Technical Data Sheet
EXHAUST® Bi Stab

Chemical composition (%)

C	Si	Mn	Ni	Cr	Mo	Cu	Ti	Nb
≤ 0.03	≤1.5	≤1,0	≤ 0,5	17.5 - 19.5	≤ 0,5	≤ 0,5	10xC – 0.5	8xC – 0.8

30-09-2021 – REV 03

General presentation

EXHAUST® Bi Stab is one of the stabilised ferritic filler wire variants offered by Ugitech for welding automotive exhaust lines.

Its bi-stabilisation with niobium and titanium gives it the advantages of both these ferritic structure stabilisers:

» Titanium minimizes grain growth in Weld Metal zones (WM) due to titanium nitride (TiN) precipitation in the still liquid metal in these zones, thus avoiding the risk of brittleness, which may sometimes occur when very thick welds are made (> 3 mm of sheet metal to be welded).

» Niobium traps the residual carbon and nitrogen through its transfer of between 85 and 95% in the welding arc under all standard welding conditions, thus avoiding any risk of intergranular corrosion in the WM.

Classification

Stabilised ferritic grade

Designation

Material No.

Europe – EN ISO 14343-A	USA – AWS A5.9	Europe – WNr.
18 L Nb Ti	**(430 LNbTi)	(1.4509)

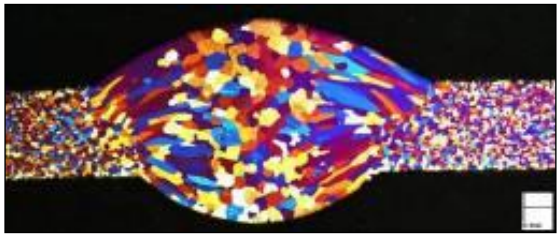
*** Usual naming not referenced in the standard AWS A5.9*

Approvals

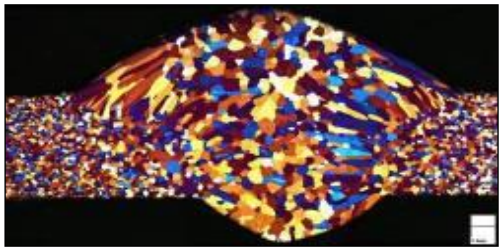
	MIG	TIG	SAW
TÜV (Germany)			
CE	X	X	X
DB			

Micro structure

Edge-to-edge welding of bi-stabilised ferritic sheet metals (1.4509) under argon+ 2% CO_2 with EXHAUST® Bi Stab MIG filler wire ∅ 1 mm



1.4 mm thick sheets
(U = 23 V; Wi S = 10 m/min; We S = 1.7 m/min)



2.0 mm thick sheets
(U = 26 V; Wi S = 12 m/min; We S = 1.2 m/min)

Swiss Steel Group

Production sites: Ugitech SA
www.swisssteel-group.com

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Welding

EXHAUST® Bi Stab filler wire is designed for welding stabilised ferritic stainless steel sheets, whatever their stabilising element (1.4509, 1.4510, 1.4511, 1.4512, etc.). It can, however, also be used in certain cases for heterogeneous welding of ferritic stainless steel/austenitic stainless steel or austenitic stainless steel/austenitic stainless steel.

The niobium present in the filler grade ensures its stabilisation (essential for preventing intergranular corrosion phenomena in the WM during use).

Although bi-stabilisation with niobium and titanium ensures a stabilised WM, including when highly oxidising and recarburising gases such as argon + 8% CO_2 are used.

slightly oxidising shielding gas is preferred (argon [possibly partly substituted by helium] + 1 to 3% CO_2 or O_2) and this will give the welds a slightly oxidised surface appearance. H_2 and N_2 are prohibited in shielding gas.

Welding parameters

MIG welding

Recommended shielding gas:

» Argon + Oxygen (1 to 3%)
» Argon + (CO_2 1 to 2%)

Nitrogen and hydrogen are prohibited, helium can partially replace argon.
For information, welding conditions to obtain a "spray" regime with 1 mm wire:

» Voltage	22 to 26V (smooth)
» Wire speed	9 to 11 m/min
» Welding speed	100 to 200 cm/min

Inducing average welding intensity of 180 to 250 A and linear welding energy of between 1.8 and 2.2 kJ/cm. For more information, consult us.
To avoid the grain growth in HAZ (Heat Affected Zones), the recommended wire diameter is 1 mm (maximum 1.2 mm). We recommend using a "pulsed" welding method. For the same reasons, multipass deposits are prohibited.

TIG Welding

With this process, the welding conditions to be used are the same as those used for EXHAUST® F1 or type 308LSi filler wires, for information:

» Intensity: 50 to 250 A
» Voltage: 10 to 15 V
» Shielding gas: Argon (+/- Helium).
Nitrogen and hydrogen are prohibited in shielding gases

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Heat treatment

Homogeneous welds (stabilised ferritic sheet metal welds) must not be subjected to heat treatment above 900°C, as this may cause grain growth in the heat-treated zone and weaken the toughness of these welds.

Available products

Process	Shape	Diameter Range	Packaging	Weight
TIG	Rods	1.0 – 4.0 mm	Cardboard tubes	5 kg
MIG	Wire	0.8 – 1.6 mm	Metallic spools – BS 300	15 – 18 kg
		0.8 – 1.2 mm	Plastic spools – D 200	5 kg
			Plastic spools – D 300	15 kg
		1.0 – 1.6 mm	Plastic spools – D 350	25 – 27 kg
		0.8 – 1.2 mm	Pay off pack - Drums	250 – 500 kg
SAW	Wire	1.6 – 3.2 mm	Rims K415 / 300 / 94	20 – 25 kg
			Rims K435 / 300 / 70	

Contact us for dimensions

Applications

Developed for MIG/TIG welding on automotive exhaust lines, EXHAUST® Bi Stab is most suitable for welding the following grades:

» Stabilized ferritic stainless steels

» Austenitic stainless steels

and in both homogeneous and heterogeneous sheet metal configurations (sheets of different grades welded together)

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