DAIKOWT 309L

GTAW

AUSTENITIC STAINLESS STEELS
309L

DESCRIPTION

Solid rod for dissimilar joining and buffer layer

These consumables are mainly used under high dilution conditions, particularly dissimilar welds between stainless and C-Mn steels. The low carbon, 0.03% max, in this filler metal reduces the possibility of intergranular carbide precipitation. This increases the resistance to intergranular corrosion without the use of stabilizers such as niobium or titanium. Ideal for joining stainless steels to themselves or to carbon or low alloy steels, and can be used at temperatures of up to 380°C. Also used for overlays on CMn steel or low alloy steel and for joining clad plate.

SPECIFICATIONS

ISO 14343-A	W 23 12 L	**AWS A5.9**	ER309L
DIN	-	**Werkstoff Number**	-
Certifications	CE	**Shielding**	I1
Positions	PA, PB, PC, PD, PE, PF	**Current**	DC-

ASME QUALIFICATIONS

F-No (QW432)	6
A-No (QW442)	8

FERRITE

8-15 FN

PREN

23.83

HARDNESS

85HRB

CHEM. COMP. %	DEFAULT
C	0.015
Mn	1.7
Ni	13
Cr	23.5
P	0.015
S	0.005
Mo	0.1
Si	0.5
Cu	0.15

MECHANICAL PROPERTIES	MIN	VARIANT
Tensile strength R_m MPa	550	590
Yield strength $R_{p0.2}$ MPa	350	450
Elongation A (L_0=5d_0) %	25	43
Impact Charpy ISO-V	-	150J @ 20°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	1.6 mm	2.4 mm
Ampere	80A - 100A	110A - 160A
Voltage	-	-
Packaging	Ø 1,0÷4,0 mm	Ø 1,0÷4,0 mm
Packaging Type	5kg carton tube	5kg carton tube

V 01/2024

DAIKO

309L

DESCRIPTION

APPLICATION

Commonly employed for buffer layers and overlays on CMn, mild steel, or low alloy steels, and for joining 304L/321 clad plates, as well as in dissimilar welds. Subsequent layers are applied using a suitable filler to align with the cladding, such as 308L or 347. In dissimilar joints, the capacity to tolerate dilution is leveraged when joining stainless types 410, 304L, 321, and 316L to mild and low alloy steels, including stiffeners, brackets, and other attachments. Typically, service temperatures exceeding 400°C are avoided. This filler metal is also utilized for welding 12%Cr 'utility ferritics' like Cromwell 3CR12, to itself and other steels. If the service demands corrosion resistance below 400°C, it is feasible to weld wrought and cast steels of the 23Cr-12Ni type (e.g., ASTM 309 and CH8, BS 309S24, and 309C30). However, for high-temperature structural service, it is advisable to use weld metal with carefully managed higher carbon and lower ferrite. Preheat and interpass temperatures depend on the base material hardenability, with no preheat typically required for mild steels, and it can extend up to 250°C for hardenable steels.

ALLOY TYPE

24%Cr-13%Ni (309L) austenitic stainless for dissimilar joint buffer layers etc.

MICROSTRUCTURE

Austenite with ferrite in the range 8-20FN. GMAW tends to have lower ferrite (8-15 FN) than the MMA and FCW consumables.

MATERIALS

Mainly used under high dilution conditions, particularly dissimilar welds between stainless and CMn steels.