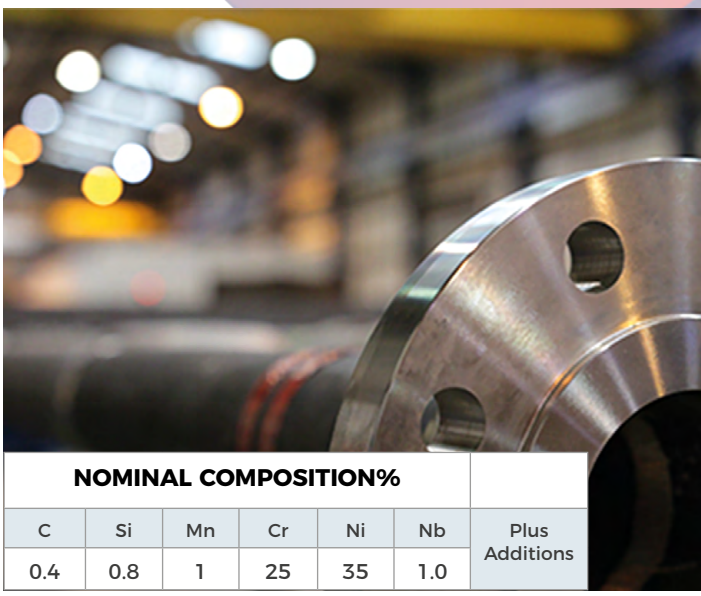
PARALLOY H39WMR

25/35 Cr/Ni 0.4%C

Creep resistant Alloy Steam Reforming



NOMINAL COMPOSITION%						
C	Si	Mn	Cr	Ni	Nb	Plus Additions
0.4	0.8	1	25	35	1.0	

APPLICATION

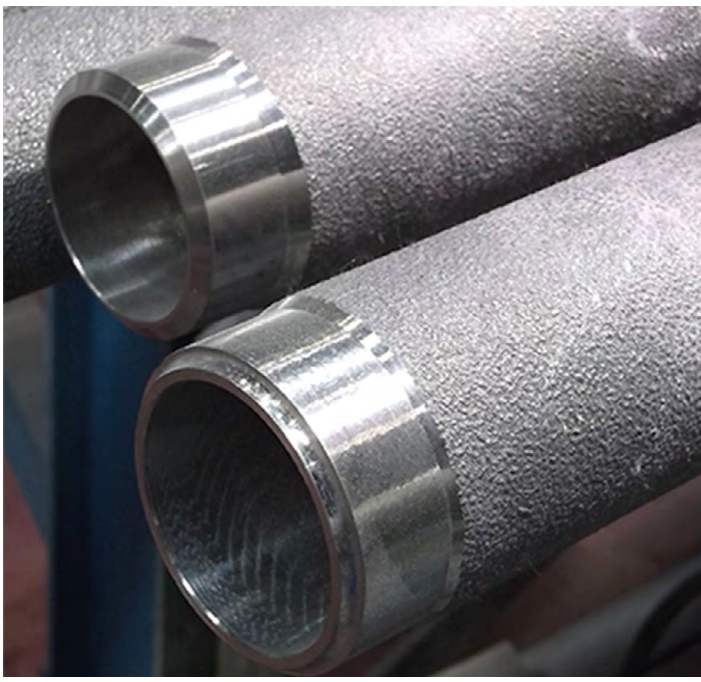
PARALLOY H39WMR is an alloy that was developed over a number of years, demonstrating incremental improvements at each stage of development. H39WMR material was especially developed for Reformer furnace applications and the creep properties lie between those of H39WM and H39WM+.

The high creep rupture strength makes H39WMR ideal for steam reformer furnaces where high tube temperatures or thinner tube walls are required. The creep strength of PARALLOY microalloyed H39WMR, is based upon H39WM a proven track record of success within the petrochemical industry over many years.

DESCRIPTION

PARALLOY H39WMR is a weldable chromium nickel heat resisting steel which is a low Silicon version of **PARALLOY H39WM** (HP Nb microalloy).

The optimized lower Silicon content adds creep strength to the alloy by re-organizing the chemical elements at the inter-dendritic space zone near the primary carbides.



PHYSICAL PROPERTIES				
COEFFICIENT OF THERMAL EXPANSION (mm/mm°C)	THERMAL CONDUCTIVITY (W/m°K)	DENSITY (kg/m³)	YOUNG MODULUS (N/mm2 x 103)	SPECIFIC HEAT (J/KgK)
20 – 100°C – 15.5 x 10-⁶	100°C – 13.0	7.97 x 10³	20°C – 158.5	455
20 – 800°C – 18.9 x 10-⁶	750°C – 24.3		800°C – 108.2	
20 – 1000°C – 19.4 x 10-⁶	1000°C – 27.7		1000°C – 95.1	
20 – 1100°C – 19.7 x 10-⁶	1000°C – 29.7			

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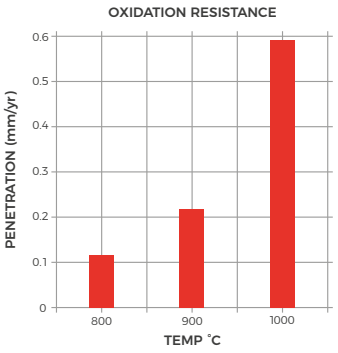
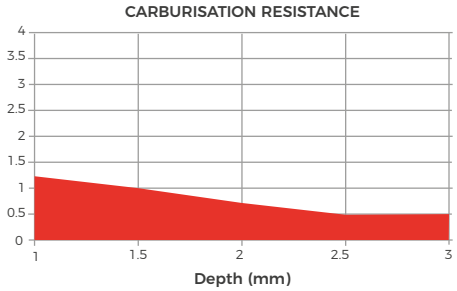
Microalloy Steam Reformer & cracker

MECHANICAL PROPERTIES

ROOM TEMPERATURE TENSILE PROPERTIES (Minimum Values)	
UTS (N/mm²)	450
Proof Stress 0.2% (N/mm²)	250
Elongation (%)	8 (tube) 6 (static)





Gas carburisation tests by NPL: 1200Hrs @ 1050°C

ELEVATED TEMPERATURE TENSILE PROPERTIES (Typical Values)			
TEMPERATURE (°C)	UTS (N/mm²)	PROOF STRESS 0.2% (N/mm²)	ELONGATION (%)
800	265	136	31
900	172	94	38
1000	117	66	43
1100	82	50	45

CREEP RUPTURE STRESS (N/mm²)						
TEMP	10,000 HOUR LIFE		50,000 HOUR LIFE		100,000 HOUR LIFE	
°C	MEAN	Minimum	MEAN	Minimum	MEAN	Minimum
800	73,92	66,53	65,33	58,8	61,64	55,48
850	58,43	52,59	49,83	44,84	46,27	41,65
900	43,88	39,5	36,01	32,41	32,88	29,59
925	37,3	33,58	30	27	27,14	24,43
950	31,31	28,18	24,65	22,19	22,1	19,89
975	25,94	23,35	19,99	17,99	17,75	15,98
1000	21,22	19,1	15,99	14,4	14,07	12,66
1025	17,14	15,43	12,63	11,36	10,99	9,89
1050	13,67	12,3	9,83	8,85	8,47	7,62