

PARALLOY OPTIM-AL

26/43 Cr/Ni + 4Al 0.26%C

Alumina forming Alloy

Steam Cracker

APPLICATION

OPTIM-AL is an aluminium containing alloy specifically developed for pyrolysis furnace cracking coils, where high oxidation and high carburisation resistance properties are required to provide enhanced coil life.

OPTIM-AL has exceptional anti-coking properties which are essential to maximise furnace run lengths, thereby enhancing productivity improving furnace controls and producing better ethylene yields.

DESCRIPTION

OPTIM-AL is a PARALLOY material especially developed to form a thin, dense homogeneous and continuous Aluminium Oxide layer on the internal coil surface during service, which produces exceptional anti-coking properties.

This is not only due to the Aluminium Oxide catalytic coking properties, but also because Aluminium Oxide is pure and totally free of catalytic elements such as Nickel and Iron.



NOMINAL COMPOSITION%

C	Cr	Ni	Nb	Ti	Al	Plus Additions
0.26	26	43	0.8	0.10	4	



PHYSICAL PROPERTIES

COEFFICIENT OF THERMAL EXPANSION (mm/mm°C)	THERMAL CONDUCTIVITY (W/m²K)	DENSITY (kg/m³)	SPECIFIC HEAT (J/kgK)
20 - 100°C - 13.3 x 10 ⁻⁶	100°C - 10.7	7.55	480
20 - 800°C - 18.0 x 10 ⁻⁶	750°C - 30.4	7.28	
20 - 1000°C - 19 x 10 ⁻⁶	1000°C - 34.3	7.18	
20 - 1100°C - 19.5 x 10 ⁻⁶	1000°C - 35.9	7.13	

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MECHANICAL PROPERTIES

ROOM TEMPERATURE TENSILE PROPERTIES (Minimum Values)

UTS (N/mm ²)	550
Proof Stress 0.2% (N/mm ²)	400
Elongation (%)	3

SURFACE OF OPTIM-AL AFTER PACK CARBURISATION AT 1100oC DURING 200hrs



OPTIM-AL



35 Cr / 45 Ni

ELEVATED TEMPERATURE TENSILE PROPERTIES (Minimum Values)

TEMPERATURE (°C)	UTS (N/mm ²)	0.2% (N/mm ²)	ELONGATION (%)
800°C	300	225	8
1000°C	75	50	28

CREEP RUPTURE STRESS VALUES (N/mm²)

TEMP °C	10,000 HOUR LIFE		50,000 HOUR LIFE		100,000 HOUR LIFE	
	MEAN	Minimum	MEAN	Minimum	MEAN	Minimum
950	22,45	19,60	17,57	15,34	15,79	13,78
975	18,33	16,00	14,21	12,40	12,71	11,09
1000	14,91	13,01	11,44	9,98	10,19	8,89
1025	12,08	10,54	9,17	8,01	8,13	7,10
1050	9,74	8,51	7,33	6,39	6,47	5,64
1075	7,83	6,84	5,83	5,09	5,12	4,47
1100	6,27	5,47	4,62	4,03	4,04	3,52
1125	5,00	4,37	3,64	3,18	3,17	2,77