

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### ARGENTINA

#### Conarco Alambres Y Soldaduras S.A.

Conarco S1 / Esab OK Flux 10.81	ABS	2M	DCEP	4.0 mm	Buenos Aires
Conarco S2Si / Esab OK Flux 10.71	ABS	3M	DCEP	4.0 mm	Buenos Aires

### AUSTRALIA

#### Lincoln Electric Co. (Australia) Pty. Ltd.

Lincolnweld LS-3 Wire/880M Flux	ABS	3YM	DC	2.4 - 4.8 mm	Sydney
L60 Wire / 761 Flux	ABS	2T, 3M	DCEP	2.0 - 5.6 mm	Sydney
L60 Wire / 780 Flux	ABS	1T, 2M	AC	2.0 - 5.6 mm	Sydney
L60 Wire / 860 Flux	ABS	2T, 3M	DCEP	2.0 - 5.6 mm	Sydney
L61 Wire / 780 Flux	ABS	3YTM	AC	2.0 - 4.8 mm	Sydney
L61 Wire / 860 Flux	ABS	3YTM	AC	2.0 - 4.8 mm	Sydney

#### Welding Industries of Australia

Ausmatic SD3 / OP121TT	ABS	3YM	AC / DCEP	2.4 - 4.0 mm	Adelaide
------------------------	-----	-----	-----------	--------------	----------

### AUSTRIA

#### Bohler Schweisstechnik Austria GmbH

Bohler CN 22/9 N-UP / BB 202	AWS A5.9-93	ER2209	DCEP	2.0 - 4.0 mm	Essen
------------------------------	-------------	--------	------	--------------	-------

Recommended by mfr. for welding austenitic-ferritic steel (Duplex), UNS no. S31803 (and similar) & for welding these alloys to Grade AH36 (C-Mn Steel). Mfr's Guaranteed min., Grade UNS S31803 to AH36: T.S. 500 MPa; ISO-V at -20 °C, 47 J.

Bohler EMS2 CrMo / BB25	*	DCEP	2.0 - 5.0 mm	Munich
-------------------------	---	------	--------------	--------

\* Intended for use with low alloy high-temp. steels, subject to special approval with each application.

Bohler EMS3 / UV418TT	AWS A5.17-97	F48A6-EH12K	DCEP	4.0 mm	Munich
-----------------------	--------------	-------------	------	--------	--------

Intended for multirun technique on Grade DH36. Test temp.: -60 °C

### BRAZIL

#### Belgo Mineira Bekaert Trefilarias S/A

BMAS 122 / Flux DX	AWS A5.17-97	F7A4-EM12K, F48A4-EM12K	DCEP	3.97 mm	Sao Paulo
BMAS 122 / Flux 105	AWS A5.17-97	F7A2-EM12K / F48A3-EM12K	DCEP	3.97 mm	Sao Paulo
BMAS 122 / Flux 108	AWS A5.17-97	F7A0-EM12K, F48A2-EM12K	DCEP	3.97 mm	Sao Paulo
BMAS 122 / OK Flux 10.71	ABS	3YTM	DCEP	2.0 - 6.35 mm	Sao Paulo

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### BRAZIL

#### CarboOx Resende Quimica Industria e Comercio Ltda.

BMAS 122 / Flux 105	AWS A5.19M-97	F7A2-EM12K, F48A3-EM12K	DCEP	3.97 mm	Sao Paulo
WM12K / Flux DX	AWS A5.17-97	F7A4-EM12K, F48A4-EM12K	DCEP	3.97 mm	Sao Paulo
WM12K / Flux 105	AWS A5.17-97	F7A2-EM12K / F48A3 - EM12K	DCEP	3.97 mm	Sao Paulo
WM12K / Flux 108	AWS A5.17-97	F7A0-EM12K, F48A2-EM12K	DCEP	3.97 mm	Sao Paulo

#### Esab S.A. Industria e Comercio

OK Flux 10.71/ OK Autrod 12.20	ABS	3YTM	DCEP	2.0 - 6.35 mm	Sao Paulo
-----------------------------------	-----	------	------	---------------	-----------

#### Gerdau S/A Arames para Solda

Arc-EL12	AWS A5.17-97	F7A0-EL12	DCEP	3.97 mm	Sao Paulo
OK Flux 10.71/ Gerdau-Arc	ABS	3YM	DCEP	1.59 - 4.76 mm	Sao Paulo

### CANADA

#### Air Liquide Canada Inc.

LA 12K / LA 23	ABS	2YM	DCEP	4.0 mm	Montreal
LA 12K / LA 46	ABS	3YM	DCEP	4.0 mm	Montreal
LA 12K / LA 59	ABS	3YM	DCEP	4.0 mm	Montreal
LA 13K / LA 46	ABS	3YM	DCEP	4.0 mm	Montreal

#### Lincoln Electric Co. of Canada Ltd.

L50/781		AWS A5.17-89	F7A0-EM13K	0.035 - 5/32 in.	Cleveland
L50/960		AWS A5.17-89	F7A2-EM13K	0.035 - 3/16 in.	Cleveland
L60 / 761	ABS	3YM, 2YT	DCEP	4.0 mm	Toronto
L60/760		AWS A5.17-89	F6A2-EL12	5/64 - 7/32 in.	Cleveland
L60/780		AWS A5.17-89	F7A0-EL12	5/64 - 7/32 in.	Cleveland
L60/860		AWS A5.17-89	F6A2-EL12	5/64 - 7/32 in.	Cleveland
L61 / 761	AWS A5.17-97	F7A2-EM12K	DCEP	1/16" - 3/16"	Cleveland
L61 / 780	AWS A5.17-97	F7A2-EM12K	DCEP	1/16" - 3/16"	Cleveland
L61 / 781	AWS A5.17-97	F7A0-EM12K	DCEP	1/16" - 3/16"	Cleveland
L61 / 8500	ABS	4M, 4YM	DCEP	1/16" - 3/16"	Cleveland
L61 / 860	AWS A5.17-97	F7A2-EM12K	DCEP	1/16" - 3/16"	Cleveland
L61 / 882	AWS A5.17-97	F7A6-EM12K	DCEP	1/16" - 3/16"	Cleveland

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### CANADA

Lincoln Electric Co. of Canada Ltd.

L61 / 960	AWS A5.17-97	F7A2-EM12K	DCEP	1/16" - 3/16"	Cleveland
-----------	--------------	------------	------	---------------	-----------

### CHINA, PEOPLES REPUBLIC OF

Atlantic China Welding Consumables (China Welding Electrode Plant)

H08A / CHF43	ABS	2T, 3M	AC / DCEP	4.0 - 5.8 mm	Guangzhou
H10Mn2 / CHF101	ABS	3YM	AC / DCEP	4.0 - 5.8 mm	Guangzhou

Changzhou Huatong Welding Wire Co., Ltd.

HTM-10Mn-2 / CHF101**	ABS	3YM	DCEP	2.0 - 5.0 mm	Shanghai
-----------------------	-----	-----	------	--------------	----------

\*\*Note: Wire HTM-10Mn2 to be used together with flux CHF101 manufactured by China Welding Electrode Plant.

Dalian Jinguang Welding Wire Factory

BSH08A / LT431**	ABS	2TM	AC	4.0 - 4.8 mm	Guangzhou
------------------	-----	-----	----	--------------	-----------

Maximum plate thickness 18 mm for two-run technique. \*\*Flux manufactured by Longtou Welding Flux Factory approved by ABS

BSH08MnA / LT350**	ABS	2YTM	AC	4.0-4.8 mm	Guangzhou
--------------------	-----	------	----	------------	-----------

Maximum plate thickness 18 mm for two-run technique.

Guangxi Longtou Welding Flux Factory

JW-2 / LT431	ABS	3TM	AC / DC	2.4 - 4.8 mm	Guangzhou
--------------	-----	-----	---------	--------------	-----------

For two-run technique, application for maximum plate thickness of 20mm.

JW-3 / LT350	ABS	2YTM, 2YM	AC / DC	2.4 - 4.8 mm	Guangzhou
--------------	-----	-----------	---------	--------------	-----------

For two-run technique, application for maximum plate thickness of 20mm. Wire JW-2, JW-3 were manufactured by Jintai Welding & Metal Co. Ltd., Jinzhou, PRC.

Jiangsu Universe Welding Consumables Group Co., Ltd.

THSJ201 / TH-08A	ABS	3M	AC / DC	2.0 - 5.0 mm	Guangzhou
------------------	-----	----	---------	--------------	-----------

Jinzhou Jin Tai Welding & Metal Co. Ltd.

JW-1 / LT350	ABS	3YM	DCEP	2.4 - 4.8 mm	Guangzhou
--------------	-----	-----	------	--------------	-----------

JW-1 / SJ101	ABS	3YM	DCEP	2.4 - 4.8 mm	Guangzhou
--------------	-----	-----	------	--------------	-----------

JW-2 / LT431	ABS	3M	DCEP	2.4 - 4.8 mm	Guangzhou
--------------	-----	----	------	--------------	-----------

JW-2 / SJ501	ABS	2YM	DCEP	2.4 - 4.8 mm	Guangzhou
--------------	-----	-----	------	--------------	-----------

JW-3 / LT350	ABS	3YM	DCEP	2.4 - 4.8 mm	Guangzhou
--------------	-----	-----	------	--------------	-----------

JW-3 / SJ101	ABS	3YM	DCEP	2.4 - 4.8 mm	Guangzhou
--------------	-----	-----	------	--------------	-----------

Shanghai Baogang Metallurgical Construction Corp.

BHM-1 (H08A)**	ABS	3M	AC	2.0 - 5.0 mm	Shanghai
----------------	-----	----	----	--------------	----------

\*\*Wire BHM-1 to be used together with flux SH431 manufactured by Shanghai Welding Electrode Flux Co. Ltd.

BHM-4 (H10Mn2)**	ABS	2YM	AC	2.0 - 5.0 mm	Shanghai
------------------	-----	-----	----	--------------	----------

\*\*Wires BHM-4 and BHM-5 to be used together with flux SH331 manufactured by Shanghai Welding Electrode Flux Co. Ltd.

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### CHINA, PEOPLES REPUBLIC OF

#### Shanghai Baogang Metallurgical Construction Corp.

BHM-5 (H10Mn2G)**	ABS	3YM	AC	2.0-5.0 mm	Shanghai
-------------------	-----	-----	----	------------	----------

\*\*Wires BHM-4 and BHM-5 to be used together with flux SH331 manufactured by Shanghai Welding Electrode Flux Co. Ltd.

#### Shanghai Welding Equipmt & Consumables, Shanghai Welding Elctd Factory

H10 Mn2G / SH331	ABS	2YTM, 3YM	AC / DC	3.2 - 5.0 mm	Shanghai
SH. H8A / SH43	ABS	2TM	AC / DC	3.0 - 5.0 mm	Shanghai

#### Swan Welding Consumable (Group) Co., Ltd.

JH-SJ101 / H10Mn2 (JW-1)	AWS A5.17-97	*F7A4-EH 14	AC / DCEP	4.0 mm	Guangzhou
--------------------------	--------------	-------------	-----------	--------	-----------

\* Meets Mechanical Properties of AWS A5.17-97 F7A4-EH14

JH-SJ101 / H10Mn2 (JW-1)	ABS	3YM	AC / DCEP	4.0 mm	Guangzhou
--------------------------	-----	-----	-----------	--------	-----------

JH-SJ301 / HO8A (JW-2)	AWS A5.17-97	*F7A0-EL8	AC / DCEP	4.0 mm	Guangzhou
------------------------	--------------	-----------	-----------	--------	-----------

\* Meets Mechanical Properties of AWS A5.17-97 F7A0-EL8

JH-SJ301 / HO8A (JW-2)	ABS	3M	AC / DCEP	4.0 mm	Guangzhou
------------------------	-----	----	-----------	--------	-----------

JH-SJ501 / HO8A (JW-2)	AWS A5.17-97	*F7A2-EL8	AC / DCEP	4 mm	Guangzhou
------------------------	--------------	-----------	-----------	------	-----------

\* Meets Mechanical Properties of AWS A5.17-97 F7A2-EL8

JH-SJ501 / HO8A (JW-2)	ABS	2YM	AC / DCEP	4.0 mm	Guangzhou
------------------------	-----	-----	-----------	--------	-----------

#### Wuhan Marine Machinery Plant (Wuhan Marine Welding Consumables Factory)

H08A**	ABS	2M	AC / DC	2.0 - 5.0 mm	Guangzhou
--------	-----	----	---------	--------------	-----------

\*\*Wire H08A to be used together with flux HJ431 in accordance with PRC National Standard GB5293-85 and flux manufacturer to be approved by ABS.

#### Zhuzhou Welding Electrode Co., Ltd.

H08A	ABS	3M	DCEP	2.0 - 6.0 mm	Guangzhou
------	-----	----	------	--------------	-----------

Note: Wire H08A to be used with flux Brand HJ431 manufactured in accordance with China National Standard GB5293-85 and flux manufacturer to be approved by ABS

### COLOMBIA

#### Electromanufacturas S.A.

WA-60 / 780	ABS	1TM	DCEP	1.5 - 4.0 mm	Cartagena
-------------	-----	-----	------	--------------	-----------

WA-61 / 780	ABS	1TM	DCEP	1.5 - 4.0 mm	Cartagena
-------------	-----	-----	------	--------------	-----------

### CZECH REPUBLIC

#### Esab Vamberk s.r.o.

OK Autrod 12.10 / OK Flux 10.40	ABS	2M	AC / DC	2.5 - 6.0 mm	Pilsen
---------------------------------	-----	----	---------	--------------	--------

OK Autrod 12.20 / OK Flux 10.40	ABS	3M, 3YM	AC / DC	2.5 - 6.0 mm	Pilsen
---------------------------------	-----	---------	---------	--------------	--------

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### CZECH REPUBLIC

#### Esab Vamberk s.r.o.

OK Autrod 16.86 / OK Flux 10.93		**	DCEP	1.6 - 5.0 mm	Gothenburg
------------------------------------	--	----	------	--------------	------------

\*\*For welding of Duplex stainless steels, Manufacturer's guaranteed min. properties Y.S. 480 N/mm<sup>2</sup>, T.S. 680 N/mm<sup>2</sup>, El. 25%, CVN > 47 J @ -20 °C

### EGYPT

#### Egyptian Swedish Welding Electrodes Co.

ESWECO ES1M / Peco P140	ABS	2YM	AC	4 mm	Cairo
ESWECO ES1M / P171	ABS	3YM	AC	4 mm	Cairo
ES1L / Peco Flux P140	ABS	2M	AC	4 mm	Cairo
ES1L / Peco Flux P181		1YTM	AC	4 mm	Cairo
ES1M / Peco Flux P181		2YM	AC	4 mm	Cairo

### FRANCE

#### Lincoln Electric Company SA Europe

IMT9 / 780	ABS	3YTM	AC / DC	4 mm	Le Havre
LNS129 / P230	ABS	3M, 3YM	AC / DC	2.0 - 7.9 mm	Le Havre
LNS133U / P240	ABS	3Y400M**	DCEP	3.25 - 5.0 mm	Le Havre

\*\*Manufacturer's guaranteed minimum CVN 47 J at -60 °C.

LNS135 / P230	ABS	3TM, 2YTM**	DCEP	2.5 - 5.0 mm	Le Havre
---------------	-----	-------------	------	--------------	----------

\*\*For two run technique, maximum plate thickness of 16 mm.

LNS140A / P230	ABS	3YM-2YT	DCEP	2.5 - 4.0 mm	Le Havre
----------------	-----	---------	------	--------------	----------

LNS140A / 761	ABS	2YTM	AC / DC	2.5 - 5.0 mm	Le Havre
---------------	-----	------	---------	--------------	----------

LNS140A / 8500	ABS	3YM	DCEP	2.5 - 4 mm	Le Havre
----------------	-----	-----	------	------------	----------

LNS160 / P230	ABS	3YM**	DCEP	2.5 - 5.0 mm	Le Havre
---------------	-----	-------	------	--------------	----------

\*\*Manufacturer's guaranteed minimum CVN 47 J at -40 °C.

LNS160 / P240	ABS	3YM**	DCEP	3.25 - 5.0 mm	Le Havre
---------------	-----	-------	------	---------------	----------

\*\*Manufacturer's guaranteed minimum CVN 47 J at -40 °C.

LNS162 / P230	ABS	3YM**	DCEP	2.5 - 5.0 mm	Le Havre
---------------	-----	-------	------	--------------	----------

\*\*Manufacturer's guaranteed minimum CVN 80 J at -40 °C.

LNS162 / P240	ABS	3YM**	DCEP	3.25 - 5.0 mm	Le Havre
---------------	-----	-------	------	---------------	----------

\*\*Manufacturer's guaranteed minimum CVN 54 J at -40 °C.

LNS309L / P2000S		**	DCEP	2 - 4 mm	Le Havre
------------------	--	----	------	----------	----------

\*\*Mfr's guaranteed properties: Ultimate tensile strength >520 MPa, Yield strength >290 MPa, %Elongation >30, CVN Energy >34 J @ -40 °C, Chemistry C <0.04, Mn 0.5-2.5, Si <1, Cr 22-27, Ni 11-14, Mo <0.5

LNS316L / P2000	AWS A5.9-93	ER316L**	DCEP	1.6 - 4 mm	Le Havre
-----------------	-------------	----------	------	------------	----------

\*\*Manufacturer's guaranteed properties: Ultimate tensile strength >550 MPa, Yield strength >290 MPa, %Elongation >30, CVN Energy >34 J @ -196 °C

L50M / 781	ABS	4Y400T	AC / DC	2.5 - 5.0 mm	Le Havre
------------	-----	--------	---------	--------------	----------

L50M / 8500	ABS	3YTM	DCEP	3.25 - 5.0 mm	Le Havre
-------------	-----	------	------	---------------	----------

L60 / 780	ABS	2T, 2YTM	DCEP	4.0 - 5.0 mm	Le Havre
-----------	-----	----------	------	--------------	----------

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### FRANCE

#### Lincoln Electric Company SA Europe

L61 / P230	ABS	3M, 3YM	AC / DC	2.0 - 7.9 mm	Le Havre
L61 / 761	ABS	3YM-2YT	DCEP	4.0 - 5.0 mm	Le Havre
L61 / 860	ABS	3TM, 3YM-2YT	DCEP	4.0 - 5.0 mm	Le Havre
L70 / 761	ABS	2YTM	AC / DC	2.5 - 5.0 mm	Le Havre

#### Sauvageau Commercy Soudure

SP 1000 / CY 95	ABS	3YTM	DCEP	4.0 mm	Mulhouse
SP1050 / CY20	ABS	3YM	DCEP	4.0 mm	Mulhouse

#### Soudure Autogene Francaise

AS 36 / AS 80	ABS	3YM	AC / DCEP	4 mm	Mulhouse
AS 40A / AS 461	ABS	3YM	AC / DCEP	2.4 - 5.0 mm	Mulhouse
AS 450 / AS 35	ABS	3YM	DCEP	2.0 - 4.8 mm	Mulhouse
Lexal S-22-9-3N / Lexal F-500		**	AC / DC	3.2 mm	Mulhouse

\*\*Manufacturer's guaranteed properties: 750-900 MPa tensile strength; 550 MPa min. yield strength; 24% min. elongation; CVN 40 J min. at -30 °C. Typical properties: 820 MPa TS; 710 MPa YS; 26% El.; 60 J CVN @ -40 °C

### GERMANY

#### Drahtwarenfabrik Drahtzug Stein GmbH & Co. KG

SDA S2 / ST55	ABS	3YM	DCEP	1.6 - 4.0 mm	Essen
Topcore 731 B / ST55	ABS	3YM	DCEP	1.6 - 4.0 mm	Essen
Topcore 735 B / 2D / SDA2 / ST55	ABS	3YTM	DCEN	4.0 mm	Essen

Maximum plate thickness of 20 mm for two-run technique

#### Oerlikon Schweissttechnik GmbH

FLUXOCORD 31 / OP 121TT	ABS	3M	DCEP	2.4 - 5.0 mm	Venice
-------------------------	-----	----	------	--------------	--------

FLUXOCORD 31 / OP 180S	ABS	2YT, 3YM	DCEP	2.4 - 4.0 mm	Venice
------------------------	-----	----------	------	--------------	--------

For two-run technique maximum plate thickness 20 mm.

OE-A 105 / FLUXOCORD 35.25-2D / OE-A 105 / OP 122	ABS	3YT	AC / DCEP	3.2 - 5.0 mm	Essen
---	-----	-----	-----------	--------------	-------

Two-wire tandem technique, limited to 25 mm plate thickness.

OE-A 105 / FLUXOCORD 35.25-2D / OE-A 105 / OP 122 FB	ABS	3YT	AC / DCEP	3.2 - 5.0 mm	Essen
--	-----	-----	-----------	--------------	-------

Two-wire tandem technique, limited to 25 mm plate thickness.

OE-A 105 / FLUXOCORD 35.25-3D / OE-A 105 / OP 122	ABS	3YTM	AC / DCEP	3.2 - 5.0 mm	Essen
---	-----	------	-----------	--------------	-------

Three-wire tandem technique. Two-run welding limited to 25 mm plate thickness.

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### GERMANY

#### Oerlikon Schweisstechnik GmbH

OE-A 105 / FLUXOCORD 35.25-3D / OE-A 105 / OP 122 FB	ABS	3YTM	AC / DCEP	3.2 - 5.0 mm	Essen
--	-----	------	-----------	--------------	-------

Three-wire tandem technique, limited to 25 mm plate thickness.

OE-SD3 / OP 41TT	ABS	3YM	DCEP	4.0 mm	Essen
------------------	-----	-----	------	--------	-------

OE-SD3 / OP121TT	ABS	3YM	AC / DCEP	2.0 - 6.0 mm	Essen
------------------	-----	-----	-----------	--------------	-------

Multi-run technique recommended by manufacturer for low temperature service (-40 °C).

OE-S1 / OP 180S	ABS	2TM	AC	4.0 - 5.0 mm	Essen
-----------------	-----	-----	----	--------------	-------

For Grade 2T, application for maximum plate thickness of 20 mm.

OE-S1 / OP 181	ABS	1T, 2YM	AC / DCEP	2.0 - 6.0 mm	Essen
----------------	-----	---------	-----------	--------------	-------

OE-S2 / OP 120TT	ABS	3YM	AC	4.0 - 5.0 mm	Essen
------------------	-----	-----	----	--------------	-------

OE-S2 / OP 122	ABS	3YTM	AC / DCEP	2.0 - 5.0 mm	Essen
----------------	-----	------	-----------	--------------	-------

OE-S2 / OP 122 FB	ABS	3YTM	AC / DCEP	2.0 - 5.0 mm	Essen
-------------------	-----	------	-----------	--------------	-------

OE-S2 / OP 180S	ABS	2YT, 3YM	AC	4.0 - 5.0 mm	Essen
-----------------	-----	----------	----	--------------	-------

For Grade 2YT, application for maximum plate thickness of 20 mm.

OE-S2 / OP181	ABS	3YT, 3YM	AC / DCEP	2.0 - 5.0 mm	Essen
---------------	-----	----------	-----------	--------------	-------

Two-wire tandem technique; two-run technique limited to 25 mm plate thickness.

OE-S2 Mo / OP121TT	ABS	3YM, 3YT	AC / DCEP	2.0 - 5.0 mm	Essen
--------------------	-----	----------	-----------	--------------	-------

Two-run technique up to 20 mm plate thickness. Multi-run technique recommended by manufacturer for low temperature service, CVN min. 28 J at -50 °C).

#### Thyssen Schweisstechnik Deutschland GmbH

Thermanit 22/09 / Marathon 431	AWS A5.9-93	ER2209	DCEP	2.0 - 4.0 mm	Essen
-----------------------------------	-------------	--------	------	--------------	-------

Recommended by mfr. for welding austenitic-ferritic steel (duplex), UNS no. S31803 (and similar) & for welding these alloys to Grade AH36 (C-Mn Steel). Mfr's guaranteed min., Grade UNS S31803 to AH36: T.S. 500 N/mm<sup>2</sup>; ISO-V @ -20 °C, 47 J.

Union S2 / UV 306	ABS	2M, 2YM	AC / DCEP	2.0 - 5.0 mm	Essen
-------------------	-----	---------	-----------	--------------	-------

The Welding Consumable Manufacturer is qualified in accordance with ABS Quality Assurance Approval

Union S2 / UV 400	ABS	3YTM	AC / DCEP	2.0 - 5.0 mm	Essen
-------------------	-----	------	-----------	--------------	-------

Two-run technique limited to max. 20 mm plate thickness.

Union S2Mo / UV 400	ABS	3YT, 4YM	AC / DCEP	2.0 - 5.0 mm	Essen
---------------------	-----	----------	-----------	--------------	-------

Union S2Ni2.5 / UV 421TT	AWS A 5.23-97	F7P10-ENi2-Ni <sub>2</sub>		3.0 - 5.0 mm	Essen
--------------------------	---------------	----------------------------	--	--------------	-------

Union S2Ni2.5 / UV 421TT	AWS A 5.23-97	F8A10-ENi2-Ni <sub>2</sub>		3.0 - 5.0 mm	Essen
--------------------------	---------------	----------------------------	--	--------------	-------

### HUNGARY

#### Esab Mor Kft.

OK Autrod 12.10 / OK Flux 10.70	ABS	3TM, 3YTM	AC / DC	4.0 - 5.0 mm	Munich
------------------------------------	-----	-----------	---------	--------------	--------

OK Autrod 12.10 / OK Flux 10.71	ABS	3M	AC / DC	4.0 mm	Munich
------------------------------------	-----	----	---------	--------	--------

OK Autrod 12.10 / OK Flux 10.81	ABS	1T, 2M / 1YT, 2YM	AC / DC	2.5 - 5.0 mm	Munich
------------------------------------	-----	----------------------	---------	--------------	--------

OK Autrod 12.10 / OK Flux 10.82	ABS	1YM	AC / DCEP	1.6 - 5.0 mm	Munich
------------------------------------	-----	-----	-----------	--------------	--------

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
<b>HUNGARY</b>					
<b>Esab Mor Kft.</b>					
OK Autrod 12.20 / OK Flux 10.70	ABS	2T / 3M, 3YM	AC / DCEP	4.0 - 5.0 mm	Munich
OK Autrod 12.20 / OK Flux 10.71	ABS	3M, 3YM	AC / DC	4.0 - 5.0 mm	Munich
OK Autrod 12.20 / OK Flux 10.81	ABS	2TM, 2YTM	AC / DC	1.6 - 5.0 mm	Munich
OK Autrod 12.20 / OK Flux 10.82	ABS	1YM	AC / DCEP	1.6 - 5.0 mm	Munich
OK Autrod 12.22 / OK Flux 10.71	ABS	3M, 3YM	AC / DC	2.5 - 5.0 mm	Munich
OK Autrod 12.22 / OK Flux 10.83	ABS	1YM	AC / DCEP	1.6 - 5.0 mm	Munich
OK Autrod 12.24 / OK Flux 10.61	ABS	3TM, 3YTM	DCEP	1.6 - 5.0 mm	Munich
OK Autrod 12.24 / OK Flux 10.71	ABS	3TM, 3YTM	AC / DC	4.0 - 5.0 mm	Munich
OK Autrod 12.34 / OK Flux 10.71	ABS	3TM, 4YTM	AC / DCEP	4.0 - 5.0 mm	Munich

## INDIA

### Advani Oerlikon Ltd. (Ahmednagar)

Automelt Grade A/Automelt Grade II	ABS	2M	DCEP	0.8 - 4.0 mm	Mumbai
Automelt Grade C/Automelt Grade IV	ABS	3YM	DCEP	1.6 - 3.15 mm	Mumbai

### Esab India Ltd.(Mumbai)

OK Autrod 12.08/OK Flux 10.81L		2M	DC/Positive	3.15 - 5.0mm	Mumbai
OK Autrod 12.08L/OK Flux 10.71L		3M	DC/Positive	2.5 - 5.0 mm	Mumbai
OK Autrod 12.40L/OK Flux 10.71L		3YM	DC/Positive	3.15 - 5.0 mm	Mumbai

## INDONESIA

### P.T. Karya Yasantara Cakti

OK Autrod 12.10 / OK Flux 10.71	ABS	3M	AC / DC	2.0 - 4.0 mm	Jakarta
OK Autrod 12.10 / OK Flux 10.80	ABS	1T, 2M	AC / DCEP	2.5 - 6.0 mm	Jakarta
OK Autrod 12.20 / OK Flux 10.71	ABS	3M, 3YM	AC / DCEP	2.0 - 6.0 mm	Jakarta
OK Autrod 12.20 / OK Flux 10.80	ABS	2TM, 2YTM	AC / DCEP	2.5 - 6.0 mm	Jakarta

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
<b>INDONESIA</b>					
<b>P.T. Karya Yasantara Cakti</b>					
OK Autrod 12.22 / OK Flux 10.71	ABS	3M, 3YM	AC / DCEP	2.0 - 6.0 mm	Jakarta
OK Autrod 12.24 / OK Flux 10.71	ABS	3TM, 3YTM	AC / DCEP	2.0 - 6.0 mm	Jakarta
OK Autrod 12.34 / OK Flux 10.71	ABS	3TM, 3YTM	AC / DCEP	2.6 - 6.0 mm	Jakarta

## ITALY

### Esab Saldatura S.p.A.

OK Flux 10.71 / OK Autorod 12.24	ABS	3TM, 3YTM	DCEP	2.4 - 6.0 mm	Milan
OK Flux 10.71 / OK Autorod 12.20	ABS	3M, 3YM	AC / DCEP	2.4 - 6.0 mm	Milan
OK Flux 10.81 / OK Autorod 12.20	ABS	2TM, 2YTM	AC / DCEP	2.4 - 6.0 mm	Milan

### ETC Elettrotermochimica S.r.l.

ETC FXA 27 SB / ETC AS 2	ABS	3YM	AC / DCEP	4.8 mm	Milan
ETC FXA 27 SB / ETC AS 2 Mo	ABS	3YTM, 3YM Fillet	AC / DC	4.8 mm	Milan
ETC FX46R / ETC AS2	ABS	3YM	DCEP	2.4 - 6.0 mm	Venice

### FRO SRL

AS 231 / AS 35	ABS	2T, 2YT	AC	2.4 - 4.8 mm	Milan
AS 231 / AS 36	ABS	3Y Fillet	AC	2.4 - 4.8 mm	Milan
AS 461 / AS 35	ABS	3YM	AC / DCEP	2.4 - 4.8 mm	Milan
AS 461 / AS 35	ABS	2YT	AC	2.4 - 4.8 mm	Milan
AS 461 / AS 40A	ABS	3YM	AC / DCEP	2.4 - 4.8 mm	Milan
AS 461 / AS 40A	ABS	3YM Fillet	AC / DCEP	2.4 - 4.8 mm	Milan
AS 461 / AS 40A	ABS	3YT	AC	2.4 - 4.8 mm	Milan
AS 461 / AS 67	ABS	3Y (One Side)	AC	2.4 - 4.8 mm	Milan
Fluxocord 31 / OP 121 TT	ABS	3M	DCEP	2.4 - 5.0 mm	Venice
Fluxocord 31 / OP 180 S	ABS	3YM, 2YT	DCEP	2.4 - 4.0 mm	Venice

For two-run technique maximum plate thickness 20 mm.

## JAPAN

### Kawasaki Steel Corp.

KW-101B (X2) / KB-110	ABS	3YT	AC	4.0 - 6.4 mm	Yokohama
Manufacturer's guaranteed min. CVN 27 J at -60 °C					
KW-101B / KB-110	ABS	3TM, 3YTM	AC	3.2 - 6.4 mm	Yokohama
Manufacturer's guaranteed min. CVN 27 J at -60 °C					

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### JAPAN

#### Kawasaki Steel Corp.

KW-43 / KB-14	ABS	3TM	AC	2.4 - 6.4 mm	Yokohama
KW-43 / KB-50	ABS	3TM, 3YTM	AC	2.4 - 6.4 mm	Yokohama
KW-43B / KB-155	ABS	2YT	AC	2.4 - 6.4 mm	Yokohama

#### Kobe Steel Ltd., Fukuchiyama Plant

US-255 (X2) / PFI-50LT / Metal Powder RR-3	ABS	4Y400 <sup>^</sup>	AC/AC or AC/DCEP	3.2 - 6.4 mm	Kobe
--	-----	--------------------	------------------	--------------	------

<sup>^</sup> Manufacturer's guaranteed minimum CVN 41 J at -60 °C. Approval subject to satisfactory procedure tests at user's plant. Plate thickness to be welded: Maximum 20 mm. Suitable for one side welding.

US-255 / PFI-50LT	ABS	3 <sup>^</sup> , 3Y <sup>^</sup>	AC / DCEP	3.2 - 6.4 mm	Kobe
-------------------	-----	----------------------------------	-----------	--------------	------

<sup>^</sup> Manufacturer's guaranteed CVN 3.5 Kgf-m -60 °C. Suitable for one-side welding with twin or triple wires.

US-255 / PFI-50LT / Metal Powder RR-3	ABS	4Y400 <sup>^</sup>	AC	3.2 - 6.4 mm	Kobe
---------------------------------------	-----	--------------------	----	--------------	------

<sup>^</sup> Manufacturer's guaranteed minimum CVN 41 J at -60 °C. Approval subject to satisfactory procedure tests at user's plant. Plate thickness to be welded: Maximum 16 mm. Suitable for one side welding.

US-36 (X2) / PFH-52	ABS	2T, 2YT	AC	4.0 - 6.4 mm	Kobe
---------------------	-----	---------	----	--------------	------

US-36 (X2) / PFH-55LT	ABS	4YM <sup>**</sup>	AC/DCEP or AC/AC	2.4 - 6.4 mm	Kobe
-----------------------	-----	-------------------	------------------	--------------	------

<sup>\*\*</sup>Manufacturer's guaranteed minimum CVN 34 J at -60 °C

US-36 (X4) / PFI-55E	ABS	3 <sup>^</sup> , 3Y <sup>^</sup>	AC / DCEP	4.0 - 6.4 mm	Kobe
----------------------	-----	----------------------------------	-----------	--------------	------

US-36 / G-60	ABS	1T	AC	2.4 - 7.9 mm	Kobe
--------------	-----	----	----	--------------	------

US-36 / G-80	ABS	2M	AC	2.0 - 6.4 mm	Kobe
--------------	-----	----	----	--------------	------

US-36 / MF-300	ABS	2T, 3M, 2YT, 3YM	AC	1.6 - 6.4 mm	Kobe
----------------	-----	------------------	----	--------------	------

US-36 / MF-38	ABS	2T, 3M, 2YT, 3YM	AC / DCEP	2.4 - 7.9 mm	Kobe
---------------	-----	------------------	-----------	--------------	------

US-36 / MF-38 / Metal Powder RR-2	ABS	3 <sup>*</sup>	AC / DCEP	2.4 - 7.9 mm	Kobe
-----------------------------------	-----	----------------	-----------	--------------	------

US-36 / MF-44	ABS	2T, 2YT	AC	1.6 - 6.4 mm	Kobe
---------------	-----	---------	----	--------------	------

US-36 / MF-53	ABS	2T, 2YT	AC	1.6 - 4.8 mm	Kobe
---------------	-----	---------	----	--------------	------

For fillet welding only.

US-36 / PFH-52	ABS	2T, 2YT	AC	4.0 - 6.4 mm	Kobe
----------------	-----	---------	----	--------------	------

US-36 / PFH-55E	ABS	3TM, 3YTM, 3Y400TM	AC	2.0 - 6.4 mm	Kobe
-----------------	-----	--------------------	----	--------------	------

US-36 / PFH-55LT	ABS	3M, 3YM <sup>**</sup>	AC	2.0 - 6.4 mm	Kobe
------------------	-----	-----------------------	----	--------------	------

<sup>\*\*</sup>Manufacturer's guaranteed min. CVN 5.5 kgf-m at -60 °C.

US-36 / PFI-52E / Metal Powder RR-2	ABS	3 <sup>*</sup> , 3Y <sup>*</sup>	AC	2.4 - 7.9 mm	Kobe
-------------------------------------	-----	----------------------------------	----	--------------	------

For use with one-side single or tandem process.

US-36 / PFI-52N / Metal Powder RR-2	ABS	3 <sup>*</sup> , 3Y <sup>*</sup>	AC	2.4 - 7.9 mm	Kobe
-------------------------------------	-----	----------------------------------	----	--------------	------

US-36 / PFI-55E	ABS	3 <sup>*</sup> , 3Y <sup>*</sup>	AC / DCEP	2.4 - 7.9 mm	Kobe
-----------------	-----	----------------------------------	-----------	--------------	------

For use with one-side single or tandem process.

US-36 / US-43 (X2) / PFI-50 / Metal Powder RR-5	ABS	2 <sup>^</sup> , 2Y <sup>^</sup>	AC / DC	2.4 - 7.9 mm	Kobe
---	-----	----------------------------------	---------	--------------	------

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### JAPAN

#### Kobe Steel Ltd., Fukuchiyama Plant

US-36 / US-43 (X2) / PFI-50M / Metal Powder RR-2	ABS	2 <sup>^</sup> , 2Y <sup>^</sup>	AC / DCEP	4.8 - 6.4 mm	Kobe
--	-----	----------------------------------	-----------	--------------	------

US-40 (X2) / PFH-55LT	ABS	4Y400T**	AC/AC or AC/DCEP	3.2 - 4.8 mm	Kobe
-----------------------	-----	----------	------------------	--------------	------

\*\*Manufacturer's guaranteed minimum CVN 41J at -60 °C. Plate thickness to be welded: Maximum 20 mm

US-40 / MF-100N	ABS	3T, 3YT**	AC	3.2 - 4.8 mm	Kobe
-----------------	-----	-----------	----	--------------	------

\*\*Manufacturer's guaranteed minimum CVN 3.0 kgf-m (29 J) at -60 °C.

US-40 / MF-38	ABS	**	AC	2.4 - 4.8 mm	Kobe
---------------	-----	----	----	--------------	------

\*\*Manufacturer's guaranteed multi-run technique weld metal minimum properties: T.S. 608-735 MPa, Y.P. 490 MPa, El. 20%, CVN 3.5 kgf-m (34 J) at -30 °C.

US-40 / PFH-50LT	ABS	3T, 3YT**	AC	3.2 - 4.8 mm	Kobe
------------------	-----	-----------	----	--------------	------

\*\*Manufacturer's guaranteed minimum CVN 3.5 kgf-m at -60 °C. Maximum plate thickness 25 mm with single or tandem process.

US-40 / PFH-55LT	ABS	4Y400T**	AC	3.2 - 4.8 mm	Kobe
------------------	-----	----------	----	--------------	------

\*\*Manufacturer's guaranteed minimum CVN 41 J at -60 °C. Plate thickness to be welded: Maximum 20 mm

US-43 (X2) / PFI-52 / Metal Powder RR-2	ABS	3 <sup>^</sup> , 3Y <sup>^</sup>	AC / DCEP	2.4 - 7.9 mm	Kobe
---	-----	----------------------------------	-----------	--------------	------

For one-side tandem welding process.

US-43 / PFH-45	ABS	3TM	AC	2.4 - 7.9 mm	Kobe
----------------	-----	-----	----	--------------	------

US-43 / PFH-60A	ABS	3TM, 3YTM	AC / DCEP	2.4 - 7.9 mm	Kobe
-----------------	-----	-----------	-----------	--------------	------

US-43 / PFI-45	ABS	3TM	AC	2.4 - 7.9 mm	Kobe
----------------	-----	-----	----	--------------	------

US-43 / PFI-45 / Metal Powder RR-2	ABS	3 <sup>^</sup>	AC / DC	2.4 - 7.9 mm	Kobe
------------------------------------	-----	----------------	---------	--------------	------

US-43 / PFI-50	ABS	3TM, 3YTM	AC / DCEP	2.4 - 7.9 mm	Kobe
----------------	-----	-----------	-----------	--------------	------

US-43 / PFI-50 / Metal Powder RR-2	ABS	3 <sup>^</sup> , 3Y <sup>^</sup>	AC / DC	2.4 - 7.9 mm	Kobe
------------------------------------	-----	----------------------------------	---------	--------------	------

US-49 / MF-38	ABS	3YTM	AC	2.4 - 6.4 mm	Kobe
---------------	-----	------	----	--------------	------

US-49 / PFH-55E	ABS	3 <sup>^</sup> , 3Y <sup>^</sup>	AC / DCEP	2.4 - 6.4 mm	Kobe
-----------------	-----	----------------------------------	-----------	--------------	------

<sup>^</sup> Manufacturer's guaranteed CVN 3.5 Kgf-m at -30 °C. Suitable for one-side welding with multiple wire.

#### Kobe Steel Ltd., Ibaraki Plant

US-36 (X2) / PFH-55EM / PFI-50R	ABS	3 <sup>^</sup> , 3Y <sup>^</sup>	AC / DC	4.8 - 6.4 mm	Kobe
---------------------------------	-----	----------------------------------	---------	--------------	------

<sup>^</sup> One-side welding; approval subject to satisfactory procedure tests at user's plant

US-36 (X3) / PFH-55EM / PFI-50R	ABS	3 <sup>^</sup> , 3Y <sup>^</sup>	AC / DC	4.8 - 6.4 mm	Kobe
---------------------------------	-----	----------------------------------	---------	--------------	------

<sup>^</sup> One-side welding; approval subject to satisfactory procedure tests at user's plant

#### Nippon Steel Welding Products & Engineering Co., Ltd. Narashino Plant

x

<sup>^</sup> Approval subject to satisfactory procedure tests at user's plant.

Nittetsu NES-53 / Nittetsu SES-15 / Nittetsu YF-15	ABS	3 <sup>^</sup> , 3Y <sup>^</sup>	AC / DCEP	2.8 - 3.2 mm	Yokohama
--	-----	----------------------------------	-----------	--------------	----------

Consumable nozzle (8 - 12 mm size) electroslag welding of plates without intentionally added Nb.

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
<b>JAPAN</b>					
<b>Nippon Steel Welding Products &amp; Engineering Co., Ltd. Narashino Plant</b>					
Nittetsu Y-A (X2) / Nittetsu NSH-50 / Nittetsu NSH-1R	ABS	2 <sup>^</sup> , 2Y <sup>^</sup>	AC	4.8 - 6.4 mm	Yokohama
Suitable for one side welding with tandem arc process					
Nittetsu Y-A (X3) / Nittetsu NSH-50/1R	ABS	2 <sup>^</sup> , 2Y <sup>^</sup>	AC	4.8 - 6.4 mm	Yokohama
^ Suitable for one side welding with tandem arc process					
Nittetsu Y-A (X4) / Nittetsu NSH - 50/1R	ABS	2 <sup>^</sup> , 2Y <sup>^</sup>	AC	4.8 - 6.4 mm	Yokohama
^ Suitable for use with multi-arc tandem one-side welding.					
Nittetsu Y-A / Nittetsu YB-100	ABS	3TM	AC	2.4 - 8.0 mm	Yokohama
Nittetsu Y-A / Nittetsu YB-150	ABS	3TM, 3YTM	AC	2.4 - 8.0 mm	Yokohama
Nittetsu Y-B / Nittetsu YF-15	ABS	3TM	AC	2.4 - 8.0 mm	Yokohama
Nittetsu Y-C / Nittetsu YF-15	ABS	3TM	AC	2.4 - 8.0 mm	Yokohama
Nittetsu Y-C/ Nittetsu Y-A/ Nittetsu Y-A/ Nittetsu NSH-50/1R	ABS	2 <sup>^</sup> , 2Y <sup>^</sup>	AC	4.8 - 6.4 mm	Yokohama
^ Suitable for use with multi-arc tandem one-side welding					
Nittetsu Y-CM / Nittetsu SES-15 / Nittetsu YF-15	ABS	2 <sup>^</sup> , 2Y <sup>^</sup>	AC / DCEP	2.4 - 3.2 mm	Yokohama
Consumable nozzle (8 - 12 mm) electroslag welding.					
Nittetsu Y-CM / Nittetsu YF-15	ABS	3TM, 3YTM	AC	2.4 - 8.0 mm	Yokohama
Nittetsu Y-CS / Nittetsu SES-15 / Nittetsu YF-15	ABS	2 <sup>^</sup>	AC / DCEP	2.4 - 3.2 mm	Yokohama
Consumable nozzle (8 - 12 mm) electroslag welding.					
Nittetsu Y-D / Nittetsu NB-55E	ABS	3TM, 3YTM	AC	2.4 - 6.4 mm	Yokohama
Suitable for use with single or tandem wire automatic process.					
Nittetsu Y-D / Nittetsu NB-55L	ABS	3M, 3YM**	AC	4.8 mm	Yokohama
**Manufacturer's guaranteed avg. CVN 40 J at -60 °C.					
Nittetsu Y-D / Nittetsu NF-1	ABS	3TM, 3YTM	AC	3.2 - 4.8 mm	Yokohama
Maximum plate thickness of 20 mm for two-run technique.					
Nittetsu Y-D / Nittetsu NF-310	ABS	3TM, 3YTM	AC	2.4 - 4.8 mm	Yokohama
Maximun plate thickness of 20 mm for two-run technique.					
Nittetsu Y-D / Nittetsu YF-15	ABS	2T, 3M, 2YT, 3YM	AC	2.4 - 8.0 mm	Yokohama
Nittetsu Y-D / Nittetsu YF-800	ABS	2M, 2YM	AC	1.2 - 8.0 mm	Yokohama
Nittetsu Y-DL (X2) / Nittetsu YF-15	ABS	3M, 3YM	AC	2.4 - 6.4 mm	Yokohama
Nittetsu Y-DL / Nittetsu YF-15	ABS	3M, 3YM	AC	2.4 - 6.4 mm	Yokohama
Nittetsu Y-E / Nittetsu NF-310	ABS	3TM, 3YTM	AC	2.4 - 4.8 mm	Yokohama

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### JAPAN

#### Nippon Steel Welding Products & Engineering Co., Ltd. Narashino Plant

Nittetsu Y-E / Nittetsu NF-310	ABS	3TM, 3YTM	AC	2.4 - 4.8 mm	Yokohama
--------------------------------	-----	-----------	----	--------------	----------

Manufacturer's guaranteed minimum properties, CVN 3.0 kgf-m at -60 °C. For two run technique, maximum plate thickness of 20 mm.

Nittetsu Y-80M / Nittetsu NB-250H		**	AC	2.4 - 4.8 mm	Yokohama
-----------------------------------	--	----	----	--------------	----------

\*\*Manufacturer's guaranteed multi-run technique weld metal minimum properties: T.S. 785 N/mm<sup>2</sup>, Y.S. 690 N/mm<sup>2</sup>, El. 16.0%, CVN 50 J at -60 °C

#### Nippon Welding Rod Co., Ltd. (Hamakita)

WEL SUB 316L / WEL SUB F-6	AWS A5.9-93	ER316L	AC	4.0 mm	Yokohama
----------------------------	-------------	--------	----	--------	----------

#### Sumikin Welding Industries, Ltd., Kashiwa Plant

#W-316L / #BS-29T		**	AC	2.4 - 4.8 mm	Yokohama
-------------------	--	----	----	--------------	----------

\*\*Mfr's guaranteed min. properties and chemical composition (%) of deposited metal: T.S 590 N/mm<sup>2</sup>, Y.S 320 N/mm<sup>2</sup>, EL. 22%.

#W-36 / #100	ABS	2TM, 2YTM	AC	2.4 - 6.4 mm	Yokohama
--------------	-----	-----------	----	--------------	----------

For grade 2T, applicable to a maximum plate thickness of 30 mm.

### KOREA

#### Chosun Steel Wire Co., Ltd. (Ulsan)

UC308L / PFS-1	AWS A5.9-93	ER308L	DCEP	2.4 - 4.8 mm	Ulsan
UC316L / PFS-1	AWS A5.9-93	ER316L	DCEP	2.4 - 4.8 mm	Ulsan

#### Chosun Steel Wire Company

UC-12K / CA-526	AWS A.5.17-97	F7A(P)6-EM12k	AC / DCEP	2.4 - 6.4 mm	Ulsan
UC-12K / CA-526	ABS	3TM, 3YTM	AC / DCEP	2.4 - 6.4 mm	Ulsan
UC-36 / CA-502	ABS	3TM, 3YTM	AC / DCEP	2.4 - 6.4 mm	Ulsan
UC-36 / CA-502	AWS A.5.17-97	F7A(P)2-EH14	AC / DCEP	2.4 - 6.4 mm	Ulsan
UC-36 / CA-508	AWS A.5.17-97	F7A(P)8-EH14	AC / DCEP	2.4 - 6.4 mm	Ulsan
UC-36 / CA-508	ABS	3TM, 4YTM	AC / DCEP	2.4 - 6.4 mm	Ulsan
UC-43 / CA-514	ABS	3TM, 3YTM	AC / DCEP	2.4 - 6.4 mm	Ulsan
UC-43 / CA-514	AWS A.5.17-97	F7A(P)4-EL8	AC / DCEP	2.4 - 6.4 mm	Ulsan
UC36 / CF50	ABS	2TM	AC / DCEP	2.4 - 6.4 mm	Pusan
UC36 / MF-38	ABS	3TM, 3YTM	AC / DCEP	2.4 - 6.4 mm	Pusan

#### Hanswel Co., Ltd.

SW-H14 / FA-77HS	ABS	2TM, 2YTM	AC / DCEP	2.0 - 6.0 mm	Ulsan
------------------	-----	-----------	-----------	--------------	-------

For two-run technique, maximum plate thickness of 20 mm.

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
<b>KOREA</b>					
<b>Hyundai Welding Co., Ltd.</b>					
H-14 (X2) / S-777 MXH	ABS	3YM	AC / DCEP	1.2 - 3.2 mm	Ulsan
H-14 / S-705.EF / IRN / S-22	ABS	2, 2Y**	AC / DCEP	2.0 - 6.4 mm	Ulsan
**For one-side welding technique					
H-14 / S-707 TP	ABS	3TM, 3YTM	AC / DCEP	2.0 - 6.4 mm	Ulsan
H-14 / S-717 ULT	ABS	3M, 3YM**	AC / DCEP	2.0 - 6.4 mm	Ulsan
**Manufacturer's guaranteed minimum CVN 3.5 kgf-m at -62 °C.					
H-14 / S-777 MX	ABS	2M, 2YM	AC / DCEP	1.6 - 6.4 mm	Ulsan
H-14 / S-777 MX	AWS A5.17-97	F7AZ-EH-14	AC / DCEP	1.6 - 6.4 mm	Ulsan
H-14 / S-777 MXH	ABS	2T, 2YT, 3M, 3YM	AC / DCEP	1.2 - 6.4 mm	Ulsan
H-14 / S-787 TB	ABS	3T, 3YTM, 3M, 3YM**	AC / DCEP	2.0 - 6.4 mm	Ulsan
**Manufacturer's Guaranteed Min. CVN 3.5 Kgf-m at -62 °C. Suitable for Tandem Arc Welding.					
H-14 / Superflux 787	ABS	3M, 4YM	AC / DCEP	1.6 - 6.4 mm	Ulsan
H-14 / Superflux 787	AWS A5.17-97	F7A8-EH14, F7P8-EH14	AC / DCEP	1.6 - 6.4 mm	Ulsan
H-14L / Superflux 787	ABS	3M, 4YM	AC / DCEP	1.6 - 6.4 mm	Ulsan
H-14L / Superflux 787	AWS A5.23-97	F7A8-EG-G	AC / DCEP	1.6 - 6.4 mm	Ulsan
H14 / S-737	ABS	3M, 3YM	AC / DCEP	2.0 - 6.4 mm	Ulsan
L-8 / Superflux 70H	AWS A5.17-97	F7A0-EL8, F7P0-EL8	AC / DCEP	1.6 - 6.4 mm	Ulsan
L12 / S-727	AWS A5.17-97	F7A2-EL12	AC / DCEP	1.6 - 6.4 mm	Ulsan
L12 / S-727	ABS	2TM, 2YTM**	AC / DCEP	1.6 - 6.4 mm	Ulsan
**Two-run technique: Max. 5.0 mm dia.					
L8 / S-707	AWS A5.17-89	F7P4-EL8, F7A4-EL8	AC / DC	1.6 - 6.4 mm	Ulsan
L8 / S-707	ABS	3TM, 3YTM	AC / DC	1.6 - 6.4 mm	Ulsan
L8 / S-707 / IRN / S-22	ABS	2, 2Y**	AC / DCEP	2.4 - 6.4 mm	Ulsan
**For one-side welding technique.					
L8 / S-727	ABS	2TM, 2YTM	AC / DCEP	2.4 - 6.4 mm	Ulsan
M-12K / S-717	AWS A5.17-97	F7P6-EM12K, F7A6-EM12K	AC / DCEP	2.4 - 6.4 mm	Ulsan
M-12K / S-717	ABS	3TM, 3YTM	AC / DCEP	2.4 - 6.4 mm	Ulsan
YS-316L / Superflux 300S	AWS A5.9-93	ER316L (Wire)**	AC / DCEP	1.6 - 5.0 mm	Ulsan
**Mfr's guaranteed min. properties and chem. (W.M) CVN 34 J at -60 °C, TS>490 (N/mm <sup>2</sup> ), EL.>30%, C 0.040 max, Mn 0.5~2.5, P 0.040 max, S 0.030 max, Si 1.0 max, Cr 17.0~20.0, Ni 11.0~16.0, Mo2.0~3.0					
<b>Kiswel Ltd.</b>					
KD-40 / EF-200	ABS	3TM, 3YTM	AC / DCEP	2.0 - 6.0 mm	Pusan
KD-42 / EF-200K	ABS	3TM, 3YTM	AC / DCEP	2.0 - 6.0 mm	Pusan
KD-50 / EF-100	ABS	3TM, 3YTM	AC / DCEP	2.0 - 6.0 mm	Pusan

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
<b>MEXICO</b>					
<b>Lincoln Electric Mexicana S.A. de C.V.</b>					
Lincoln Mexicana L-61 /Lincoln Cleveland 860	AWS A5.17-89	F7A2-EM12K	DC	5/64 - 3/16 in.	Cleveland
Lincoln Mexicana L-61/ Lincoln Cleveland 882	AWS A5.17-89	F7A6-EM12K	DC	5/64 - 3/16 in.	Cleveland
<b>NETHERLANDS</b>					
<b>Hilarius Haarlem Holland B.V.</b>					
Hilco H100 / HW 530	ABS	3YM	AC	4.0 mm	Rotterdam
Hilco H100 / HW 530	ABS	2YT	AC	4.8 mm	Rotterdam
<b>Lincoln Electric B.V.</b>					
LNS T55 / 8500	ABS	4Y400M	DCEP	2.8 mm	Rotterdam
<b>PERU</b>					
<b>Exsa S.A.</b>					
PS-1 / POP-100	ABS	1T, 3M	DCEP	4 - 5 mm	Callao
PS-1 / POP-185	ABS	1T, 2M	DCEP	4 - 5 mm	Callao
PS-2 / POP-100	ABS	1YT, 3YM	DCEP	4 - 5 mm	Callao
PS-2 / POP-185	ABS	1YT, 2YM	DCEP	4 - 5 mm	Callao
<b>PHILIPPINES</b>					
<b>Welding Industries of the Philippines</b>					
Wipweld EMSI / Wipweld OP 181	ABS	3TM	DCEP	2.5 - 5.0 mm	Manila
<b>POLAND</b>					
<b>Ema Brzeznie Sp. z o.o.</b>					
IMT7 / TA.St.3	ABS	3M	AC / DCEP	5.0 mm	Gdynia
IMT8 / TA.St.1	ABS	3YM	AC / DCEP	5.0 mm	Gdynia
<b>Esab Sp. z o.o.</b>					
IMT 7F / FF 75	ABS	3TM, 3YTM	AC / DCEP	2.0 - 6.0 mm	Gdynia
OK Autrod 12.10 / OK Flux 10.76	ABS	3TM, 3YTM	AC / DCEP	2.0 - 6.0 mm	Gdynia
OK Autrod 12.20 / OK Flux 10.71	ABS	3M, 3YM	AC / DCEP	2.0 - 6.0 mm	Gdynia

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### POLAND

#### Esab Sp. z o.o.

OK Autrod 12.24 / OK Flux 10.71	ABS	3TM, 3YTM	AC / DC	2.0 - 6.0 mm	Gdynia
---------------------------------	-----	-----------	---------	--------------	--------

### SLOVENIA

#### Elektrode Jesenice d.o.o.

EPP2 / AB100	ABS	2TM	AC / DCEP	2.0 - 5.0 mm	Croatia
EPP2 / AR D1	ABS	2YTM	AC / DCEP	2.0 - 5.0 mm	Croatia
EPP2 / AR 18.1	ABS	2YTM	AC / DCEP	2.0 - 5.0 mm	Croatia
For two-run technique, maximum plate thickness of 20 mm.					
EPP2 / AR18.5	ABS	2TM	AC / DCEP	2.0 - 5.0 mm	Croatia
EPP2 / FBTT	ABS	3M	AC / DCEP	2.0 - 5.0 mm	Croatia
Mfr's guaranteed minimum CVN 30 J at -40 °C.					
EPP2Mo / FBTT	ABS	3YM	AC / DCEP	2.0 - 5.0 mm	Croatia
EPP2Ni / FBTT	ABS	4YM	AC / DCEP	2.0 - 5.0 mm	Croatia
EPP3 / AB100	ABS	2YTM	AC / DCEP	2.0 - 5.0 mm	Croatia
For two-run technique, maximum plate thickness of 20 mm.					
EPP3 / FB 12.2	ABS	2YT, 3YM	AC / DCEP	2.0 - 5.0 mm	Croatia
EPP3 / FBTT	ABS	3YM	AC / DCEP	2.0 - 5.0 mm	Croatia

### SOUTH AFRICA

#### Afrox Ltd.

Afrox Sub70-2 / Duracor B	ABS	2YM	DCEP	4 mm	Durban
Intended for local market					

### SPAIN

#### Union Iberica de Soldadura, S.A.

HB10/H700	ABS	2TM	DCEP	2.38 - 6.0 mm	Gijon
HB20 / AS60	ABS	3YTM	AC / DC	1.6 - 6.0 mm	Gijon
HB20 / H700	ABS	3YTM	DCEP	2.38 - 6.0 mm	Gijon

### SWEDEN

#### Esab AB

OK Autrod 12.10 / OK Flux 10.30	ABS	2YT	AC	2.0 - 6.0 mm	Gothenburg
OK Autrod 12.10 / OK Flux 10.70	ABS	3TM, 3YM	AC / DCEP	4.0 - 6.0 mm	Gothenburg
OK Autrod 12.10 / OK Flux 10.71	ABS	3M	AC / DCEP	2.0 - 4.0 mm	Gothenburg

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
<b>SWEDEN</b>					
<b>Esab AB</b>					
OK Autrod 12.10 / OK Flux 10.80	ABS	2TM, 2YTM	AC / DCEP	2.5 - 6.0 mm	Gothenburg
OK Autrod 12.20 / OK Flux 10.70	ABS	2T, 3M, 3YM	AC / DCEP	4.0 - 6.0 mm	Gothenburg
OK Autrod 12.20 / OK Flux 10.71	ABS	3M, 3YTM	AC / DCEP	2.0 - 6.0 mm	Gothenburg
OK Autrod 12.20 / OK Flux 10.80	ABS	1T, 2M	AC / DCEP	2.5 - 6.0 mm	Gothenburg
OK Autrod 12.22 / OK Flux 10.62	ABS	3M, 3YM	AC / DCEP	2.5 - 6.0 mm	Gothenburg
OK Autrod 12.22 / OK Flux 10.71	ABS	3M, 3YM	AC / DCEP	2.0 - 6.0 mm	Gothenburg
OK Autrod 12.24 / OK Flux 10.62	ABS	3M, 3YM	AC / DCEP	1.6 - 6.0 mm	Gothenburg
OK Autrod 12.24 / OK Flux 10.71	ABS	3TM, 3YTM	AC / DC	2.0 - 6.0 mm	Gothenburg
OK Autrod 12.32 / OK Flux 10.62	ABS	3M, 3YM	AC / DCEP	3.0 - 6.0 mm	Gothenburg
OK Autrod 12.34 / OK Flux 10.62	ABS	3M, 3YM	AC / DCEP	4.0 mm	Gothenburg
OK Autrod 12.34 / OK Flux 10.71	ABS	3TM, 3YTM	AC / DCEP	4.0 - 6.0 mm	Gothenburg
OK Autrod 13.27 / OK Flux 10.62	ABS	3YM	AC / DCEP	3.0 - 4.0 mm	Gothenburg

## TAIWAN R.O.C.

### Tien Tai Electrode Co., Ltd.

TSW-12KM / TF-385	ABS	3T, 3YT	DC	2.4 - 4.8 mm	Kaohsiung
TSW-12KM / TF-565	ABS	3M, 3YM	DC	2.4 - 4.8 mm	Kaohsiung
TSW-14H / TF-560	AWS A5.17-97	F7A2-EH14	AC / DCEP	2.4 - 4.8 mm	Kaohsiung
TSW-14H / TF-565	ABS	3M, 3YM	DC	2.4 - 4.8 mm	Kaohsiung
TSW-60G / TF-560	AWS A5.23-97	F8A4-EG-G	AC / DCEP	2.4 - 4.8 mm	Kaohsiung

## TURKEY

### Arcotech Kaynak Elektrolari Ve Tel San.A.S.

Arcotech S1 / Subtech 10	ABS	3M	DCEP	2.0 - 5.0 mm	Istanbul
Arcotech S2 / Subtech 10	ABS	3YM	DCEP	2.0 - 4.0 mm	Istanbul
S1 / Subtech AB 18	ABS	3M	DCEP	2.0 - 4.0 mm	Istanbul
S2 / Subtech AB 18	ABS	3YM	DCEP	2.0 - 4.0 mm	Istanbul

## Submerged Arc Welding

---

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### TURKEY

#### AS Kaynak, Kaynak Teknigi San. ve Tic. A.S.

AS-S1 Wire / Lincoln 860 Flux	ABS	3M	DCEP	2.4 - 4.0 mm	Istanbul
AS-S2 / L-780	ABS	3M, 3YM	DCEP	2.0 - 4.0 mm	Istanbul
AS-S2 Wire / Lincoln 860 Flux	ABS	3M, 3YM	DCEP	2.4 - 4.0 mm	Istanbul

---

#### Gedik Kaynak Sanayi Ve Ticaret A.S.

Geka S1 / Eliflux BAR	ABS	2T	DCEP	2.0 - 5.0 mm	Istanbul
Geka S2 / Eliflux BFB	ABS	3YM	DCEN	2.0 - 5.0 mm	Istanbul

---

#### Oerlikon Kaynak Elektrodleri Ve Sanayi A.S.

OE-S1 / F-261	AWS A5.17-89	F7A2-EL12	DCEP	2.4 - 4.0 mm	Istanbul
OE-S1 / F-261	ABS	3YM	DCEP	2.4 - 4.0 mm	Istanbul
OE-S1 / OP1100	AWS A5.17-89	F6A2-EL12	DCEP	2.4 - 4.0 mm	Istanbul
OE-S1 / OP1100	ABS	3M	DCEP	2.4 - 4.0 mm	Istanbul
OE-S1/OS1150		3M	DC(R)	2.4 - 4.0mm	Istanbul
OE-S1/OS1150		F6A2-EL12, AWS A5.17-89	DC (R)	2.4 - 4.0 mm	Istanbul
OE-S2 / F-261	ABS	3YM	DCEP	2.4 - 4.0 mm	Istanbul
OE-S2 / F-261	AWS A5.17-89	F7A4-EM12	DCEP	2.4 - 4.0 mm	Istanbul
OE-S2 / OP1100	ABS	3YM	DCEP	2.4 - 4.0 mm	Istanbul
OE-S2 / OP1100	AWS A5.17-89	F7A4-EM12	DCEP	2.4 - 4.0 mm	Istanbul
OE-S2/OP1100 MO		3YM	DC(R)	2.4 - 4.0mm	Istanbul
OE-S2/OP1100 MO		F7A4-EM12K-A, AWS A5.23-90	DC (R)	2.4 - 4.0mm	Istanbul
OE-S2/OS1150		3YM	DC(R)	2.4 - 4.0mm	Istanbul
OE-S2/OS1150		F7A4-EM12K, AWS A5.17-89	DC (R)	2.4 - 4.0mm	Istanbul

---

### UNITED KINGDOM

#### Esab Group (UK) Ltd. - Esab

OK Tubrod 14.00S / OK Flux 10.71	ABS	3M, 3YM	AC / DCEP	2.4 - 4.0 mm	London
OK Tubrod 15.00S / OK Flux 10.71	ABS	3M, 3YM	AC / DCEP	2.4 - 4.0 mm	London
OK Tubrod 15.25S / OK Flux 10.62	ABS	4Y400	DCEP	3.0 - 4.0 mm	London

---

#### Oerlikon Welding Ltd.

SD3 / OP 121TT; also RE3N / OP 121TT	ABS	4YM	DCEP	4.0 mm	Liverpool
--------------------------------------	-----	-----	------	--------	-----------

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
<b>UNITED KINGDOM</b>					
<b>Oerlikon Welding Ltd.</b>					
SD3 / OP192	ABS	4YM	DCEP	4.0 mm	Liverpool
SD3 1Ni 1/2 Mo / OP121TT	ABS	4YQ550M	DCEP	4.0 mm	Liverpool
SD3 1Ni 1/4 Mo / OP121TT	ABS	4YQ460M	DCEP	2.4 - 4.0 mm	Liverpool
SD3-2-1/2 Ni, 1/2 Cr, 1/2 Mo / OP121TT	ABS	4YQ690M	DCEP	4.0 mm	Liverpool
S2 / OP121TT	ABS	4YM	DCEP	4.0 mm	Liverpool
S2 / OP192	ABS	3YM	DCEP	2.4 - 4.0 mm	Liverpool
Tibor 22 / OP 192 (Single wire)	ABS	3YM	DCEP	4.0 mm	Liverpool
Tibor 22 / OP 192 (Single wire)	ABS	3YT	DCEP	4.0 mm	Liverpool
Tibor 22 / OP 192 (Tandem)	ABS	3YT	DCEP	3.2 - 4.0 mm	Liverpool
Tibor 22 / OP 192 (Tandem)	ABS	3YM	DCEP	3.2 - 4.0 mm	Liverpool

## UNITED STATES

### Esab Group, Inc. / L-Tec Welding and Cutting Systems

Spoolarc ENi4 / Unionmelt 429	AWS A5.23-97	F8A4-ENi4-Ni4 (H8)		1/16 - 3/16 in.	Cleveland
Spoolarc ENi4 / Unionmelt 651VF	AWS A5.23-97	F8A8-ENi4-Ni4		1/16 - 3/16 in.	Cleveland
Spoolarc ENi4 / Unionmelt 709-5	AWS A5.23-97	F8A4-ENi4-Ni4 (H8)		1/16 - 3/16 in.	Cleveland
Spoolarc 100 / Unionmelt 709-5	AWS A5.23-97	F11A4-EF5-F5		1/16 - 3/16 in.	Cleveland
Spoolarc 29S / Unionmelt 651VF	ABS	3M, 3YM	DCEP	1/16 - 3/16 in.	Cleveland
Spoolarc 36 / Unionmelt 124	AWS A5.17-97	F7A2-EH14		1/16 - 3/16 in.	Cleveland
Spoolarc 36 / Unionmelt 50	AWS A5.17-97	F7A2-EH14		1/16 - 3/16 in.	Cleveland
Spoolarc 36 / Unionmelt 585	AWS A5.17-97	F7A2-EH14		1/16 - 3/16 in.	Cleveland
Spoolarc 36 / Unionmelt 80	AWS A5.17-97	F7A2-EH14		1/16 - 3/16 in.	Cleveland
Spoolarc 81 / Unionmelt 651VF	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
Spoolarc 81 / Unionmelt 231	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
Spoolarc 81 / Unionmelt 350	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
Spoolarc 81 / Unionmelt 350M	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
Spoolarc 81 / Unionmelt 429	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
Spoolarc 81 / Unionmelt 585	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland

### ITW Hobart Brothers/Hobart Brothers

Hobart 121/EM12K		AWS A5.17-89, F7A4-EM12K		1/16 - 3/16 in.	Cleveland
------------------	--	-----------------------------	--	-----------------	-----------

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
------------	------	-------	------------------	-------	-------------

### UNITED STATES

#### ITW Hobart Brothers/Hobart Brothers

Hobart 121/EM13K		AWS A5.17-89, F7A6-EM13K		1/16 - 3/16 in	Cleveland
Hobart 121/SD3		AWS A5.17-89, F7A6-EM13K		1/16 - 3/16 in	Cleveland

#### ITW Hobart Brothers/McKay

McKay In-Flux 308L GS/Lincoln ST100		*	DC(R)	1/16 - 5/32 in	Cleveland
Man. guaranteed chem. (WM) & min properties:C 0.04 max, Mn 1-2.5, P.03 max, Si 1.0 max, Cr 19.5-22, Ni 9-11, Mo .75 max, Cu .75 max Y.P. 55ksi, T.S. 80ksi, EI 30%					
McKay In-Flux 309L GS/Lincoln ST100		*	DC(R)	1/16 - 5/32 in	Cleveland
Man. guaranteed chem. (WM) & min properties:C 0.04 max, Mn 1-2.5, P.03 max, S .03 max, Si 1.0 max, Cr 23-25, Ni 12-14, Mo .75 max, Cu .75 max Y.P. 55ksi, T.S. 80ksi, EI 30%					

#### Lincoln Electric Co. (Mentor Plant)

L-61 / 882	AWS A5.17-97	F7A6-EM12K		1/16 - 3/16 in.	Cleveland
L-61 / 960	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
LA-90 / 8500	AWS A5.23-97	F9A2-EA3K-A3		5/64 - 3/16 in.	Cleveland
LAC-M2 / 880	AWS A5.23-97	F11A6-ECM2-M		3/32 - 5/32 in.	Cleveland
LAC-Ni2 / 880	AWS A5.23-97	F7P10-ECNi2-N		3/32 - 5/32 in.	Cleveland
LS3 / 8500	ABS	4M, 4YM	DCEP	3/32 - 5/32 in.	Cleveland
L50 / 781	AWS A5.17-97	F7A0-EM13K		0.035 - 5/32 in.	Cleveland
L50 / 880M	ABS	3M, 3YM	DCEP	0.035 - 5/32 in.	Cleveland
L50 / 960	AWS A5.17-97	F7A2-EM13K		0.035 - 3/16 in.	Cleveland
L56 / 880M	ABS	3M, 3YM	DCEP	0.035 - 5/32 in.	Cleveland
L60 / 760	AWS A5.17-97	F6A2-EL12		5/64 - 7/32 in.	Cleveland
L60 / 761	AWS A5.17-97	F7A2-EL12		5/64 - 7/32 in.	Cleveland
L60 / 780	AWS A5.17-97	F7A0-EL12		5/64 - 7/32 in.	Cleveland
L60 / 860	AWS A5.17-97	F6A2-EL12		5/64 - 7/32 in.	Cleveland
L61 / 761	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
L61 / 780	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
L61 / 781	AWS A5.17-97	F7A0-EM12K		1/16 - 3/16 in.	Cleveland
L61 / 8500	ABS	4M, 4YM	DCEP	5/32 in.	Cleveland
L61 / 860	AWS A5.17-97	F7A2-EM12K		1/16 - 3/16 in.	Cleveland
L70 / 761	ABS	3M, 3YM	AC / DC	5/64 - 3/16 in.	Cleveland
L70 / 761	ABS	3YTM	AC / DC	5/64 - 3/16 in.	Cleveland

## Submerged Arc Welding

Trade Name	Spec	Grade	Current Polarity	Sizes	Port Office
<b>UNITED STATES</b>					
<b>Sandvik Steel Co.</b>					
Sandvik 308L / 34SF				0.5 mm	Philadelphia
Deposited weld metal meets AWS A5.4-92, E308L chemistry.					
Sandvik 308L / 35WF				1/8 - 3/16 in.	Philadelphia
Deposited weld metal meets AWS A5.4-92, E308L chemistry.					
Sandvik 309L / 34SF				0.5 mm	Philadelphia
Deposited weld metal meets AWS A5.4-92, E309L chemistry.					
Sandvik 309L / 35WF				1/8 - 3/16 in.	Philadelphia
Deposited weld metal meets AWS A5.4-92, E309L chemistry.					
Sandvik 316L / 34SF				0.5 mm	Philadelphia
Deposited weld metal meets AWS A5.4-92, E316L chemistry.					
Sandvik 316L / 35WF				1/8 - 3/16 in.	Philadelphia
Deposited weld metal meets AWS A5.4-92, E316L chemistry.					
<b>Washington Alloy Company</b>					
RW 308L		ER 308L	DC(R)	2.4mm	Seattle
ST 100		AWS 5.17	DC(R)	3/32in	Seattle