongation 25%
Hardness as deposited.....100-150Rb
work hardened.....30-35 Rc
Deposits cannot be flame-cut.
Deposits are machinable.

TYPICAL APPLICATIONS:
Rebuild undercarriage components, sprockets, gear teeth, sheaves, impactors, weld in wear plate, cushion layer for hardfacing alloys.

SIZES: 1/8 (3.2mm), 5/32 (4.0mm), 3/16 (4.8mm)
AMPERAGES: 90-135, 125-160, 150-200

Also available as a semi-automatic wire - **POSTALLOY 2866-FCO**.

Postalloy 207

POSTALLOY 207 is a high alloy, work-hardening austenitic manganese steel electrode. It can be used equally well for joining and build-up/surfacing of carbon, low alloy and manganese steels.

Weld deposits made with POSTALLOY 207 contain chromium, nickel and manganese, providing an excellent combination of weld metal strength and ductility. Work-hardens rapidly under repeated impact. The yield strength is higher than ordinary manganese alloys providing excellent resistance to mushrooming when subjected to compression loads and repeated impact.

Postalloy 207 is an excellent heat insulator and is ideal for use as a cushioning or buffer layer on manganese steel parts that must be rebuilt on a repetitive basis. It will act as an insulator to the manganese base metal in helping it keep below 500°F (260°C) during the welding operation.

Tensile Strength .....130,000 psi
Yield Strength.....95,000 psi
Elongation 35%
Hardness as deposited 20Rc
Work Hardened 50-55Rc
Machinability.....Poor
Deposits cannot flame cut.

SUGGESTED USES:
Fabricating manganese steels, manganese to mild or low alloy steels, other dissimilar combinations. Build-up of railroad crossovers and frogs, hammer mill hammers, pulverizing hammers, dragline and power shovel bucket lips and teeth, sizing screens, grizzly bars, steel mill wobblers.

SIZES: 1/8 (3.2mm), 5.32 (4.0mm), 3/16 (4.8mm)
AMPERAGES: 110-135, 125-190, 150-250

Also available as a semi-automatic wire - **POSTALLOY 2865-FCO**

POSTALLOY 27

POSTALLOY 27 is a heat treatable build-up electrode in the machinable range of hardness providing wear resistance that is far superior to low and medium carbon steels and low alloy steels.

- Deposits are fully machinable.
- Deposits are extremely tough and have a high resistance to impact and deformation.
- Deposits are not subject to spalling or roll-over.
- Deposits are dense, crack-free, and porosity-free.

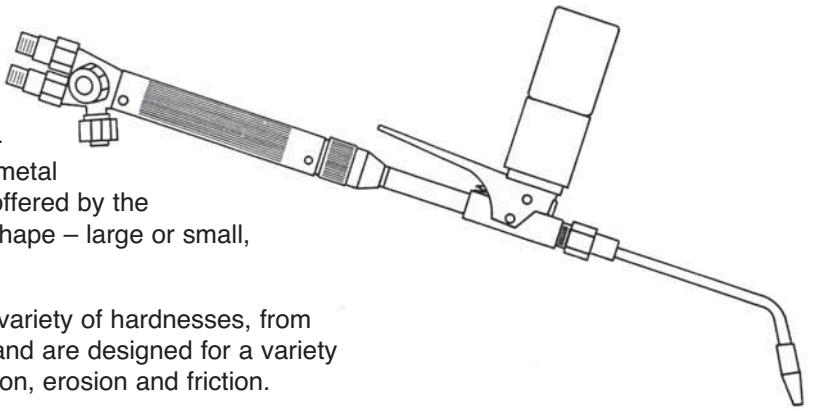
Hardness .....Up to 31 Rc
Impact Resistance.....Excellent
Compressive Strength.....High
Deposit Thickness as required.
Can Be Flame Cut.

TYPICAL APPLICATIONS:
Rebuilding badly worn machine parts back to original dimensions. Build-up of parts prior to overlaying with a wear resistant overlay. Tractor rollers, rails, idlers, gear teeth, roll ends, shafts, wobblers, brake drums, sprockets, trunnions, dredge pump casings, wheels.

SIZES: 1/8 (3.2mm), 5/32 (4.0mm), 3/16 (4.8mm)
AMPERAGES: 90-120, 120-160, 170-225

Also available as a semi-automatic wire -
POSTALLOY 2892-FCO or 2892-SPL.

Puddle-Spray Build-up and Hardfacing System



The Puddle-Spray process is a precision metal build-up and hardfacing system. It uses specially blended powder metal alloys, which are fed through a modified oxy-acetylene torch, and deposited on a heated metal surface. The unusual control and versatility offered by the process allows it to be used on almost any shape – large or small, thick or thin, contoured or complex.

The Puddle-Spray Powder Alloys come in a variety of hardnesses, from as soft as cast iron to as hard as tool steel, and are designed for a variety of wear problems – impact, abrasion, corrosion, erosion and friction.

Postalloy Puddle-Spray Powder	Characteristics	Applications
Puddle-Spray 215 Hardness 15-22 Rc	A very soft nickel base alloy used primarily for build-up, filling or sealing. Deposits are easily machined with all standard tools, and may be drilled, tapped, turned or milled. They are tough and resistant to cracking and cross-checking on contoured surfaces. Unlimited build-up capability.	**JOINING AND OVERLAYING** Castings, Machine parts, Sheetmetal, Tubing, Machine errors,Thread repairs, Exhaust manifolds, Mould surfaces, Foundry patterns
Puddle-Spray 22 Hardness 25-30 Rc	A modified version of Puddle-Spray 215. Slightly harder and more wear resistant. Deposits offer very good resistance to metal-to-metal frictional wear, impact and corrosion. Unlimited build-up capability.	**JOINING AND OVERLAYING** Moulds, Shafts, Bearing surfaces, Bushings, Splines, Gear teeth, Levers
Puddle-Spray 235 Hardness 32-38 Rc	A tough, wear-resistant, overlay still offering machinability coefficient of friction makes it ideal for long-lasting bearing applications. Good for impact applications and heat resistance. Unlimited build-up capability. **Hot Hardness Data** 600°F (316°C) 35 Rc 1000°F (538°C) 29 Rc 800°F (427°C) 33 Rc 1200°F (649°C) 25 Rc	**WEAR RESISTANCE** Shafts, Roller cams, Arbors, Collets, Drill tangs, Draw dies, Conveyor guides
Puddle-Spray 26 Hardness 57-63 Rc	Excellent abrasion resistance. Excellent heat resistance. Excellent frictional wear resistance. Very smooth, thin, hard overlays. Extremely good resistance to corrosion and oxidation. Deposits must be ground. **Hot Hardness Data** 600°F (316°C) 57 Rc 1000°F (538°C) 49 Rc 800°F (427°C) 54 Rc 1200°F (649°C) 44 Rc	**WEAR RESISTANCE** Funnels, Cams, Guides, Dies, Gauges, Lathe centers, Knife edges, Seal rings, Fan blades, Cutting edges, Solenoid valves, Roll guides
Puddle-Spray 63070 Hardness Matrix - 60 Carbide - 89	Combination of matrix material at 60 Rc and tungsten carbide provides the finest abrasion resistance available. High hardness is maintained under the severest of conditions, even high temperatures.	**WEAR RESISTANCE** Plows, Feeder screws, Augers, Tool tips, Mixer blades and paddles, Dies, Drilling tools, Wire block guides, Spools

POSTALLOY®

Special Alloy and Repair Electrodes

Postalloy Super 35 AC-DC REVERSE	**Superior "general purpose" mild steel welding electrode.** Outstanding weldability. Welds in all positions. May be used on rusty, contaminated steels, thin sheet metal and heavy sections and galvanized. Moisture resistant flux-coating. **Tensile Strength:** 80,000 psi **Sizes:** 3/32, 1/8, 5/32
Postalloy 301 AC-DC REVERSE	**Crack resistant electrode for joining all steels with easy weldability.** For difficult to weld "problem steels" of unknown chemistry. For tool steels, spring steels, and alloy steels. Ideal for dissimilar combinations. Withstands shock, impact, vibration, heat and corrosion. **Tensile Strength:** 120,000 psi Also available as a semi-automatic wire - **30-FCG** or **30-SPL** **Sizes:** 3/32, 1/8, 5/32 Also available for TIG Welding - **TIGWELD 30-B**
Postalloy 305 AC-DC REVERSE	**Crack resistant electrode for joining carbon and low alloy steels.** Superior weldability in all positions. Ideal for joints under restraint. Excellent strength and crack resistance at sub-zero temperatures. **Tensile Strength:** 105,000 psi **Sizes:** 1/8, 5/32, 3/16 Also available as a semi-automatic wire - **3044-FCG**
Postalloy 344 AC-DC REV. or STR.	Outstanding high strength mild steel electrode. Very easy out-of-position welding and welding on dirty, contaminated steels. Weld heavy gauge steel, as well as thin sections and galvanized. Moisture resistance coating. **Tensile Strength:** 84,000 psi **Sizes:** 3/32, 1/8, 5/32
Postalloy 40 DC REVERSE	**High strength electrode** for welding aluminum and aluminum alloys. Easy weldability and fast deposition. Bead appearance is good - spatter-free and porosity free. Applications include tanks, pipes, casting salvage, framework, truck bodies. **Tensile Strength:** 34,000 psi **Sizes:** 3/32, 1/8 Recommended for TIG welding - **42-B**
Postalloy 505 AC-DC REVERSE	**Outstanding weldability.** For all cast irons and cast iron to steel or stainless. Maximum strength, ductility, and crack resistance. Excellent for use on dirty, oil-soaked castings. Ideal for heavy sections and dissimilar thickness, and joints under restraint. Maybe used out-of-position. Machinable. **Tensile Strength:** 75,000 psi **Sizes:** 3/32, 1/8, 5/32
Postalloy 515 AC-DC REVERSE	**Best for machinability and welding thin sections.** Excellent weldability. For all types of cast iron or cast iron to steel. Excellent crack resistance. All position. **Tensile Strength:** 55,000 psi **Sizes:** 3/32, 1/8, 5/32 Recommended for TIG welding - **53-B** Also available as a semi-automatic wire - **53-SPL**
Postalloy 250 AC-DC STRAIGHT	**Gouging and grooving all metals** including cast iron, aluminum and stainless steel. Ideal for removal of old welds or veeing out cracks prior to repair. Use with standard electrode holder. **Sizes:** 1/8, 5/32
Postalloy 94 DC REVERSE	**Superior Bronze electrode for joining and overlaying.** May be used on a wide range of base metals including stainless steel, cast iron, copper alloys, bronze and tool steel. Very tough, high strength, corrosion resistant deposits that work-harden in service. For use on ship propellers, bearing surfaces, impellers, cams, clutch fingers. Deposited Hardness: 150 BHN Work Hardened: Up to 225 BHN **Tensile Strength:** 100,000 psi Recommended for TIG welding - **94-B** **Sizes:** 1/8 Also available as a semi-automatic wire - **94-SPL**
Postalloy 950 DC REVERSE	**Bronze electrode for joining** copper, brass, bronze, steel and cast iron. Easy weldability. Machinable. **Tensile Strength:** 60,000 psi **Sizes:** 1/8

GUIDELINES FOR APPLYING

Cushion Layers Buffer Layers

Hard surfacing alloys are usually much harder and of a much higher alloy content than the base metal. The cushion or buffer layer provides a transition between the softer parent metal and the hard overlay.

The cushion layer has several purposes

1. Most hard surfacing alloys are limited to two or three layers, some only one. Therefore, some applications require that an intermediate layer be used to build up the part close to finish dimensions prior to depositing a harder, more abrasion resistant alloy.
2. When hard materials are used on soft base metals, such as mild steel, there is a tendency for the hardfacing layer to “sink” into the soft base metal under high load conditions. This may result in spalling of the hardfacing alloy. An intermediate buffer layer will help to prevent this from happening.
3. Hard surfacing alloys check-crack throughout the deposit. The buffer layer helps to prevent these cracks from propagating into the parent metal.
4. If the surface conditions involve thermal cycling, large thermal property differences between the parent metal and the overlay can lead to fatigue problems and spalling. The deposition of a buffer layer provides a very effective transition between the weld and the overlay.
5. **Never use 7018** as a cushion or build-up. It does not have the hardness and strength for hardfacing applications.

Alloys in this category are used on many different parts and components

Base metal	wire	electrode
Manganese	2850-FCO	205
	2865-FCO	207
Low Alloy and Carbon Steel	2865-FCO	207
	2892-SPL	27
	2892-FCO	

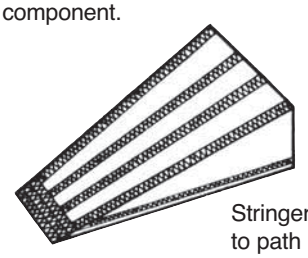
MetalTec™

“When wear or abrasion cannot be resolved with hardfacing...use MetalTec coatings”

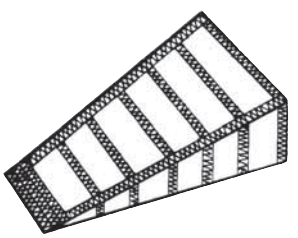
MetalTec composite high performance coatings are formulated to produce maximum physical properties while minimizing wear due to: abrasion, corrosion, friction, erosion and cavitation. This wear results in financial losses due to downtime and equipment parts replacement. Let us show you how to minimize wear problems by helping you select the best MetalTec product for your specific needs.

Hardfacing Patterns

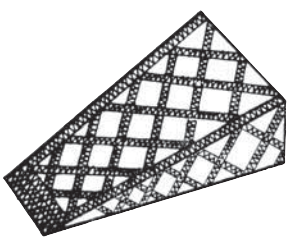
Selection of the proper hardfacing alloy and preparation of the workpiece are not enough to maximize the service life of a part. The pattern used to make the overlay must also be considered, as it too, will have a bearing on how long the part will last. There are times when putting less hardfacing on a surface is better than covering the entire surface. There are a number of ways that stringer bead patterns are used depending on the service conditions of the component.



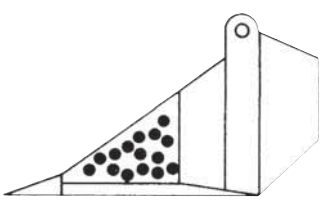
Stringer beads parallel to path of rocky material



Stringer beads at right angles to path of fine sandy material



Stringer beads in checker or waffle pattern for mixed conditions or wear fine material might easily pack



Dot Pattern for less critical areas

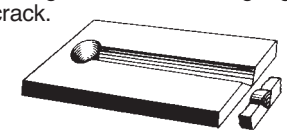
GUIDELINES FOR APPLYING HARDFACING ALLOYS

Preparation of the surface

A. Remove rust, dirt, grease, oil and other contaminants from the surfaces to be welded.

B. A sound base is required, and this may necessitate removing fatigued or rolled-over metal, high ridges or other major surface irregularities. This may be done by gouging (Postalloy 250), grinding or machining.

C. Cracks in the base metal should be arc gouged or ground out and repaired using compatible electrodes. If cracks are through the base metal make sure the end of the crack is removed by drilling or cutting at the end before gouging out the crack.



Crack repair using a "V" groove

D. Previous hardfacing should be removed if:
- The type used is unknown
- The type used is incompatible with the new deposit
- Deposits are porous
- Deposits are badly cracked and deformed

E. If the surface is severely work-hardened, about 1/8" (3mm) of work hardened surface should be removed before hardfacing or build-up of a worn area. Failure to do so might result in weld bead spalling.

Arc gouging removes surface irregularities work-hardened surfaces and/or cracks

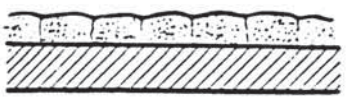
F. Edges should be rounded, no sharp edges. This causes excessive mixing of the base metal and hardfacing alloy.

G. If a build-up is needed prior to hardfacing, select a build-up that is compatible with the base metal composition. Never use 7018 as a build-up.

Choosing a hardface overlay

A. Never put a work-hardening maganese alloy on top of a harder, more brittle hardfacing alloy. Deposts may spall and come loose. The stronger alloy should always be applied beneath the harder deposit. Never use 7018 as a cushion or build-up. It does not have the hardness and strength for hardfacing applications.

B. The more wear resistant the deposit and the higher the alloy content and hardness, the greater will be the tendency to cross-check. They appear during cooling and are due to the different shrinkage rates between the hard surfacing material and the base material. A regular check pattern is desirable as it will reduce or even eliminate the tendency for distortion. These cracks do not normally extend into the base material and do not weaken the bond to the base. Cracks should be transverse across the weld and less than 1" apart. If not, increase the travel speed.



Relief Checks

C. Hardness and number of layers

Limit deposit thickness. Thick hardfacing deposits may crack and break off rapidly in service. Furthermore, as hardface overlays increase in hardness, they tend to be more brittle. Unless an alloy has been specifically designed and tested for multi-layer weld overlays, the following guide lines should be useful to determine the number of hardface layers that should be applied. If it is necessary to apply more layers than is specified for the alloy, a build-up material should be applied first.

Deposited Hardness of Overlay	Maximum Layers
65 or higher	1 - 2
50-64	2 - 3
40-50	3 - 5

Weld Polarity

Weld polarity strongly effects the amount of dilution. Reverse polarity results in a first-layer deposit that is up to 50% base metal and 50% weld metal. Straight polarity, on the other hand, results in less penetration and more favorable deposit chemistry. A second layer in either case will produce a chemistry suitable for wear resistance.

Dilution

Consideration must also be given to the dilution that will occur with the base metal. A weld deposit is a mixture of the filler metal and the base metal, and the deposit chemistry will depend on how much of each is present. Wear resistance is reduced by high base metal dilution. The following suggestions will help minimize dilution, resulting in greater wear resistance.

1. Do not use excessive welding currents.
2. Direct the arc on the molten weld metal rather than on the base metal.
3. Use close overlap (50 to 75%) when placing weld beads side by side.

CORRECT **INCORRECT**

Overlapping of beads

4. Use DC straight polarity if possible (electrode negative)
5. Do not use excessive preheat. Preheat with recommended ranges.
6. Regardless of stringer or wide weave beads, the travel speed should be adjusted to direct the arc on the weld puddle.
7. When using wire processes, a longer stick-out will reduce penetration.
8. In order of decreasing penetration and dilution - vertical up (highest), horizontal, up hill, flat and down hill lowest).

Preheating

Manganese Steel. Do not preheat manganese. The tough properties of manganese can be lost if the base metal is continually heated above 600°F(315°C). Weld beads should be distributed so as to avoid concentrated and prolonged heat input into one area.

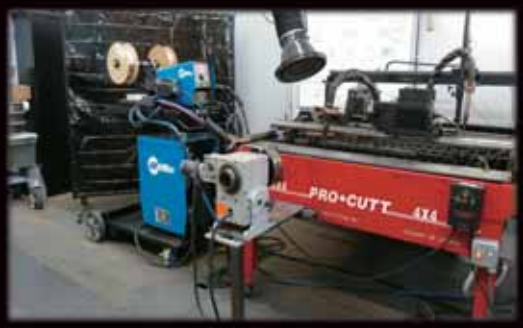
Cast Iron. Cast iron requires high preheat temperatures for hardfacing applications. A good rule of thumb is a dull red.

Carbon and Low Alloy Steels. Preheating of some carbon and low alloy steels may be necessary to minimize distortion, spalling, underbead cracking and cracking in the base metal. Preheat temperature is influenced by carbon and alloy content, part size and rigidity. The higher the carbon and alloy content, the higher the required preheat temperature. Consult the preheat chart or call Postle Industries for recommendations. Arrange the welding schedule so that it can be completed without any long interruptions. The preheat should be uniform throughout the part and the part should be slow cooled.

- ***SOLID & FLUX-CORED WELDING WIRES***
- ***MAINTENANCE WELDING ALLOYS***
- ***POWDER SPRAY TECHNOLOGY***

RESEARCH AND DEVELOPMENT

- All customers and applicators are entitled to and have access to Postle Industries' extensive knowledge bank, lab facilities and metallurgical analysis as it pertains to all aspects of hardfacing.
- The key to Postle Industries' success as a hardfacing supplier is the ability to quickly analyze and address welding issues in a timely manner and respond to our customers and solve application problems.
- Our knowledgeable staff can direct you to the best product for your application and even come out and assist you to maximize application.
- It takes a continuous effort and an aggressive R & D program to bring innovative products to the hardfacing market.
- Our laboratories are well staffed with personnel and equipment to formulate, test and evaluate new products. From chemical analysis to micro hardness testing to wear testing. Postle Industries enjoys a wealth of state of the art resources.



POSTALLOY®

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