Thermanit 20/25 Cu - Marathon 104

SAW wire/flux combination, high-alloyed, austenitic stainless

Classifications

EN ISO 14343-A	AWS A5.9 / SFA-5.9	EN ISO 14174
S 20 25 5 Cu L	ER385	S A FB 2 AC

Characteristics and typical fields of application

Thermanit 20/25 Cu - Marathon 104 is a wire/flux combination for submerged arc welding of corrosion resistant 4 – 5% Mo-alloyed CrNi-steels such as 1.4539 / 904L. Solid SAW wire of S 20 25 5 Cu L / ER385 type for joining and surfacing work on matching austenitic CrNiMoCu-steels and cast steel grades. For joining these steels with unalloyed and low-alloyed steels. Especially applicable in sulfur and phosphorus production, pulp and paper industry, flue gas desulfurization plants, further on for fertilizer production, petrochemical industry, fatty, acetic and formic acid production, seawater sludge fittings and pickling plants which are proceeded with sea or brackish water. Good corrosion resistance similar to matching steels, above all in reducing environment. The fully austenitic weld metal possesses a marked resistance towards pitting and crevice corrosion in chloride containing media. Highly resistant against sulfuric, phosphoric, acetic and formic acid, as well as seawater and brackish water. The high Ni-content in comparison to standard CrNi-weld metals also leads to high resistance against stress corrosion cracking. Max. service temperature 350ºC.

Marathon 104 is an agglomerated fluoride-basic flux for submerged arc welding of stainless and heat resistant steel grades. The weld metal is characterized by high resistance to hot cracking and is recommended for the highest demanding applications. For more information regarding this sub-arc welding flux, see the separate datasheet.

Base materials

1.4465 X1CrNiMoN25-25-2, 1.4505 X4NiCrMoCuNb20-18-2, 1.4506 X5NiCrMoCuTi20-18, 1.4537 X1CrNiMoCuN25-25-5, 1.4538 X2NiCrMoCuN20-18, 1.4539 X2NiCrMoCuN25-20-5, 1.4586 X5NiCrMoCuNb22-18
UNS N08904 AISI 904L

Typical analysis

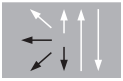
wt.-%	C	Si	Mn	Cr	Ni	Mo	Cu
wire	0.01	0.35	1.6	20.0	25.0	4.5	1.5
all-weld metal	0.02	0.45	1.6	19.7	25.0	4.5	1.5

Mechanical properties of all-weld metal - typical values (min. values)

Condition	Yield strength R_e	Tensile strength R_m	Elongation A (L_0=5d_0)	Impact energy ISO-V KV J	
	MPa	MPa	%	20°C	–196°C
u	410 (≥ 320)	650 (≥ 550)	34 (≥ 30)	(≥ 90)	60

u untreated, as-welded

Operating data



Dimension mm	Current A	Voltage V
2.4	300 – 400	39 – 33
3.2	350 – 500	29 – 33

The weld metal has a fully austenitic microstructure and therefore sensitive to hot cracking. No preheating unless required by the parent material. Single wire technique with wire diameter of max. 3.2 mm recommended. Suggested heat input is max.1.5 kJ/mm, interpass temperature max. 100ºC. Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1120ºC. Polarity: DC+

Approvals

TÜV (07213), CE