DAIKOWM 21.33MnNb

GMAW

HIGH TEMPERATURE ALLOYS
800/800H

DESCRIPTION

Fully austenitic solid wire for matching alloy 800

These consumables are designed to match composition and properties of alloy 800. These alloys are used for their resistance to corrosion, thermal fatigue and shock at temperatures up to 1050°C depending on the atmosphere. Typical applications include radiant tubes, reformer furnace outlet manifolds, pyrolysis furnace tubes in the petrochemical industry and nuclear engineering industries.

SPECIFICATIONS

Werkstoff Number	1.4850	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
-	21.99	-

CHEM. COMP. %	DEFAULT
C	0.15
Mn	4.3
Ni	33
Cr	21
Nb	1
Mo	0.3
Si	0.5
Cu	0.1
Ti	0.15

MECHANICAL PROPERTIES	MIN	VARIANT
Tensile strength R_m MPa	-	620
Yield strength $R_{p0.2}$ MPa	-	410
Elongation A (L_0=5d_0) %	-	27
Impact Charpy ISO-V	-	40J @ 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.

DAIKO

800/800H

DESCRIPTION

APPLICATION

These consumables are designed to match alloys commonly used in castings. The addition of copper not only improves corrosion resistance in sulfuric acid environments but also has the potential to enhance strength and wear resistance. It's important to highlight that, compared to alloys with less than 1% copper, the as-welded toughness and resistance to pitting in chloride environments may be reduced. The composition is carefully controlled to maintain a minimum Pitting Resistance Equivalent (PRE) of 40, aligning with superduplex alloys for optimal pitting resistance. However, for applications in non-sulfuric acid media, consumables with less than 1% copper may be preferred, unless post-weld heat treatment (PWHT) is applied. These consumables find applications in pumps, valves, corrosion-resistant and wear-resistant components, as well as process equipment suitable for use in offshore oil and gas industries, pulp and paper, textile industries, and chemical and petrochemical plants.

ALLOY TYPE

Austenitic heat resisting consumables to match alloy 800.

MICROSTRUCTURE

As-welded weld metal microstructure consists of austenite with cellular NbC-rich network.

MATERIALS

EN W.Nr.: 1.4850, 1.4859, 1.4876
ASTM: A351 CT15C
UNS: N08800, N08810, N08811
PROPRIETARY: Paralloy CR32W (Doncasters Paralloy), Incoloy® 800, 800H, 800HT (Special Metals), Manaurite® 900 (Manoir Industries), Thermalloy T52 (Lloyds), Sanicro 31 (Sandvik), Vicro 8 (Firth Vickers), RA330 (Rolled Alloys), MO-RE® 21 (Duraloy), Nicrofer 3220 (VDM), Centralloy® 4859 (Schmidt + Clemens), E2032Nb (Engemasa)

WELDING & PWHT

No preheating is deemed necessary, and it is preferable to maintain the interpass temperature below 150°C. Ordinarily, welds do not undergo heat treatment. However, in applications involving elevated temperatures, the Heat-Affected Zone (HAZ) of welds in alloys 800/800H/800HT, characterized by progressively increasing levels of Ti+Al, may exhibit susceptibility to stress relaxation cracking. For pressure boundary welds designed to operate at temperatures exceeding 538°C, compliance with ASME VIII UNF-56 is mandated. This standard stipulates a Post-Weld Heat Treatment (PWHT) requirement at temperatures surpassing 885°C for 1 hour, with an additional hour for every 25mm (e.g., 900°C for 3 hours), or alternatively, the application of solution annealing. Notably, API 560 does not currently enforce a PWHT requirement. However, it's essential to acknowledge that certain specifiers may insist on PWHT for specific operating conditions.