



Steel-high chromium bimetal wear-resisting compound pipe

The steel-high chromium bimetal wear-resisting compound pipe exterior wall uses the ordinary seamless steel tube, through the centrifugal forming process forms the high chromium cast steel lining compound. The outer wall of the elbow is heated and the inner layer is made of high chromium cast steel, which has the wear-resisting property of high alloy cast steel, and can withstand pressure and has higher mechanical properties.

- Bimetal wear-resistant composite elbow material grade: KMTBCr26
- Working temperature: 150°C / Working pressure: 0.4Mpa
- Working medium: pulverized coal, air two-phase flow
- Maximum flow velocity of gas-solid two-phase flow: 28m/s

Good overall performance

Wear-resistant composite Pipe series is the use of bimetal composite casting process, the outer wall of the pipe using ordinary carbon steel, lined with high chromium wear-resistant alloy. Not only has the high alloy casting wear resistance, but also has the high mechanical strength and the impact resistance performance, the use is safe and reliable.



Chemical composition

- Program: Fe-30-M
- Comment: Cr-Cr/Ni-steel -M
- Elements: Concentration

Single spark(s)

No.	C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	Mo (%)
1	~2.81	0.59	1.17	0.024	0.014	22.05	0.326	0.215
2	~2.80	0.55	1.00	0.014	0.014	22.3	0.371	0.220

No.	Al (%)	Cu (%)	Co (%)	Ti (%)	Nb (%)	V (%)	W (%)	Pb (%)
1	0.0052	0.036	0.021	0.069	0.03	0.118	<0.007	<0.002
2	0.0044	0.037	0.024	0.035	0.026	0.112	<0.007	<0.002

No.	B (%)	Sb (%)	Sn (%)	As (%)	Bi (%)	Ta (%)	Ca (%)	Se (%)
1	0.0021	<0.0020	0.0031	0.043	<0.0010	<0.010	0.0004	0.0033
2	0.0023	<0.0020	0.0036	0.059	<0.0010	<0.010	0.0003	0.0043

No.	N (%)
1	0.053
2	0.038



High abrasion resistance

The hard quality of high chromium cast steel is M7C3 type carbide, which has high toughness and high hardness (hv1500-1800) and thus has good wear resistance.

Strong corrosion resistance, high temperature, wear resistance

Because of the composition and structure of Ka carbide and the high content of CR, the matrix has high heat resistance and decay performance, and can show corrosion resistance in high temperature or corrosive environment. Under the condition of wet state, corrosive medium and particle scouring, the 28Cr white cast steel used in cast mode is used. In dry condition, high chromium cast steel material with martensite matrix can be obtained by heat treatment.

The compound technology is advanced and stable

High precision of mold making, wear-resistant layer thickness uniformity, and uniform, stable performance, especially for straight tubes and special-shaped tubes for the overall composite (elbow, tee, four-pass, tapered pipe, variable diameter pipe, non-thick wall pipe, eccentric tube can do the whole compound).

Good thermal shock resistance

As the main product of the internal and external thermal expansion coefficient is similar to the temperature of the rapid changes and often changing conditions, will not occur due to the loss of the inner layer of failure.



Do you know what's the cladding steel pipe used for?

It not only satisfies the special requirements, but also saves costs.

In a clad line pipe, the corrosion-resistant alloy forms a complete barrier layer on the internal surface of carbon or low-alloy steel pipe (usually referred to as the “backing steel”). In general, use of clad or bi-metal-lined pipe allows the economic use of expensive CRA materials. It has been widely concerned and used in many other fields abroad.

Features of High chromium cast iron pipes

The wear resistance of the high-chromium bimetallic lined pipe is at least many times that of ordinary steel pipes. The bimetallic composite steel pipe has inner and outer double layers of metal, the inner lining is made of wear-resistant cast iron, the inner lining material has good wear resistance and corrosion resistance, and the outer layer material has high mechanical strength and high impact resistance. The lost foam composite process is directly adopted, and the metallurgical composite is formed by casting, which is safe and reliable to use.

Lined high-chromium bimetallic composite pipes include high-chromium bimetallic composite straight pipes lined, high-chromium bimetallic composite elbows lined, high-chromium bimetallic composite tee lined, lined with high-chromium bimetallic composite multi-pass, lined with high-chromium bi-metal composite reducer, lined with high-chromium bi-metal composite flash buffer device, etc.



Technical requirements

- The overall performance of the bimetal wear-resistant composite elbow must meet the following requirements; the flexural strength must be greater than 610MN/M², the tensile strength must be greater than 415MN/M², the impact toughness must be greater than 15J/CM², and the hardness of the wear-resistant layer must be greater than 50.
- The inner and outer surfaces of the bimetal wear-resistant composite elbow should be smooth and clean, without burrs, burrs, cracks, porosity, pores or air bubbles, no cracks are allowed, the pipe has good compactness, and the flow direction of the medium should be marked in obvious parts. The inner lining of each elbow must be formed at one time, and it is strictly prohibited to weld the folded line after it is produced in sections.
- The dimensional deviation of pipe fittings shall comply with the provisions of GB3092, GB8162 and GB8163, and shall comply with the requirements of product drawings and order agreements. Thickness deviation of inner lining \leq +1.2mm. The weight of each elbow cannot exceed the design weight. And mark the weight in the obvious place.
- The steel pipe used in the composite pipe adopts seamless steel pipe, and its performance shall comply with the relevant agreement.
- The bimetal wear-resistant composite elbow is installed by direct welding, with good welding performance, and the outer welded pipe is made of 16MnR# steel.
- Each inlet and outlet of the bimetal wear-resistant composite elbow has a straight



section of a certain length. The straight section (L1/L2) should be consistent with the material and wall thickness of the elbow body, and a 100mm transition section is added outside the straight section to be welded to the powder feeding pipeline. There should be no special requirements for on-site welding of products to ensure good welding performance when products are welded at room temperature on site.

- The life of the bimetal wear-resistant composite elbow is not less than 10 years (8000 hours of operation per year).
- During the service life of the bimetal wear-resistant composite elbow and under the abnormal conditions of spontaneous combustion of the powder feeding pipeline, the product should ensure that the lining wear-resistant layer does not crack or peel off; when the pipeline is partially blocked, it should ensure that it can knock, cutting, it should be convenient for unloading, installation and maintenance.
- The sealing performance test of the bimetal wear-resistant composite elbow shall be carried out before leaving the factory, and the test shall be carried out according to the relevant standards. When the quality and performance of the products provided by the supplier do not meet the specified standards, they shall not leave the factory.
- The product should meet the “DL/T 680-1999 Technical Conditions Standard for Wear-Resistant Pipelines”.



Advantages

The hardness of a good wear resistance super-hard wear alloy is greater than 56 (HRC), which has good wear resistance and thermal stability.

Excellent impact resistance, metal binding and thermal shock resistance KMTBCr28 bimetal composite wear-resistant elbow. The joint surface of the two metals is completely metallurgical, safe and reliable. The coefficient of thermal expansion is equal to that of expansion, shrinkage and crack. The outer wall of the elbow is made of steel tube and the inner lining is made of super-hard wear-resistant alloy.

Good resistance to heat and corrosion. The matrix of super hard alloy material has strong resistance to heat and corrosion. Under the action of wet state, corrosion medium and particle scour, it is more suitable to use the super hard wear-resistant alloy. Under the condition of dry state in which abrasive wear is the main failure mode, a kind of super hardness wear-resistant alloy material which can be obtained by heat treatment is selected.

The bimetal wear-resistant pipe with low composite cost and good quality is manufactured by the internationally advanced epc casting process with high yield, good compactness, uniform thickness and stable quality.

The bimetal wear-resistant pipe can be connected by flange, quick joint and direct welding. In addition, due to the high resistance and beating performance of the composite pipe, when partial blockage occurs in the pipe system maintenance, it can be knocked or hammered at will, and can be cut, unloaded, welded and installed at will.





Application

Because oil and natural gas contains a large number of corrosive media such as hydrogen sulfide, carbon dioxide and chloride ions, especially the content of corrosive components in the oil and gas medium before pipeline purification in the seabed oil and gas field is high, and some even require heat transfer, and internal corrosion problems are very prominent. The use of stainless steel or corrosion-resistant alloys in large quantities is not economical. Double metal clad pipes are a good choice.

The bimetal clad pipe structure uses a corrosion-resistant alloy tube (stainless steel or corrosion-resistant alloy) as the inner liner (wall thickness 0.5-3mm) to contact the corrosive medium and carbon steel or low-alloy steel as the outer base pipe to withstand the pressure. low. Generally, the double-metal clad pipe contains 316L austenite stainless steel as the inner liner in the case of containing CO₂ medium, and 2205 and 2505 duplex stainless steel can be used as the medium containing CO₂ + small amount of chloride, when H₂S+CO₂ is contained. + Chloride, the inner liner should be 028, G3, INCONEL625 and Inconel825 nickel-base or iron-nickel alloy, in order to ensure the corrosion resistance of the pipeline, but also can choose the titanium alloy and other materials with excellent corrosion resistance as lining. The



outer layer material is usually API 5L X42, X50, X60, X70, ASTM-A106GB and A335-P22 and other materials, so as to ensure the strength of the pipeline.

Casing pipe for oil and gas transportation

Choosing stainless steel such as Incoloy625 and Incoloy825 for inner tubes to ensure the corrosion resistance of the pipe. The outer pipe is usually X42, X50, X60, X70, A335-P22 and other materials to ensure the strength of the pipeline. The American Petroleum Association (API) has developed the standard for composite pipes for pipelines, with the serial number API 5LD: Cr-Mo steel, super 13Cr, G3, C028 and other oil well tubes and the nickel-base alloy cladding tubes such as 825, 028.

Waste incinerator

Cladding steel tube for waste incinerator. The outer tube can be made of Sanicro65 alloy, and the inner pipe may be carbon steel or chromium, molybdenum steel with resistance to stress corrosion cracking. Europe and the United States have used 2 million meter composite steel pipe since the first installation cladding pipe incinerator superheater and water wall tubes in the 1971.

Heat exchanger

Cladding steel pipe used for heat exchanger should also have good thermal conductivity and a certain strength and corrosion resistance.



We manufactured cladding pipe with high alloy, nickel chromium alloy 800 as the inner tube and the low-alloy steel ASTM A213 Ti2 as the outer pipe.

Used for wear-resistant steel

A Japan company have made cladding steel pipe with SUS316L corrosion resistant steel for outer pipe, Stellite No12 alloy for inner pipe, after 4 years is still new. They have also been well applied in the pneumatic conveying pipe of other micro powder particles, and the demand is increasing.

Marine environment

- Inner pipe: Nickel, Titanium stainless steel or Copper alloy.
- Outer pipe: Carbon steel or low alloy corrosion resistant steel.

Cladding pipe used for marine environment made by Japan's Kawasaki is widely used as marine heat exchanger tube and seawater desalination of seawater intake pipe.

Civil areas

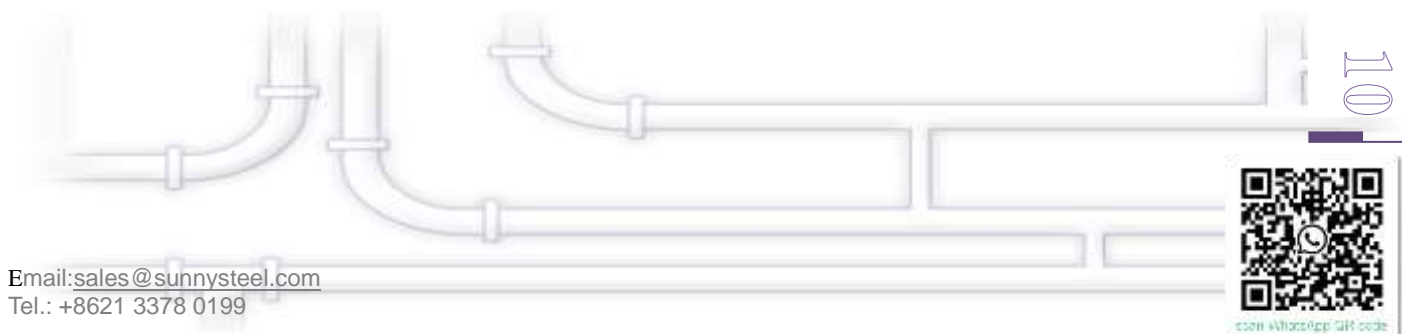
Cold, hot water pipes, direct drinking water pipes, heating, solar energy, ground source heat pump; civil construction water supply pipes, water distribution trunk; air conditioning circulation pipe, fine decoration high-grade commercial housing water



pipes.

Industry

Oil and gas pipeline, oil and gas wells casing, sewage return pipe; chemical heat exchanger tube bundle; power desalination water, desulfurization pipeline and other metallurgy, desalination, medicine and chemical industry, sewage treatment, new energy, food processing and other industries.



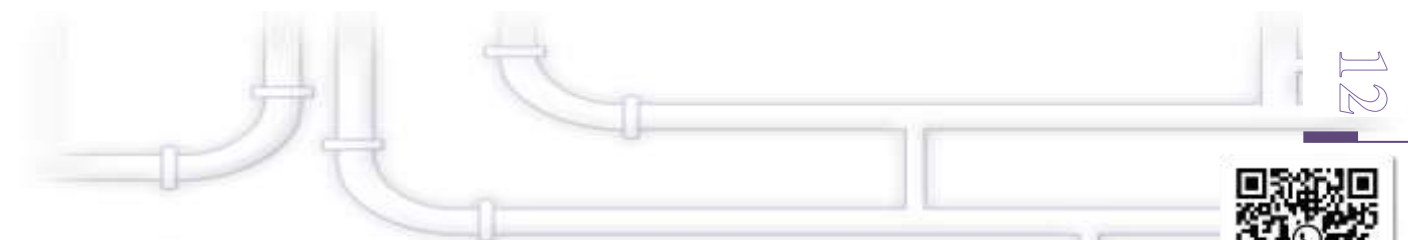


Easy to install and use

It can be installed by flange, quick connector and direct welding.

Because of the high impact resistance of the composite pipe, it is convenient to cut, unload, weld, install and overhaul in the pipeline system when local pipe plugging occurs.





Packing

The packaging method of the Bimetal clad steel pipe usually includes a single bare package-container, wooden frame bundled packages, channel steel frame box.

