PARALLOY RED+

25/35/0.1Cr/Ni/Nb 0.5% C + 0.1% N +addition

Cast Heat Resisting Alloy

Direct reduction

NOMINAL COMPOSITION%					
C	Si	Mn	Cr	Ni	Nb
0.5	1	1	25	35	0.1

APPLICATION

PARALLOY RED+ is a variation of **PARALLOY H39WM+** specially developed for the DRI application related to Midrex type reformer design.

PARALLOY RED+ tailored chemistry allows exposure to temperature up to 1135°C, but most specifically involves good creep properties with very low creep rate for long time exposure at temperature up to 1050 °C

In addition, **Paralloy RED+** characteristics are: Good aged ductility, and hot temperature ductility which can accommodate furnace temperature variations.

DESCRIPTION

PARALLOY RED+ Has been specifically developed for the direct reduction market for installation in to new and existing plants.

BENEFITS

PARALLOY RED+ has multiple abilities as a high temperature alloy. **PARALLOY RED+** has a high creep resistance, low creep rate and good aged ductility to enhance tube life. Specific emphasis is to control and minimise tube elongation to improve overall service life. These same features, allows the alloy to resist crack formation resulting from any plant upsets, or during unpredicted events.

PHYSICAL PROPERTIES		
COEFFICIENT OF THERMAL EXPANSION (mm/mm°C)	THERMAL CONDUCTIVITY (W/m°K)	DENSITY (kg/m³)
20 – 100°C – 14.4 x 10^{-4}	100°C – 13.0	7.97 x 10^{3}
20 – 800°C – 16.8 x 10^{-6}	800°C – 24.3	
20 – 1000°C – 17.6 x 10^{-6}	1000°C – 27.7	
20 – 1100°C – 18.1 x 10^{-6}	1100°C – 29.7	

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MECHANICAL PROPERTIES

ROOM TEMPERATURE TENSILE PROPERTIES (Minimum Values)	
UTS (N/mm²)	460
Proof Stress 0.2% (N/mm²)	225
Elongation (%)	10 (tube) 8 (flange)

ELEVATED TEMPERATURE TENSILE PROPERTIES (Typical Values)			
TEMPERATURE (°C)	UTS (N/mm²)	PROOF STRESS 0.2% (N/mm²)	ELONGATION (%)
900	160	107	28.5
1000	98	72	32.5
1100	74	59	21

CREEP RUPTURE STRESS (N/mm²)			
TEMP	10,000 HOUR LIFE	50,000 HOUR LIFE	100,000 HOUR LIFE
°C	Minimum	Minimum	Minimum
900	41.36	33.50	30.59
925	35.20	28.39	25.88
950	29.97	24.07	21.90
975	25.52	20.41	18.54
1000	21.73	17.31	15.69
1025	18.51	14.68	13.29
1050	15.77	12.45	11.25

Note: Creep curves are subject to periodic review as new test data is added.