LINCOLNWELD® A-96-S

Hardfacing • Flux

KEY FEATURES

- Modified Type 420 stainless deposit with a carbon content near the high side for as-welded hardness
- Designed to produce a weld deposit with 13% chromium, 0.23% carbon when proper procedures are followed

TYPICAL APPLICATIONS

Use with Lincolnweld® L-60 mild steel wire for hardfacing

PACKAGING

60 lb (27.2 kg) Plastic Bag

ED031860

DIAMETERS / PACKAGING

Diameter - in (mm)	60 lb (27.2 kg) Plastic Bag
N/A	ED031860

NOTE: Deposit carbon, alloy content and hardness depend upon the ratio of flux melted to wire melted. High voltage promotes high carbon and alloy contents, while low voltage promotes lower carbon and alloy content.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER

LINCOLNWELD® H-535™

Hardfacing • Flux

KEY FEATURES

- Produces a deposit with good abrasion resistance, allows some machinability
- Low carbon martensitic deposit
- Hardness range is 24-45 Rockwell C (R_c), depending upon the actual welding procedure used

TYPICAL APPLICATIONS

Use with Lincolnweld® L-60 mild steel wire for hardfacing

PACKAGING

50 lb (22.7 kg) Paper Bag ED027865

DIAMETERS / PACKAGING

Diameter - in (mm)	50 lb (22.7 kg) Paper Bag
N/A	ED027865

NOTE: Deposit carbon, alloy content and hardness depend upon the ratio of flux melted to wire melted. High voltage promotes high carbon and alloy contents, while low voltage promotes lower carbon and alloy content.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

LINCOLNWELD® H-560[™]

Hardfacing ■ EN 760 – SAZ3

KEY FEATURES

- High alloy flux depositing primary carbides in a martensitic matrix
- Excellent material for severe abrasion applications
- Resistance to abrasion is 50 to 60 times that of plain carbon steel

TYPICAL APPLICATIONS

• Use with Lincolnweld® L-60 mild steel wire for hardfacing

PACKAGING

100 lb (45.4 kg) Paper Bag ED010345

DIAMETERS / PACKAGING

Diameter - in (mm)	100 lb (45.4 kg) Paper Bag
N/A	ED010345

NOTE: Deposit carbon, alloy content and hardness depend upon the ratio of flux melted to wire melted. High voltage promotes high carbon and alloy contents, while low voltage promotes lower carbon and alloy content.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

LINCOLNWELD® 801®

Neutral Flux ■ EN 760 – S A FB 1; EN 760 – S A FB 2

KEY FEATURES

- Provides smooth beads and excellent slag removal
- Fast-freezing

TYPICAL APPLICATIONS

- Hardfacing
- Use with Lincore® 20, 30-S, 35-S, 40-S, 42-S, 4130, 8620, 410, 410NiMo, 420 and 96S

PACKAGING

50 lb (22.7 kg) Paper Bag ED019588 550 lb (249 kg) Drum ED023403 3000 lb (1361 kg) Bulk Bag EDS30786

DIAMETERS / PACKAGING

Diameter - in (mm)	Diameter - in (mm) 50 lb (22.7 kg) Paper Bag		3000 lb (1361 kg) Bulk Bag		
N/A	ED019588	ED023403	EDS30786		

NOTE: Deposit carbon, alloy content and hardness depend upon the ratio of flux melted to wire melted. High voltage promotes high carbon and alloy contents, while low voltage promotes lower carbon and alloy content.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume

BEFORE USE, READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER

SUBMERGED ARC (SAW) FLUX

LINCOLNWELD® 802®

Neutral Flux ■ EN 760 – S A CS 1; EN 760 – S A CS 2

KEY FEATURES

• Excellent hot slag removal with wire containing niobium, vanadium or very high chromium levels

TYPICAL APPLICATIONS

- Hardfacing
- Use with Lincore® 102W, 423Cr, 423N, 414N, and 102HC

PACKAGING

ED032800 50 lb (22.7 kg) Paper Bag ED023365 450 lb (204 kg) Drum EDS30787 2700 lb (1225 kg) Bulk Bag

DIAMETERS / PACKAGING

Diameter - in (mm)	50 lb (22.7 kg) Paper Bag	450 lb (204 kg) Drum	2700 lb (1225 kg) Bulk Bag	
N/A	ED032800	ED023365	EDS30787	

NOTE: Deposit carbon, alloy content and hardness depend upon the ratio of flux melted to wire melted. High voltage promotes high carbon and alloy contents, while low voltage promotes lower carbon and alloy content.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

WEARTECH® GUARDIAN® HB

Severe Abrasion

KEY FEATURES

- Industry leading casing wear protection
- High tool joint protection in casing
- Superior spalling resistance
- Weldable with or without gas shielding

TYPICAL APPLICATIONS

Hardbanding

DIAMETERS / PACKAGING

Diameter	33 lb (15 kg)
in (mm)	Spool
1/16 (1.6)	ED035667

MECHANICAL PROPERTIES(1)

Rockwell Hardness (R _c)	Wear Resistance
57-59	ASTM G65-04 Procedure A 0.32 g mass loss

DEPOSIT COMPOSITION(1)

22. 00 00 00										
	%Fe	%C	%Cr	%В	%Mo	%W	%Ti	%Mn	%Si	ı
Requirements	Balance	<2	<20	<5	<4	<6	<3	<4	<2	

TYPICAL OPERATING PROCEDURES

Diameter, Polarity	Current	Voltage	Wire Feed Speed	Shielding Gas	Flow Rate
ESO - in (mm)	(Amps)	(Volts)	m/min (ipm)		(cfh)
1/16 in (1.6mm), DC+ ½ - ½ (15) GMAW-C ½ - 1 (20) FCAW-S	~220	24	7.0 (275)	75 Ar – 25 CO ₂	45 – 60

⁽¹⁾ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

WEARTECH® GUARDIAN® CF

Severe Abrasion

KEY FEATURES

- Industry leading casing wear protection
- Exceptional tool wear life
- Applicable over other hardband materials
- Weldable with or without gas shielding

TYPICAL APPLICATIONS

Hardbanding

DIAMETERS / PACKAGING

Diameter	33 lb (15 kg)	50 lb (22.7 kg)		
in (mm)	Spool	Fiber Spool		
1/16 (1.6)	ED035668	ED035856		

MECHANICAL PROPERTIES(1)

Rockwell Hardness (R _c)	Wear Resistance
58-62	ASTM G65-04 Procedure A 0.22 g mass loss

DEPOSIT COMPOSITION(1)

	%Fe	%С	%Cr	%В	%Nb	%Mn	%Si
Requirements	Balance	<3	<10	<6	<9	<5	<2

TYPICAL OPERATING PROCEDURES

Diameter, Polarity ESO - in (mm)	ESO - in (mm) (Amps)		Wire Feed Speed m/min (ipm)	Shielding Gas	Flow Rate (cfh)
1/16 in (1.6mm), DC+ ½ - ½ (15) GMAW-C ½ - 1 (20) FCAW-S	~220	24	7.0 (275)	75 Ar – 25 CO ₂	45 – 60

⁽¹⁾ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

WEARTECH® SHS® 7570W

Severe Abrasion

KEY FEATURES

- Excellent corrosion resistance and high wear and impact resistance
- Especially resistant to corrosion in high chloride and seawater
- Alternative to nickel and superalloys and stainless steels

TYPICAL APPLICATIONS

- Oil & Gas
- Power Generation
- Pulp & Paper

DIAMETERS / PACKAGING

Diameter	25 lb (11.3 kg)
in (mm)	Spool PLW
1/16 (1.6)	ED035664

MECHANICAL PROPERTIES

Vicker's Hardness (HV0.3)	Wear Resistance	Bond Strength ksi (MPa)
58-62	ASTM G65-04 Procedure A 0.22 g mass loss	ASTM C633-01 Glue Failure 8 (55)

DEPOSIT COMPOSITION

	%Fe	%C	%Cr	%B	%Мо	%W	%Mn	%Si
Requirements	Balance	<2	<25	<5	<15	<5	<2	<2

TYPICAL OPERATING PROCEDURES

Tip Size in (mm)	Air Cap	Positioner	Amperes (Amps)	Voltage (V)	Air Motor (psi)	Atomizing Air (psi)		Transverse Rate in/min (m/min)		
1/16 (1.6)	Blue	Short Cross	200	32	50	70	80	276 (7)	6 (152)	

^{*} This procedure was developed on a TAFA 8830/8835 system. Changes in equipment, materials, and substrates may change optimum procedures. Listed procedures should only be used as a starting point.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

WEARTECH® SHS® 8000W

Severe Abrasion

KEY FEATURES

- Excels in elevated temperature environments where fly ash and bed ash erosion occurs
- Superior bond strength without necessity of bond coat
- Hardness increases as a function of time and temperature

TYPICAL APPLICATIONS

- Boiler Tubes
- Oil & Gas

- Power Generation
- Pulp & Paper

DIAMETERS / PACKAGING

Diameter	25 lb (11.3 kg)	400 lb (181 kg)
in (mm)	Spool PLW	Accu-Trak Drum
1/16 (1.6)	ED035665	ED035972

MECHANICAL PROPERTIES

Vicker's Hardness (HV0.3)	Wear Resistance	Bond Strength ksi (MPa)		
1000-1200	ASTM G65-04 Procedure B 0.18 g mass loss	ASTM C633-01 Glue Failure 8 (55)		

DEPOSIT COMPOSITION

	%Fe	%C	%Cr	%В	%Мо	%Nb	%Mn	%Si
Requirements	Balance	<2	<22	<5	<5	<5	<1	<1

TYPICAL OPERATING PROCEDURES

Tip Size in (mm)	Air Cap	Positioner	Amperes (Amps)	Voltage (V)	Air Motor (psi)	Atomizing Air (psi)	Arc Jet Air (psi)	Transverse Rate in/min (m/min)	Standoff in (mm)
1/16 (1.6)	Blue	Short Cross	250	32	50	70	80	276 (7)	6 (152)

^{*} This procedure was developed on a TAFA 8830/8835 system. Changes in equipment, materials, and substrates may change optimum procedures. Listed procedures should only be used as a starting point.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

WEARTECH® SHS® 9172W

Severe Abrasion

KEY FEATURES

- Excels in extreme environments where severe abrasion is encountered
- Significant ability to withstand corrosion and high temperature oxidation
- Exceptional wear resistance in applications involving fine particle abrasion and erosion

TYPICAL APPLICATIONS

- LPA Screens
- Oil & Gas

- Power Generation
- Pulp & Paper

DIAMETERS / PACKAGING

Diameter	25 lb (11.3 kg)
in (mm)	Spool PLW
1/16 (1.6)	ED035666

MECHANICAL PROPERTIES

Vicker's Hardness (HV0.3)	Wear Resistance	Bond Strength ksi (MPa)
975 - 1025	ASTM G65-04 Procedure B 0.17 g mass loss	ASTM C633-01 Glue Failure 6 (41)

DEPOSIT COMPOSITION

	%Fe	%С	%Cr	%В	%Mo	%Nb	%W	%Mn	%Si
Requirements	Balance	<4	<25	<5	<6	<12	<15	<3	<2

TYPICAL OPERATING PROCEDURES

Tip Size in (mm)	Air Cap	Positioner	Amperes (Amps)	Voltage (V)	Air Motor (psi)	Atomizing Air (psi)		Transverse Rate in/min (m/min)	
1/16 (1.6)	Blue	Short Cross	200	32	50	70	80	276 (7)	6 (152)

^{*} This procedure was developed on a TAFA 8830/8835 system. Changes in equipment, materials, and substrates may change optimum procedures. Listed procedures should only be used as a starting point.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

WEARTECH® SHS® 9290P

Severe Abrasion

KEY FEATURES

- Alternative to 65% tungsten carbide PAW materials
- Provides exceptional uniformity of hardness and wear performance across a range of service environments

TYPICAL APPLICATIONS

- Crusher Rolls
- Ore Chutes
- Screw Augers

DIAMETERS / PACKAGING

Size	10 lb (4.5 kg)	25 lb (11.3 kg)				
Micron (µm)	Bottle	Pail				
+53/-180	ED035722	ED035723				

MECHANICAL PROPERTIES(1)

Rockwell Hardness (R _c)	Wear Resistance
71-74	ASTM G65-04 Procedure A 0.08 g mass loss

DEPOSIT COMPOSITION(1)

	%Fe	%C	%Cr	%В	%Mo	%Nb	%W	%Mn	%Si	%V
Requirements	Balance	<5	<20	<10	<10	<10	<15	<5	<2	<5

TYPICAL OPERATING PROCEDURES

Current (Amps)	Voltage (Volts)			Flow Rate (cfh)	Plasma Gas	
190	23	6 (45)	100% Ar	25	100% Ar	
Oscillation in (mm)	Oscillation Rate (hz)	Dwell Time (s)	Slew Time (s)	Travel in/min (ı	Speed nm/min)	
0.75 (19)	1	0.05	0.5	3.5	(89)	

⁽¹⁾ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

^{*} This procedure was developed on a Eutectic GAP 375 power source and a Eutectic GAP E52 torch. Changes in equipment, materials, and substrates may change optimum procedures. Listed procedures should only be used as a starting point.

WEARTECH® SHS® 9700P

Severe Abrasion

KEY FEATURES

- Economical iron-based alternative to nickel based materials containing tungsten carbide
- Good resistance to abrasion and erosion from fine particles
- Highly refined microstructure

TYPICAL APPLICATIONS

- Wearplate
- Crusher Rolls
- Ore Chutes
- Screw Augers

DIAMETERS / PACKAGING

Size	10 lb (4.5 kg)	25 lb (11.3 kg)
Micron (µm)	Bottle	Pail
+53/-180	ED035724	ED035725

MECHANICAL PROPERTIES(1)

Rockwell Hardness (R _c)	Wear Resistance
67-69	ASTM G65-04 Procedure A 0.13 g mass loss

DEPOSIT COMPOSITION(1)

	%Fe	%C	%Cr	%В	%Nb	%Mn	%Si	
Requirements	Balance	<2	<21	<7	<6	<2	<2	

TYPICAL OPERATING PROCEDURES

Current (Amps)	Voltage (Volts)	Powder Feed Rate lb/hr (g/min)	Shielding Gas	Flow Rate (cfh)	Plasma Gas
180	22	3.3-3.9 (25-29)	95 Ar – 5 H ₂	25	100% Ar
Oscillation in (mm)	Oscillation Rate (hz)	Dwell Time (s)	Slew Time (s)	Travel in/min (r	Speed nm/min)
0.6 (15)	1	0.1	0.4	3.5	(89)

^{*} This procedure was developed on a Eutectic GAP 375 power source and a Eutectic GAP E52 torch. Changes in equipment, materials, and substrates may change optimum procedures. Listed procedures should only be used as a starting point.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

WEARTECH® SHS® 7574HV

Severe Abrasion

KEY FEATURES

- Outstanding corrosion resistance in high chlorine, salt fog, concentrated salt and seawater environments
- Can be finished to very high surface specifications for use as a replacement for hard chrome
- High bond strength, low porosity and high impact
- Corrosion resistance is superior to crystalline austenitic stainless steel and nickel based superalloys

TYPICAL APPLICATIONS

- Oil & Gas
- Power Generation
- Mining

- Pulp & Paper
- Offshore & Marine

DIAMETERS / PACKAGING

Size	10 lb (4.5 kg)	25 lb (11.3 kg)
Micron (µm)	Bottle	Pail
+15/-53	ED035730	ED035731

MECHANICAL PROPERTIES

Vicker's Hardness (HV0.3)	Wear Resistance	Bond Strength ksi (MPa)
975 - 1075	ASTM G65-04 Procedure B 0.13 g mass loss	ASTM C633-01 Glue Failure 10 (69)

DEPOSIT COMPOSITION

	%Fe	%C	%Cr	%B	%Мо	%Mn	%Si	
Requirements	Balance	<3	<25	<5	<20	<5	<2	

TYPICAL OPERATING PROCEDURES

Feeder Speed	Gas Flow	Powder Feed Rate	Spray Distance	Deposit Rate
(rpm)	(cfh)	lb/hr (g/min)	in (mm)	(mil/pass)
270 (6 pitch screw)	21	5 (37.8)	14 (356)	0.5-0.7
Fuel Flow Rate	Fuel Pressure	Oxygen Flow Rate	Oxygen Pressure	Combustion
gal/hr (I/min)	(psi)	(cfh)	(psi)	(psi)
6 (0.45)	120	2100	135	100

^{*} This procedure was developed on a TAFA JP5000. Changes in equipment, materials, and substrates may change optimum procedures. Listed procedures should only be used as a starting point.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

WEARTECH® SHS® 8000HV

Severe Abrasion

KEY FEATURES

- Excels in high abrasion, erosion environments, both wet and dry
- Very good metal to metal (two body) wear resistance
- Superior bond strength without necessity of bond coat
- Can be finished to very high surface specifications

TYPICAL APPLICATIONS

- Oil & Gas
- Power Generation
- Mining
- Pulp & Paper

DIAMETERS / PACKAGING

Size	10 lb (4.5 kg)	25 lb (11.3 kg)		
Micron (µm)	Bottle	Pail		
+15/-53	ED035732	ED035733		

MECHANICAL PROPERTIES

Vicker's Hardness (HV0.3)	Wear Resistance	Bond Strength ksi (MPa)
1000	ASTM G65-04 Procedure B 0.07 g mass loss	ASTM C633-01 Glue Failure 10 (69)

DEPOSIT COMPOSITION

	%Fe	%C	%Cr	%В	%Mo	%Mn	%Si
Requirements	Balance	<4	<25	<5	<6	<3	<2

TYPICAL OPERATING PROCEDURES

Feeder Speed	Gas Flow	Powder Feed Rate	Spray Distance	Deposit Rate
(rpm)	(cfh)	lb/hr (g/min)	in (mm)	(mil/pass)
270 (6 pitch screw)	21	10 (75.6)	14 (356)	0.2-0.4
Fuel Flow Rate	Fuel Pressure	Oxygen Flow Rate	Oxygen Pressure	Combustion
gal/hr (I/min)	(psi)	(cfh)	(psi)	(psi)
• , ,	dr.,	(,	(53.7	(62.)

^{*} This procedure was developed on a TAFA JP5000. Changes in equipment, materials, and substrates may change optimum procedures. Listed procedures should only be used as a starting point.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.