G-TECH 103

SMAW

CARBON STEELS
STRUCTURAL STEEL

DESCRIPTION

Rutile coated electrode for general application

Rutile medium coated welding electrode, producing a mild steel deposit. Suitable for positional welds, except vertical down. High current carrying capacity, minimum spatter formation and virtually self-cleaning slag produce a concave bead with minimal ripple as well as a smooth and clean weld profile. Suitable for the light section steel fabrication, storage tanks, shipyards, car body works, boilers construction, sheet metal works, etc.

SPECIFICATIONS

EN ISO 2560-A	E 42 A RR 12	**AWS A5.1**	E6013
Shielding	-	**Positions**	PA, PB, PC, PD, PE, PF
Current	AC, DC+, DC-	**Packaging Type**	Carton box and dry pack

ASME QUALIFICATIONS

F-No (QW432)	2
A-No (QW442)	1

CHEM. COMP. %	DEFAULT
C	0.08
Mn	0.5
P	0.02
S	0.01
Si	0.4

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	430	510
Yield strength $R_{p0.2}$ MPa	420	450
Elongation A (L_0=5d_0) %	22	22
Impact Charpy ISO-V	-	47J @ 20°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	2.5 mm	3.2 mm	4.0 mm	5.0 mm
Ampere	50A - 80A	80A - 120A	110A - 160A	160A - 200A
Voltage	-	-	-	-
Packaging	50 pcs/kg	31 pcs/kg	20 pcs/kg	10 pcs/kg
Packaging Type	Carton box and dry pack	Carton box and dry pack	Carton box and dry pack	Carton box and dry pack

NOTES

Pcs/kg is indicative, actual number may vary ± 5%.

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DAIKO

STRUCTURAL STEEL

DESCRIPTION

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 J0, S 235 J2+N, S 275, S 275 J0, S 275 J2+N, S 355 JR, S 355 J0, 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

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