DAIKOWT 21.33MnNb

GTAW

HIGH TEMPERATURE ALLOYS
800/800H

DESCRIPTION

Completely austenitic rod corresponding to alloy 800

These consumables are developed to match the chemical composition and characteristics of alloy 800. Alloys of this type are chosen for their resistance to corrosion, fatigue, and thermal shock up to 1050 °C, depending on the operating atmosphere. The main applications include radiant tubes, outlet manifolds of reformer furnaces, pyrolysis furnace tubes in the petrochemical sector, and uses in nuclear engineering.

SPECIFICATIONS

Werkstoff Number	1.4850	**Shielding**	I1
Positions	PA, PB, PC, PD, PE, PF	**Current**	DC-
Packaging Type	5kg carton tube		

PREN

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

	PRODUCT
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

WELDING PARAMETERS

	1.6 mm	2.4 mm
Ampere	95A - 135A	145A - 205A
Voltage	-	-
Packaging	Ø 1,6÷3,2mm	Ø 1,6÷3,2mm
Packaging Type	5kg carton tube	5kg carton tube

DAIKO®

800/800H

DESCRIPTION

APPLICATION

The consumables from this subfamily are designed to deposit weld metal with chemical and mechanical properties closely aligned with 800-type alloys, both in cast and wrought forms. The weld metal composition is engineered to reflect that of the castings, with strict control of carbon and niobium to optimize corrosion resistance and creep performance. In contrast, most wrought materials use titanium and aluminum instead of niobium. The manganese and silicon levels in the filler metal have been optimized to ensure high resistance to hot cracking in highly restrained welds. To minimize aging embrittlement, the composition is generally designed to meet Chiyoda's parameter: $P \leq 9$ with $P = (7C + 5Si + 8Nb - 3Mn)$. These alloys are applied in contexts where corrosion resistance, thermal fatigue, and thermal shock resistance are required at temperatures that can reach approximately 1000 °C. They are ideal for the fabrication of muffles and radiant tubes, trays and baskets for heat treatment, outlet headers in reforming furnaces, and transfer lines in ethylene plants, particularly in fields like the petrochemical industry and nuclear engineering. These consumables are an excellent alternative to nickel-based materials up to temperatures of 1000 °C, also offering a comparable expansion coefficient and resistance to sulphidation as that of the base material.

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

Preheating is not required; it is preferable to maintain an interpass temperature below 150 °C. Normally, welds do not require heat treatment; however, when used at elevated temperatures, the heat-affected zone (HAZ) of welds on 800/800H/800HT alloys with increasing levels of Ti and Al may be subject to stress relaxation cracking. For welds subjected to service temperatures above 538 °C, ASME VIII UNF-56 requires a post-weld heat treatment (PWHT) above 885 °C for 1 hour, plus 1 hour for each 25 mm thickness (e.g., 900 °C for 3 hours) or a solution annealing. Although API 560 currently does not foresee PWHT, some specifiers may require it, depending on particular operating conditions.