

PARALLOY H46M

35/45 Cr/Ni 0.4%C

Chromia forming Alloy

Steam Cracker

APPLICATION

PARALLOY H46M was developed for use in elevated temperature applications where high creep strength and corrosion resistance is required.

H46M is an excellent choice for heavy-duty Pyrolysis Cracker Coils where coke formation and carburisation are most severe and end of run temperatures can reach 1125°C or above.

DESCRIPTION

The high nickel content of **PARALLOY H46M** ensures superb resistance to carburisation and the very high chromium content aids the formation of a more protective oxide film on the internal bore surface of the coils. This oxide film acts as further protection against carburisation.

Niobium increases the creep rupture strength and the controlled "Microalloy" addition of specially selected elements not only ensures further strength improvements, but also contributes to improved carburisation resistance.



NOMINAL COMPOSITION%						
C	Si	Mn	Cr	Ni	Nb	Plus Additions
0.4	1.6	1	35	45	1	



PHYSICAL PROPERTIES

COEFFICIENT OF THERMAL EXPANSION (mm/mm°C)	THERMAL CONDUCTIVITY (W/m²K)	DENSITY (kg/m³)	YOUNG MODULUS (N/mm² x 103)	SPECIFIC HEAT (J/KgK)
20 - 100°C - 15.6 x 10 ⁻⁶	100°C - 13.8	7.97 x 10 ³	20°C - 176.5	480
20 - 800°C - 18.8 x 10 ⁻⁶	800°C - 25.9		800°C - 127.2	
20 - 1000°C - 19.2 x 10 ⁻⁶	1000°C - 28.3		1000°C - 109.1	
20 - 1100°C - 19.5 x 10 ⁻⁶	1100°C - 31.5			

PARALLOY H46M

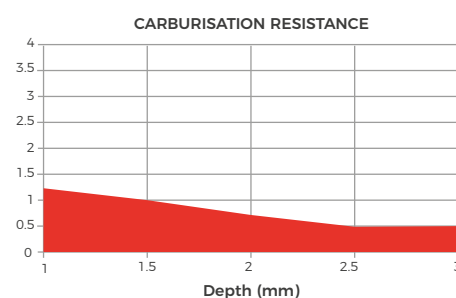
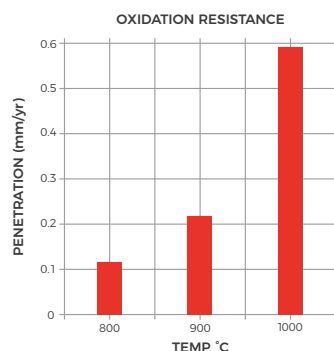
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MECHANICAL PROPERTIES

ROOM TEMPERATURE TENSILE PROPERTIES (Minimum Values)

UTS (N/mm ²)	450
Proof Stress 0.2% (N/mm ²)	250
Elongation (%)	4



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

ELEVATED TEMPERATURE TENSILE PROPERTIES (Typical Values)

TEMPERATURE (°C)	UTS (N/mm ²)	PROOF STRESS 0.2% (N/mm ²)	ELONGATION (%)
820	226	106	30
950	175	67	36
1050	113	41	44
1150	59	28	47

CREEP RUPTURE STRESS (N/mm²)

TEMP °C	10,000 HOUR LIFE		50,000 HOUR LIFE		100,000 HOUR LIFE	
	MEAN	Minimum	MEAN	Minimum	MEAN	Minimum
950	26,07	22,08	20,76	17,59	18,68	15,83
975	21,99	18,63	17,1	14,49	15,23	12,9
1000	18,29	15,5	13,88	11,76	12,23	10,36
1025	15,01	12,71	11,11	9,41	9,67	8,19
1050	12,14	10,28	8,75	7,41	7,54	6,38
1075	9,68	8,2	6,8	5,76	5,78	4,9
1100	7,62	6,45	5,2	4,41	4,37	3,7
1125	5,91	5,01	3,92	3,32	3,26	2,76
1150	4,52	3,83	2,91	2,47	2,39	2,02