

## Description

**OP76** is a fluoride basic agglomerated submerged-arc flux with a basicity index of B.I 2.7 for the welding of austenitic and duplex stainless steels. The flux is also suitable for use with CrMo low alloy wires where low levels of residual elements are required. The flux behaves neutrally with regard to carbon content in the filler wire and as such low carbon stainless steels can be readily welded using the appropriate wire grade. **OP76** used in conjunction with **Silverfil 22.8.3L** duplex stainless steel wire produces weld metal with a PRE<sub>N</sub> 33. The metallurgical behaviour of the flux in respect to silicon and manganese is neutral and as a result there is no burn out or pick of these elements.

**OP76** gives an excellent weld bead shape and appearance with even blending at the weld toe, the resultant bead requiring little or no post weld dressing. Whilst the flux is particularly suited for use with tandem and multi-wire welding operations on DC positive or AC at up to 800A the use of single wire welding is recommended for stainless steels.

## Flux Analysis

SiO <sub>2</sub> + TiO <sub>2</sub>	CaO + MgO	Al <sub>2</sub> O <sub>3</sub> + MnO	CaF <sub>2</sub>
15%	40%	20%	25%

## Specifications

Wire	AWS A5.23-97
OE-SD2 1¼Cr ½Mo	F8P2-EB2-B2

## All-Weld Metal Composition [typical, wt%]

Wire	C	Mn	Si	S	P	Cr	Ni	Mo	N
Silverfil 316L	0.029	1.77	0.47	0.001	0.015	19.2	12.9	2.58	-
Silverfil 22.8.3L	0.01	1.64	0.42	0.004	0.017	22.6	8.7	3.2	0.15
OE-SD2 1¼Cr ½Mo	0.07	0.85	0.31	0.005	0.008	1.32	0.07	0.54	-

## All-Weld Metal Mechanical Properties [typical]

Wire	Condition	0.2% Proof Stress N/mm <sup>2</sup>	Tensile Strength N/mm <sup>2</sup>	Elongation %	Charpy V-notch Joules
Silverfil 316L	As-welded	404	620	33	116 @ -110°C
Silverfil 22.8.3L	As-welded	580	810	28	90 @ -20°C 70 @ -60°C
OE-SD2 1¼Cr ½Mo	PWHT 690°C 1h	455	570	28	150 @ -20°C

**Typical Applications**

For welding Austenitic and Duplex stainless steels, also suitable for welding CrMo low alloy steels. Typical steel grades suitable for welding using OP76 in combination with a range of submerged-arc wires are listed below.

Wire	Product	Grade	
Silverfil 316L	Pressure Vessel Plate	BS1501:Pt.3:1990 Grades 316S11,316S31	
		BS970:Pt.1:1991 Grades 316S11, 316S13, 316S31	
	Forgings Castings ASTM Castings	BS1449:Pt.2:1983 Grades 316S11, 316S13, 316S31	
		BS1503:1989 Grades 316S11, 316S13, 316S31	
		BS3100:1991 Grades 316C12, 316C16	
		ASTM A351 Grades CF3M, CF3MA	
Silverfil 22.8.3L	German Werkstoff Grades	1.4417, 1.4460, 1.4462	
		Sandvik SAF 2205	
		Mannesman AF22	
		Thyssen Remanit 4462	
		Uranus 45N	
		SS 744LN	
	ASTM Steel	ALX 4462	
		Hyesist 25/5	
		A182 Grade F51	
OE-SD2 1¼Cr ½Mo	Plates	EN 10028-2: 1993 Grade 13CrMo4-5 and steel 621	
		ASTM A387 Grades 2, 11,12	
	Pipes	BS3604: 1978 Grades 620 and 621	
		ASTM A199 and A200 Grade T11	
	Tubes	ASTM A213 Grades T11, T12	
		BS3059: Pt: 1990 Grade 620-460	
	Forgings	ASTM A199 and A200 Grade T11	
		BS1503: 1989 Grades 620-440, 620-540, 621-640	
		BS 1504: 1976 Grade 621	
			BS 3100: 1991 Grade B2

**Packaging** OP76 is supplied in 35kg heavy-duty polythene sacks.