



DAIKOWT SG1



CARBON STEELS
STRUCTURAL STEEL

DESCRIPTION

Copper-plated GTAW rod for carbon and C-Mn steels

Copper-plated GTAW rod for welding carbon and carbon-manganese steels with a tensile strength of up to 500 MPa. It is particularly suitable for tanks, boilers, structural work, earth moving machinery, and constructions. It can be used for root passes and as a backing pass where reverse recovery is not possible. It features excellent mechanical properties and good toughness even at low temperatures.

SPECIFICATIONS

EN ISO 636-A	W 42 5 W 2 S i	AWS A5.18	ER70S-3
Certifications	CE	Shielding	11
Positions	PA, PB, PC, PD, PE, PF	Current	DC-
Packaging Type	5kg carton tube		

ASME QUALIFICATIONS

F-No (QW432)	6
A-No (QW442)	1

CHEM. COMP. %

C	0.08
Mn	1.21
Cr	0.02
P	0.01
S	0.01
Si	0.5
Cu	0.04

MECHANICAL PROPERTIES

	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	490	550
Yield strength $R_{p0.2}$ MPa	420	440
Elongation A ($L_0=5d_0$) %	22	32
Impact Charpy ISO-V	27J @ -50°C	60J @ -40°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1.6 mm	2.4 mm
Ampere	95A - 135A	145A - 205A
Voltage	-	-
Packaging	Ø 1,2÷3,2 mm	Ø 1,2÷3,2 mm
Packaging Type	5kg carton tube	5kg carton tube





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APPLICATION

Carbon-manganese steels (C-Mn) are the backbone for a wide range of applications in the structural engineering industry. Welding of these steel structures can be successfully achieved provided the material composition is known, appropriate precautions are adopted, and qualified procedures are followed. Weldability varies based on the type of C-Mn steel, and there is a risk of defects such as hydrogen cracking, solidification cracking, or reheat cracking, which depend on specific operating conditions. The proposed consumables offer effective resistance to these issues, emphasizing the importance of a carefully defined welding process. Preheating and post-weld heat treatment (PWHT) are not always necessary, but their adoption depends on the type and thickness of the base material. The desired mechanical properties in the welded joint can be achieved using appropriate consumables. However, the complex structural transformations that occur during the welding thermal cycle require careful evaluation of critical parameters such as the toughness and hardness of the heat-affected zone (HAZ).

ALLOY TYPE

Consumables for welding mild and C-Mn steels of 340-510MPa tensile strength.

MICROSTRUCTURE

Predominantly ferrite.

MATERIALS

Carbon and carbon-manganese steels encompass a wide range of structural and pressure-grade materials commonly used in construction, mechanical engineering, and industrial plant applications. Among the EN-standardized grades are non-alloy structural steels intended for general use, known for their good weldability and progressively higher mechanical strength. The "P" grades, on the other hand, are pressure vessel steels typically used in boilers and heat exchangers. Equivalent ASTM specifications cover a similar scope of applications and are widely adopted internationally for structural components, piping, and fittings exposed to pressure or high temperatures. Lastly, API specifications are typical of the oil & gas sector, particularly for the production of pipelines used in hydrocarbon transport, offering increasing levels of mechanical strength and specific performance requirements.

EN W.Nr.: S 235 JR, S 235 JO, S 235 J2+N, S 275, S 275 JO, S 275 J2+N, S 355 JR, S 355 JO, S 355 J2+N, S 355 K2+N, P 235 GH, P 265 GH, P 295 GH

ASTM: A36, A106 gr. A, A106 gr. B, A106 gr. C, A139, A210 gr. A1, A210 gr. C, A234 gr. WPB, A334 gr. 1, A216 gr. WCA, A216 gr. WCB, A216 gr. WCC

API: A, B, X42, X52, X60

