DAIKOWM 253MA

GMAW

HIGH TEMPERATURE ALLOYS
253MA

DESCRIPTION

Iron based 22%Cr-10%Ni solid wire with excellent oxidation resistance

Formulated to match equivalent alloys with good hot strength coupled with excellent resistance to oxidation up to about 1100°C. The weld metal resistance to sulphidation under oxidising conditions is superior to many higher nickel heat-resistant alloys but not intended for wet corrosion applications. Combinations with alloys stabilised with Ti and Nb should be avoided, due to the possibility of embrittlement by Si-rich eutectics with these elements. Applications include furnaces and furnace parts, high temperature flues, exhaust and heat recuperator systems, combustion nozzles.

SPECIFICATIONS

Certifications	-	Shielding	M12, M13
Positions	PA, PB, PC, PD, PE, PF, PG	Current	DC+
Packaging Type			Drums, B300, D200 and D100 spools.

FERRITE	PREN	HARDNESS
~5 FN	23.56	-

CHEM. COMP. %	DEFAULT
C	0.07
Mn	0.6
Ni	10
Cr	21
N	0.16
P	0.025
S	0.015
Si	1.6

MECHANICAL PROPERTIES	MIN	VARIANT
Tensile strength R_m MPa	-	700
Yield strength $R_{p0.2}$ MPa	-	540
Elongation A (L_0=5d_0) %	-	38
Impact Charpy ISO-V	-	57J @ 20°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	1 mm	1.2 mm
Ampere	170A - 210A	180A - 260A
Voltage	24V - 28V	26V - 30V
Packaging	Ø 0,8÷1,6mm	Ø 0,8÷1,6mm
Packaging Type	Drums, B300, D200 and D100 spools.	Drums, B300, D200 and D100 spools.

253MA

DESCRIPTION

APPLICATION

Crafted to align with equivalent alloys, this welding material provides robust hot strength coupled with outstanding oxidation resistance up to around 1100°C. Its resistance to sulfidation under oxidizing conditions surpasses many higher nickel heat-resistant alloys. While demonstrating satisfactory resistance to nitriding and carburization, it falls short under reducing conditions where higher nickel alloys excel. Furthermore, it proves suitable for dissimilar combinations of materials with similar alloying levels. Yet, the management of hot cracking in this high-silicon weld metal relies on the presence of some ferrite during solidification. Thus, caution is warranted when contemplating dilution by dissimilar materials that might encourage fully austenitic solidification, as observed in type 310 and other high nickel alloys. Avoiding combinations with alloys stabilized with Ti and especially Nb is recommended to avert potential embrittlement by Si-rich eutectics with these elements. Applications encompass furnaces, furnace parts, high-temperature flues, exhaust and heat recuperator systems, and combustion nozzles. No preheating is necessary and maintaining an interpass temperature below 150°C is advisable.

ALLOY TYPE

Iron based 22%Cr-10%Ni alloy with controlled additions of C, Si, N and rare earths, predominantly cerium, with excellent oxidation resistance.

MICROSTRUCTURE

Austenite with controlled ferrite of about 5FN.

MATERIALS

EN W.Nr.: 1.4818 (X6CrNiSiNCe 19-10), 1.4828 (X15CrNiSi 20-12), 1.4835 (X9CrNiSiNCe 21-11-2), 1.4893 (X8CrNiSiN 21 11), 1.4891 (X4CrNiSiN 18 10)
UNS: S30815
PROPRIETARY: 253MA (Outokumpu)