



YANTAI MANOIR HEAT RESISTANT ALLOYS CO., LTD.

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YANTAI MANOIR HEAT RESISTANT ALLOYS CO.,LTD.

Integrated Heat-Resistant Alloys Solutions Specialist
for Petrochemical and metallurgy Industries.

COMPANY PROFILE

Yantai Manoir Heat Resistant Alloys Co., Ltd. was established in 1991. As a Sino-French joint venture, drawing on French management models and systems, the company has consistently adhered to Manoir's technical procedures and quality standards. Over the years, we have developed extensive expertise in producing Proprietary Alloy Grades RÉFRALLOY® alloys and are equipped with advanced automated tube production lines and inspection facilities.

Specializing in centrifugal casting tubes and static casting fittings made of heat-resistant alloys, our products include cracking radiant coils, reformer tubes, DRI tubes, hearth rolls, and lehr rolls designed for the petrochemical, steel, and float glass industries.

By integrating advanced technology, modern equipment, and robust metallurgical R&D with decades of experience, Yantai Manoir provides highly reliable and cost-effective solutions to meet the demanding needs of our clients.



OUR PRODUCTS

► Cracking

Yantai Manoir is supplying ethylene radiant coils and spares to more than 100 domestic and international customers (including worldwide clients such as Dow Chemicals, Dupont, Reliance, TE, BASF, EM), Yantai Manoir has carried out more than 200 projects, covering the main designs like CBI Lummus, Stone & Webster, Technip, Selas Linde, SEI.

Operating temperature range: 800 to 1100°C, with a maximum of 1200°C.

Pressure condition: The internal pressure is relatively low.

Material properties: high-temperature resistance ($\geq 1000^{\circ}\text{C}$), corrosion resistance, oxidation resistance and coking-resistant. Commonly used materials: RF35M, RF45M



OUR PRODUCTS



► Reforming

With the higher material reliabilities demanded by the reformers of ammonia, methanol hydrogen and DRI under long term operating with high temperature and pressure, Yantai Manoir has always the favor of reforming clients, thus has taken till now more than 200 jobs such as 1248 tubes for Shell, 864 tubes for Essar Oil and 624 tubes for Petrobras, covering the main designs like Haldor Topsoe, Technip, Foster Wheeler, Selas Linde, Kellogg, DPT and etc.

Operating temperature range: with a maximum of 1100°C.

Material properties: high-temperature resistance ($\geq 1000^{\circ}\text{C}$), corrosion resistance, oxidation resistance and creep-resistant.

Commonly used materials: RF35M, RF35M-R

Designed lifetime: 100000 hours

OUR PRODUCTS

► DRI

As the market leader for centrifugal casting tubes for direct reduced iron reformers, we know the exceptionally demanding operating conditions and always provide the right solutions.

Operating temperature range: 600°C-900°C, with a maximum of 1100°C.

Material properties: high-temperature resistance, high strength of extension, corrosion resistance, oxidation resistance, anti-sulfidation corrosion and carbonization-resistant.



► Steel/glass

On top of the traditional radiant tubes and rollers, Yantai Manoir has also fabricated the latest designed double P radiant tubes. With years of metallurgical experience, Yantai Manoir is able to bring the new alloy solutions to clients, more stringent controls on material and machining finish.

Working conditions: up to 650 °C

Surface finish: Ra: 0.2-1.6 μ m

Roll surface length: up to 10m

Service life: 5-10 years



INSPECTION&TEST



Yantai Manoir implemented its quality insurance system in conformity with ISO9001 and established its quality control policy as " Customer Satisfaction and International Level" with the goal of improving and ensuring product quality. From chemical composition, mechanical properties, metallographic structure to macroscopic dimensions and non-destructive testing.

Yantai Manoir was equipped with sophisticated inspection facilities which can meet the requirements of all inspections and tests, including direct reading spectrometers, digital radiographic testing machines, eddy current testing instruments, and creep test machines, etc.



Yantai Manoir ensures a dual inspection of online and laboratory testing, with a complete set of advanced testing equipment and an overall standard inspection process, making quality control more professional.



That can, not only satisfy the usual requirements of international codes and standards of any country, region or enterprise, but also provide raw material inspection, production process inspection, finished product inspection and outsourcing parts inspection according to the quality inspection plan for each contract.



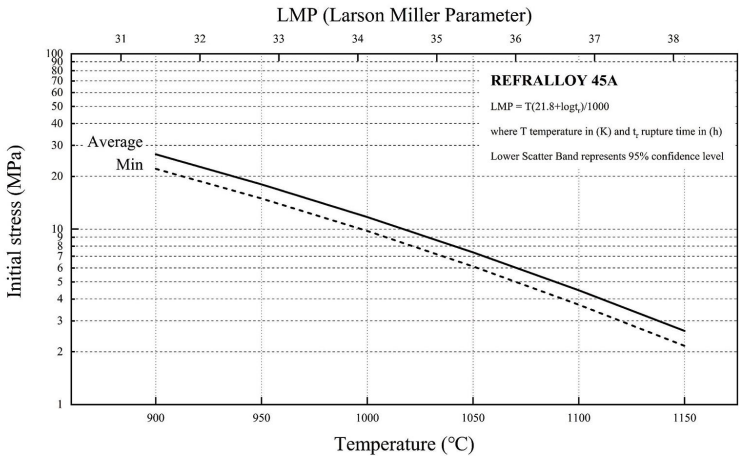
Alloy	Composition Cr / Ni	Max operating Limit (°C)	Applications	Main Features
RÉFRALLOY 35M	25 / 35 MA	1100	Reforming & Cracking	☐ High creep resistance ☐ Improved carburization and oxidation resistance
RÉFRALLOY 35M-R	25 / 35 MA	1100	Reforming	☐ Superior creep resistance, ☐ carburization and oxidation resistance
RÉFRALLOY 45M	35 / 45 MA	1200	Cracking (For High carburizing and metal dusting atmospheres)	☐ Superior carburization and oxidation resistance ☐ High creep strength
RÉFRALLOY 32L	20 / 32 LC	1000	Parts Outside the Furnace Reformer Furnace Manifolds, Transfer Lines	☐ Good creep strength ☐ High thermal shock resistance ☐ Good ductility after ageing
RÉFRALLOY 35L	25 / 35 LC	1080	Parts Inside the Furnace	☐ Similar properties to 32L with higher carburization and oxidation resistance
RÉFRALLOY 45LM	35 / 45 LC MA	1200	DRI Convection Section, Transfer Lines	☐ Similar properties to 32L with 45M with higher thermal shock resistance
RÉFRALLOY 48W	28 / 48 W	1200	DRI, Coil support, Furnace hardware	☐ High creep resistance ☐ Superior oxidation resistance

LMP curves of RÉFRALLOY® derived from historical data of creep tests performed since 1995
Data include long-term and short-term creep test results
All tests performed at Yantai Manoir plant in China
Independent laboratories in Europe and China regularly used for performing additional tests
Test results are analyzed for further internal R&D purpose

RÉFRALLOY-45A

RÉFRALLOY 45A is a cast aluminum-added alloy containing 24% Chromium, 45% Nickel, 4% Aluminum, and trace elements. It was specifically developed to resist coke formation and carburization issues commonly encountered in steam-cracking processes for ethylene production
It is characterized by the following features:

- High resistance to carburization and oxidation
- Excellent creep properties
- Acceptable weldability, even in aged conditions
- Self-protective Al₂O₃ oxide layer



RÉFRALLOY-60A-D

By adding the Al element, a continuous and dense Al₂O₃ oxide film with high thermal stability can be automatically formed under high-temperature conditions. It has excellent resistance to high-temperature creep, high-temperature oxidation and corrosion, with a working temperature as high as 1200°C. It significantly improves the catalytic efficiency and capacity during the reduction process, reduces energy consumption and extends the service life of the furnace tube.



COOPERATIVE CLIENTS

