



DAIKOWT 307Si

GTAW

AUSTENITIC STAINLESS STEELS
307

DESCRIPTION

Rod for dissimilar joints and bearing layers

Rod developed for mixed welding applications, including homologous or dissimilar welding on C-Mn steels, stainless, hardenable, and ballistic steels. It is also suitable for depositing bearing layers and hard-facing on base metals that are sensitive to cracking. The filler metal ensures high corrosion resistance, withstands temperatures up to 300°C in service, and does not oxidize up to 850°C. Hot cracking resistance is ensured by the high manganese content, while the increase in silicon offers greater bath fluidity and a uniform appearance to the deposit.

SPECIFICATIONS

EN ISO 14343-A	W 18 8 Mn	AWS A5.9	(ER307Si)
Shielding	I1	Positions	PA, PB, PC, PD, PE, PF
Current	DC-	Packaging Type	5kg carton tube

ASME QUALIFICATIONS

FERRITE

PREN

F-No (QW432)	6	-5 FN	18.525
A-No (QW442)	-		

CHEM. COMP. %

MECHANICAL PROPERTIES

MIN. PER STANDARD

PRODUCT

C	0.085	Tensile strength R_m MPa	500	620
Mn	7	Yield strength $R_{p0.2}$ MPa	350	420
Ni	8	Elongation A ($L_0=5d_0$) %	25	40
Cr	17.7	Impact Charpy ISO-V	-	50J @ -80°C
P	0.02	Impact Charpy ISO-V	-	-
S	0.01			
Mo	0.25			
Si	0.85			
Cu	0.25			
		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



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APPLICATION

Applications for this subfamily include the welding of different materials such as mild steels, stainless steels, hardenable and ballistic steels, both among themselves and with other metals, with or without the need for preheating. The high manganese content ensures excellent dilution tolerance and resistance to hot cracking, unlike ballistic steels and type 309, which require a high ferrite content. In some situations, this material can effectively replace those with high nickel content in joints between cast iron and stainless steels. Welds subjected to post-weld heat treatment (PWHT) maintain good ductility and toughness down to -50°C. Additionally, it offers moderate resistance to scale formation at temperatures up to 850°C. It is ideal as a cushion layer for welding or repairing steels with 13% Mn used in crushing plants or earthmoving equipment. It is also recommended as an intermediate layer on cast iron before a hard facing. This consumable is designed for surfacing operations with hardening between 200 and 400 HV, and is well-suited for repairing alloy rails, sleepers, and crossings, avoiding preheating. However, the hardening rate is lower compared to steel with 13% Mn, and overlays beyond a single layer may collapse under heavy rolling loads.

ALLOY TYPE

Strong tough austenitic weld metal composition for dissimilar joints and buffer layers.

MICROSTRUCTURE

Consists of austenite with approximately 5FN.

MATERIALS

Dissimilar combinations of C-Mn, stainless, hardenable, wear-resistant and armour steels. Suitable for 13% Mn steel also known as Hadfield steel.

WELDING & PWHT

In general, preheating is not necessary, unless working with very thick sections. However, in-service conditions require consideration of Heat-Affected Zone (HAZ) properties for high-carbon hardenable steels. When welding steels with 13% Mn, it is essential to minimize brittleness and the risk of cracking by keeping the workpiece cool. Therefore, the following precautions must be applied: no preheating, controlling interpass temperature to a maximum of 150°C, low heat input, making small weld beads, and cooling with water if necessary.

