

上海司迈尔特种合金材料有限公司

Shanghai Smile Special Alloy Material Co., Ltd.

About Us
简介

上海司迈尔（smile）特种合金材料有限公司是一家专业生产合金焊粉、合金铸棒、合金铸件和电焊条等各种硬面材料及等离子堆焊设备专业生产企业。产品广泛应用于耐高温、耐腐蚀、耐磨损、抗冲击等恶劣工况。

公司目前拥有一批专业的技术研究人员，在材料的开发、应用方面都有丰富的经验，能为客户提供最全面的技术咨询和最优质的现场服务。专业的管丝生产流水线，可向用户提供直径1.2mm-5.0mm、合金含量可≥50%的铁基、碳化钨、不锈钢等材料，用于埋弧焊、明弧焊、气体保护焊、线材电弧喷涂、氧一乙炔等的管状焊丝、焊棒。可用于冶金、矿山、电力、机械等耐磨、耐蚀、耐高温场合。公司配套有连铸生产线、制粉生产线系统、真空熔炼、焊接设备等优良装备，有科学完善的质量检测手段。

“客户是财富之源；服务是生存之本；创新是发展之路”是我公司的宗旨及倡导的企业精神。“以顾客满意为中心；以服务质量求生存；以持续改善促发展”是我公司质量方针，也是我公司全体员工为之努力的奋斗目标。ISO-9001严谨的管理体系有效的保证了产品的稳定，使公司得以在竞争激烈的市场上持续、高速的发展。

Shanghai Smile Special Alloy Materials Company is a professional manufacturer of solder alloy powder alloy casting rods, alloy castings, and welding electrodes and other hard surface material and plasma welding equipment specializing in the production of enterprises. The products are widely used in high-temperature, corrosion-resistant, resistant to abrasion, impact and other harsh conditions.

The company has a number of professional and technical researchers, has a wealth of experience in the development of materials, applications, and can provide customers with the most comprehensive technical advice and the highest quality on-site service. The professional tube wire production lines, to provide users with a diameter of 1.2mm-5.0mm, alloy content ≥ 50% of the iron-based materials such as tungsten carbide, stainless steel, can be used for tubular welding wire and welding rod for submerged arc welding, open arc welding, gas metal arc welding, wire arc spraying, oxygen - acetylene. Can be used in wear and corrosion resistance, high temperature occasions, such as metallurgy, mining, electricity, machinery. The companies supporting the continuous casting production lines, milling production line system, vacuum melting, welding equipment and other excellent equipment, scientific quality detection means.

"The customer is a source of wealth; service is the basis condition for the survival ; innovation is the development of the road" --this is the purpose of my company and the spirit of enterprise. "Customer satisfaction; survival QOS; continued to improve and promote development " --this is the quality policy of the company, my company all employees worked for the goal. ISO-9001 and strict management system to ensure the stability of the product and the company to be sustained, high-speed development of a competitive market.







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丝材合金系列 Alloy Series of wire

公司生产诸多合金系列的丝材，直径从1.2mm至4.0mm多个品种，适用于埋弧焊、明弧焊、气体保护焊，电弧线材喷涂等各类工艺。

专业、品种齐全的合金能为您解决各类耐高温、耐磨损、耐冲击、耐腐蚀等工业问题，广泛用于钢铁、冶金、水泥、电力、钻采、石化裂解等各个工业领域。

Our products include many alloy series wire, diameter from 1.2mm to 4.0mm varieties, suitable for submerged arc welding, open arc welding, gas shielded arc welding, arc wire spraying and other all kinds of technology.

Professional, full range of alloys for you to solve all kinds of high temperature resistance, abrasion resistance, impact resistance, corrosion resistance and other industrial issues, are widely used in various industrial sectors such as iron and steel, metallurgy, cement, electricity, drilling, petrochemical cracking.

马氏体合金钢（Marensitic Alloy Steel）

SME 8104, SME 8224, SME 8225

马氏体不锈钢（Marensitic Stainless Steel）

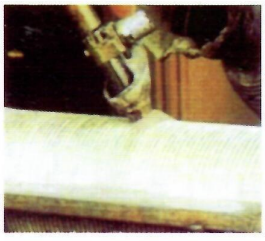
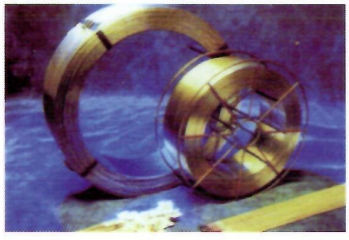
SME 8410, SME 8414, SME 8430

奥氏体不锈钢（Austenitic Stainless Steel）

SME 8308, SME 8309, SME 8316

高铬铸铁合金（High-Cr Cast Lron Alloy）

SME 8103, SME 8911, SME 8625



产品介绍 Product introduction

管状焊丝 Tubular Wire	焊剂 Flux	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)											典型用途 Application
			C	Cr	Si	Mo	Mn	Fc	W	Ni	V	B	其它	
SME 8104	431	28	0.25	1.20	1.50		3.00	Bal						轧辊等堆焊过渡层及及轴的修复 build up prior to hardfacing of rolls and shaft rebuilding
SME 8105	431	45	0.50	4.00	1.10	0.50	2.75	Bal						拖拉机惰轮、矿车轮、导辊 tractor idlers, mine car wheel, roller
SME 8107	431	37	0.35	2.70	1.20	0.25	2.70	Bal						卷筒、拖拉机惰轮、矿车轮 rools, tractor idlers, mine car wheels
SME 8108	260	28	0.10	1.00	0.80	0.60	1.90	Bal		0.90				轧辊等堆焊过渡层及轴的修复 build up prior to hardfacing of rolls and shaft rebuiding
SME 8109	260	40	0.45	3.10	0.60	0.50	0.60	Bal		0.50				管模，各类辊、轴等 pipe dies, rolls
SME 8224	107	46	0.45	5.50	0.65	1.10	1.80	Bal	1.50					热轧工作辊、支撑辊、开坯辊 hot-rolling support roll, primary roughing roll
SME 8224H	107	53	0.55	6.50	0.65	1.10	1.80	Bal	1.50				1.00	热轧工作辊、支撑辊、开坯辊 hot-rolling support roll, primary roughing roll
SME 8224HC	107	58	0.75	7.70	0.75	1.80	1.70	Bal	2.60				1.00	支撑辊、校直辊、助卷辊 support rool, straightener rool, xoiler roll
SME 8225	107	59	0.90	6.00	0.50	1.20	0.80	Bal	8.60					热轧支撑辊 hot-rolling support roll
SME 8227	260	50	0.60	5.50	0.50	0.90	1.80	Bal	1.40					热轧工作辊、支撑辊、开坯辊 hot-rolling support roll, primary roughing roll
SME 8414-s	260	46	0.15	13.00	0.50	1.00	1.40	Bal		4.20				连铸辊等耐磨耐高温场合 continuous casting roll
SME 8414N-s	260	44	0.08	13.00	0.60	0.70	1.10	Bal					N:0.1	连铸辊等耐磨耐高温场合 continuous casting roll
SME 8420	260	46	0.40	13.00	0.50		1.40	Bal						一般轧钢辊、刹车鼓、卷辊 pinch roll, brackdrum, coiler rolls
SME 8420H	260	54	0.60	13.00	0.40		1.40	Bal						一般轧钢辊、刹车鼓、卷辊 pinch roll, brackdrum, coiler rolls
SME 8423	107	45	0.33	13.50	0.50	1.20	1.50	Bal		2.50	0.20			连铸机辊、热轧辊堆焊 continuous casting roll, hot-roll
SME 8424H	260	49	0.40	12.00	0.50	0.90	2.20	Bal		1.40				有色工作辊的堆焊 non-ferrous roll
SME 8430	260		0.10	19.00	0.50		0.70	Bal		0.60				连铸辊等耐磨耐高温场合 continuous casting roll
SME up-o		30	0.15	0.90	0.90	0.40	1.80	Bal						碳钢和低合金钢恢复尺寸如齿轮、垂头 rebuilding of mild and low alloy steels such as gear teeth, hammers
SME 8414N-o		46	0.20	14.00	0.50	0.80	1.30	Bal	4.20				N:0.1	连铸辊等耐磨耐高温场合 continuous casting roll
SME 8430-o			0.10	17.00	0.50		0.70	Bal		0.20				连铸辊等耐磨耐高温场合 continuous casting roll
SME 8103	107	57	5.15	27.50	1.50		2.50	Bal						磨煤辊 coal pulverizing roll
SME 8911	107	60	6.60	36.50	0.40		0.40	Bal						磨煤辊堆焊 coal pulverizing roll








耐磨合金 系列 Resistant alloy

关于磨粒磨损

磨粒磨损是引起机械设备失效的重要表现形式之一，它是由相对坚硬的磨粒在机械部件表面磨损而导致重量/体积损失，最终导致设备损坏。磨粒磨损一般表现为两种形式：一种是滑擦磨损，表现为坚硬磨粒在工件表面滑动摩擦进而导致重量/体积损失，其特征为磨粒本身对金属等表面的方向压力很小，典型的应用如钢铁、建材机械行业的输料槽，风机叶片等。另一种为凿削磨损，表现为坚硬磨粒在一定的方向压力的作用下在工件表面切向移动。磨粒嵌入工件表面，凿削导致部分重量/体积损失。典型的如各类破损机械，如电厂中速磨、水泥厂立磨、挤压辊，螺旋传送器等。

耐磨合金

目前，经济而高效的耐磨粒磨损合金首推高铬铸铁合金。该系列合金的特点为在坚实的金属基件上密集生长大块的初生碳化物（M7C3等）。这些碳化物显微硬度一般为HV2000左右，甚至更高，它们在金属基体的支撑下，抵抗坚硬磨粒的磨损。

相对于滑擦磨损，凿削磨损的产生机制相对更复杂。由于磨粒压力造成的对耐磨合金表面的显微组织破坏，导致耐磨相的碎裂，剥落是导致宏观磨损的重要因素。

在典型的应用如电厂磨煤辊中，燃煤中存在一定比例的杂质如黄铁矿或石英等。磨损介质在挤压力的作用下切入耐磨合金，并横向挤切金属。在这种情况下，如果基体过软，就容易被磨粒凿削，进而影响整体的耐磨效果；二来过大的初生碳化物本身强度较低，在受力条件下容易断裂，造成显微剥落，碳化物硬质相对于基体是相辅相成的两部分，对抗磨粒磨损都起着重要作用。所以，通过合金设计以及堆焊工艺调整，让堆焊合金生成均匀密布的、细晶粒的碳化物硬质相，并在周围裹以坚实的基体，是提高机械部件服役寿命的关键。在此基础上，我们研发了多个牌号的“复合碳化物”堆焊合金，即在传统的高铬铸铁合金基础上添加Mo，V，W，Nb和Ti等元素。一方面，这些元素参与Cr/C形成初生碳化物或形成自身的碳化物，提高耐磨性以及高温稳定性；同时这些合金元素细化了合金晶粒，并强化了基体，提高了堆焊合金的整体强度，改善了合金的抗磨粒磨损性能。

About abrasive wear

Abrasive wear is one of the important form of mechanical equipment failure. It is the surface wear of the mechanical parts due to a relatively hard abrasive grains and lead to loss of weight / volume, and finally result in equipment damage. Abrasive wear general performance of the two forms: one is sliding friction wear, sliding friction of the hard abrasive grains on the workpiece surface and thus lead to loss of weight / volume, Its feature is abrasive itself on the metal surface in the direction of pressure is very small, Typical applications such as iron and steel, building materials machinery industry feeding trough, fan blades. Another is chiselling wear, performance for the hard abrasive grains in the cut surface of the workpiece under the action of a certain direction pressure to the mobile. The abrasive particles embedded in the surface of the workpiece, chipping lead to some of the weight / volume loss. Typical, such as all kinds of broken machinery, power plants-speed mill, vertical mill of cement plant, squeeze rollers, screw spreader and so on.

Resistant alloy

Currently, economical and efficient abrasive wear-resistance alloy is the most important high-chromium cast iron alloy. This series alloy is characterized by intensive growth and chunks of a solid piece of metal matrix primary carbides (M7C3). Usually these carbides microhardness is HV2000 about, or even higher, they are the support of the metal substrate, resistant to wear of the hard abrasive grains.

Relative to swipe wear, chipping wear generation mechanism is more complex. Wear resistant phase of wear-resistant alloy surface microstructure damage due to the the abrasive pressure caused the fragmentation, spalling are important factors that lead to macro-wear.

Typical applications such as power plants coal grinding roller, there is a certain percentage of impurities such as pyrite or quartz in coal. Wear medium cut in wear-resistant alloy under the action, and lateral squeeze to cut metal. In this case, if the substrate is too soft, it is easy to be abrasive chipping, thereby affecting the overall wear effect; Second, the large primary carbides itself with lower strength, is easily broken under stress conditions, cause micropeeling. Hard carbide is a two-part complementary relative to the matrix, plays an important role against abrasive wear. Therefore, by the alloy design and the surfacing process adjustments, make the surfacing alloys with uniformly, fine grain carbide phase, and the hard phase of a fine grain carbide, and around the wrapped in a solid matrix. That is the key to improve the service life of mechanical components. On this basis, we have developed a variety of complex carbide hardfacing alloys. Added in some other elements such as Mo, V, W, Nb and Ti on the basis of the conventional high chromium cast iron alloy. On the one hand, these elements are involved in the formation of primary carbides Cr / C or form their own carbide to improve wear resistance and high temperature stability; at the same time these alloying elements refine the alloy grain, and strengthen the matrix, enhances the overall strength of surfacing alloy, improved alloy abrasive performance.



产品介绍 Product introduction

管状焊丝 Tubular Wire	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%) C	Cr	Si	Mo	Mn	Fc	Ni	Al	其它
SME 8103-o	58	5.60	27.0	0.90		1.80	Bal			
SME 8100HD-o	60	6.00	29.0	1.30		0.40	Bal			
SME 8100HC-o	60	5.50	27.0	1.00	1.30	1.90	Bal			
SME 8150-o	58	2.00	7.0		2.00	1.00	Bal	V: 0.20		Ti: 7.00
SME 8943-o	60	6.10	23.0	0.50		1.00	Bal			Nb: 6.00
SME 8945-o	60	5.00	21.50	0.70	4.50	0.70	Bal	W: 2.00		Nb: 7.00
SME Ni-Mang-o	冷硬	0.85	3.00	0.50		14.00	Bal	3.00		
SME Sat-Mang-o	冷硬	0.10	10.00	0.50	0.80	15.50	Bal	0.85		
SME 892G	54	3.00	30.00	1.40	0.60	0.80	Bal			
SME 893G	44	2.00	28.00	1.00	1.10	1.10	Bal			
SME 11-o	50	3.20	14.50	0.90	0.45	1.40	Bal			
SME 94-o	57	3.20	24.50	0.70		0.80	Bal	2.80		
SME 117-o	43	2.30	10.50	1.30	1.50	1.50	Bal	Zr: 0.40		Cu: 0.40
SME 90G	48	2.40	24.00		0.90	0.90	Bal			
SME 94G	52	3.00	28.00		1.20	1.20	Bal	B: 0.80		
SME 165	62	6.80	30.00	0.50	0.50	0.50	Bal	W: 4.20		Nb: 2.60

典型用途 Application

碳化铬以及复合碳化物耐磨铸铁合金，适用于中低应力下的磨粒磨损工况，如耐磨衬板，螺旋输送机，电厂中速磨，水泥厂立磨等等。

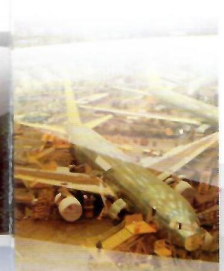
Tic强化耐磨合金，抗冲击性能优越
Nbc强化耐磨合金，高温耐磨性能优越

Chromium carbide and complex carbide wear resistant cast iron alloy, suitable for low-stress abrasive wear conditions, such as wear-resistant liner, screw conveyor, power plant of medium speed mill, vertical mill of cement plant and so on.

Tic strengthen wear-resistant alloy, superior performance of the impact resistance.

Nbc strengthen wear-resistant alloy, superior performance of the high temperature wear

管状焊丝 Tubular Wire	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)	典型用途 Application
SME 60A-91	A-91	60%碳化钨、其余为钢管，A-91中为碳化钨颗粒硬度 60% tungsten carbide, the other is steel pipe, A-91 for the hardness of tungsten carbide particles	风机搅拌机叶片、采矿、建筑易损件 Fan mixer blades, mining, construction wearing parts









耐磨合金 系列 Resistant alloy

我公司提供直径1.6mm的高铬铸铁、二氧化碳气体保护焊丝，合金含量可≥40%的铁基、镍基、钴基、不锈钢等材料。焊丝配方独特，熔敷率高，无飞溅。成型好，焊缝质量优异。采用先进的明弧焊接技术，焊前无需预热，焊后无需热处理，工艺简单，修复成本降低。被广泛应用于电力、水泥、钢铁、矿山、石油、化工、铁路、阀门、制糖、船舶等行业。

二氧化碳气体保护焊的优点：

1、 焊后变形较小，角变形为5‰，不平度只有3‰。

2、 焊接飞溅小，当采用超低碳合金焊丝或药芯焊丝，或在CO_2中加入Ar，都可以降低焊接飞溅。

3、 焊接成本低，其成本只有埋弧焊和手工弧焊的40-50%。

4、 生产效率高，其生产效率是手工电弧焊的1-4倍。

5、 操作简单，明弧，对工作厚度不限，可进行全位置焊接而且可以向下焊接。

6、 焊缝抗裂性能高，焊缝低氢且含氮量也较少。

My company provides the diameter of 1.6mm high chromium cast iron, carbon dioxide gas shielded welding wire, alloy content of ≥ 40% iron-base, nickel-base, cobalt-base, stainless steel and other materials. Wire unique formula, the high deposited rate, no spatter, molding good, excellent weld quality. Using the advanced open arc welding technology, without preheating before welding, without heat treatment after welding, the process is simple, reduce repair costs. It is widely used in electricity, cement, steel, mining, petroleum, chemical, railway, valves, sugar refining, shipbuilding and other industries.

Advantages of carbon dioxide gas shielded arc welding:

1, small deformation after welding, angular distortion was 5‰ roughness was 3‰ only.
2, small spatter, can reduce the welding spatter, while using ultra low carbon alloy welding wire and flux cored wire, or addition of Ar into CO_2.
3, low cost of welding, the cost of only 40-50% of the submerged arc welding and manual arc welding.
4, high production efficiency, the production efficiency is 1-4 times of manual metal arc welding.
5, the operation is simple, open arc, the thickness of the work is not limited to, all-position welding and can be welded down.
6, high crack resistance of weld, hydrogen content and nitrogen content of the weld less.

产品介绍 Product introduction

管状焊丝 Tubular Wire	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%) C	Cr	Si	Mo	Mn	Fc	Ni	Al	其它	典型用途 Application
SME-10	58	5.60	25.0	0.90		0.60	Bal				碳化铬以及复合碳化物耐磨铸铁合金，适用于中低应力下的磨粒磨损工况，如耐磨衬板、螺旋输送机、电厂中速磨、水泥厂立磨等等。 Chromium carbide and complex carbide wear resistant cast iron alloy, suitable for low-stress abrasive wear conditions, such as wear-resistant liner, screw conveyor, power plant in speed mill vertical mill, cement plant and so on.
SME-20	60	5.50	25.0	1.00	1.30	0.80	Bal				
SME-30	60	5.50	23.0	0.50		1.00	Bal			Nb: 6.00	
SME-40	冷硬	0.10	10.0	0.50	0.80	15.5	Bal	0.85			
SME-50	60	5.00	21.5	0.70	4.50	0.70	Bal	W: 2.00		Nb: 7.00	

细丝：宜现场堆焊优质电厂磨辊及其它磨损件的修复，以及预保护焊丝堆焊中耐强磨料磨损的工件。

Filaments: should site surfacing quality power plant grinding rollers, and other wear parts repair, as well as pre-protection wire surfacing resistant to strong abrasive wear workpiece.



堆焊工艺介绍

Hardfacing Process Introduction

目前，国内大量应用的堆焊工艺是埋弧或者明弧堆焊。我们希望堆焊合金中得到均匀、细密分布的碳化物相。为此堆焊弧道上大量形成细密的横向裂纹（一般间隔10-15mm就有一道裂纹），堆焊时可耳闻间断的“砰、砰”开裂声，这是释放焊接应力所必需的。应力释放不够，容易导致堆焊层合金的剥落。在堆焊电参数及转台转速的选择匹配上，希望堆焊焊道成型良好，焊道宽度约为15mm左右。如果焊道上的裂纹间隔过宽或裂纹过大，可能最终影响堆焊合金耐磨性能，严重的甚至可能导致剥落。

就埋弧焊及明弧焊两种工艺而言，两者各有特点。埋弧焊相对焊接的环境更清洁，焊道成型美观。而明弧焊无需使用焊剂，所以堆焊应用更灵活。同时，明弧焊堆焊的效率更高，熔深浅，对于变性敏感的堆焊件，如薄壁，耐磨衬板，则适用性更好。只是由于焊接产生大量的烟雾、飞溅和暴露弧光，焊接场所需要做好环境保护及焊工的防护措施。

At present, submerged arc welding or open arc surfacing is the widely-used welding technology in China. We hope to get uniform fine distribution of carbide phase in the surfacing alloy. So there was generated a lot of fine-grained transeverse crack in the surfacing arc track channel (usually there is a crack interval of 10-15mm). We can heard the intermittent sound of cracking "bang, bang" when surfacing, which is required to release the welding stress. Not enough stress release, easily lead alloy surfacing layer peeling. Surfacing electrical parameters match the selection and turntable speed, hoping good the surfacing weld bead molding, bead width is about 15mm. If welding trail crack interval is too wide or too large cracks may eventually affect the wear resistance of the surfacing alloy, and may even lead to severe flaking.

For both submerged arc welding and open arc welding process, both have their own characteristics. Submerged arc welded environment is cleaner, the arc channel forming beautiful. Open arc welding without the use of flux, so surfacing applications more flexible. At the same time, the open arc welding more efficiency, the penetration shallow. For flexible surfacing pieces, such as thin-walled, wear liners, better applicability. Just because welding to produce a lot of smoke, the splash and exposed arc. The welding places need to do a good job of environmental protection and the protective measures of welder.





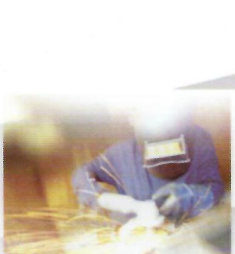


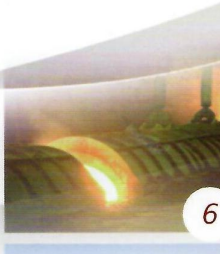












钴基合金系列 Cobalt-Base Alloy

钴基合金具有较好的抗高温疲劳性能、抗热震冲击性能和良好的抗氧化、耐腐蚀性能、耐磨粒磨损及良好的金属间磨损性能，主要用于耐磨、耐腐蚀、耐高温、抗冲击等条件下的各类零件的制造、修复和保护，产品形式有：钴基铸棒、钴基粉末、钴基焊条、钴基精密铸件。

Cobalt-Base alloy with good resistance to high temperature fatigue properties, impact properties and good thermal shock resistance to oxidation and corrosion resistance, abrasive wear-resistance and good wear properties between the metal, mainly used for wear, corrosion resistance, high temperature, shock and other regulations under the various pieces of manufacturing parts, repair and protection, product lines are on: Co-based casting rods, cobalt powder, cobalt-based electrode, cobalt-based fine honey casting.

钴基铸棒 Cobalt-Base Bare Rods

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)									典型用途 Application	国际国内参考标准 Reference Standard
		C	Cr	Si	W	Ni	Fe	Mn	Mo	Co		
CAG-Co1	50-58	2.45	30.00	1.00	13.00	≤3.00	≤3.00	≤1.00	≤1.00	Bal	阀座、轴承、刀口、旋转密封环等 valve seat inserts, bearing, cutter edge, rotary ring, etc	AWSA.5.21 ERCoCr-C Stellite 1
CAG-Co3	50-56	2.40	30.50	1.00	13.00	≤3.00	≤3.00	≤1.00	≤1.00	Bal	阀座、轧钢导向辊、破碎机刀口等 valve seat inserts, steel mill guide roll, wearing panel of cracker blade, etc	AWSA.5.21 ERCoCr-C Stellite 3
CAG-Co4	45-50	1.00	31.00	1.00	14.00	≤3.00	≤1.00	≤0.50	≤0.50	Bal	热压模、挤压模、干电池工业 hot extrusion die, dry battery industry	Stellite 4
CAG-Co6	40-46	1.20	29.00	1.00	4.50	≤3.00	≤3.00	≤1.00	≤1.00	Bal	发动机气门、高温高压阀门、涡轮机叶片等 engine valve, high temperature valves, turbine balde, etc	AWSA.5.21 ERCoCr-A Stellite 6
CAG-Co12	44-50	1.40	30.00	1.30	8.50	≤3.00	≤3.00	≤1.00	≤1.00	Bal	高温高压阀门、锯齿、螺旋推杆等 high temperature, pressure valves, sawteeth, screw flights, etc	AWSA.5.21 ERCoCr-B Stellite 12
CAG-Co20	54-59	2.50	32.00	1.20	17.00	≤3.00	≤3.00	≤0.50	≤1.00	Bal	轴承套筒、耐磨板等 bearing sleeve, wear plate	Stellite 20
CAG-Co21	20	0.25	27.00	1.00	0.20	≤3.00	≤2.00	≤1.00	≤5.50	Bal	各种液体阀、热冲模、阀座等 fluid valve, brass casting die, valve seat, etc	AWSA.5.21 ERCoCr-E Stellite 21
CAG-Co25	冷硬	0.05	20.00	1.00	15.00	10.00	≤2.00	≤1.50	≤1.00	Bal	高温耐腐蚀阀门密封面、压铸模等 high temperature and corroson-resistant valve sealing surface, pressure casting dies, etc	Stellite 25
CAG-Co31	30-35	0.50	26.00	1.00	7.50	10.00	≤3.00	≤1.00	≤1.00	Bal	挤压模、燃气涡轮叶片等 extruding die, steam turbine blade, etc	Stellite 31
CAG-CoF	40-45	1.80	26.00	1.00	12.00	22.00	≤1.50	≤0.50	≤1.00	Bal	内燃机进排气门等 engine inlet and exhaust valve	AWSA.5.21 ERCoCr-F Stellite F
CAG-Co190	≥54	3.20	26.00	1.00	14.00	≤1.00	≤3.00	≤1.00	≤1.00	Bal	石油钻具等 petroleum drill bit	AWSA.5.21 ERCoCr-G Stellite 190
CAG-CoT-400	50-60	0.08	8.50	2.60		1.50	≤1.50	≤1.00	≤28.00	Bal	高温强腐介质的阀门、挤塑器等 wedge gate valves at elevated temperature, corrosive environment, plastic extrusion liners	Stellite 400
CAG-CoT-800	52-58	0.08	18.00	3.40		≤1.50	≤1.50	≤1.00	≤28.00	Bal	高温强腐介质的阀门、挤塑器等 wedge gate valves at elevated temperature, corrosive environment, plastic extrusion liners	Stellite 800

*Deloro Stellite 注册商标







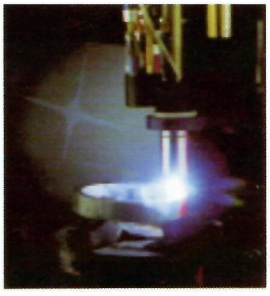


钴基合金粉 Cobalt-Base Welding Powder

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%) C	Cr	Si	W	Ni	Fe	Mn	Mo	Co		典型用途 Application	国际国内参考标准 Reference Standard
CAG-Co1	48-54	2.40	30.00	1.00	12.00	≤3.00	≤3.00	≤1.00	≤1.00	Bal		阀座、轴承、刀口、旋转密封环等 valve seat inserts, bearing, cutter edge, rotary ring, etc	Stellite 1
CAG-Co3	48-54	2.30	30.00	1.00	12.00	≤3.00	≤3.00			Bal		针阀座、导向辊、阀座等 needle holders, steel mill guide roll, valve seat inserts, etc	Stellite 3
CAG-Co6	38-44	1.20	30.00	1.00	4.50	≤3.00	≤3.00	≤1.00	≤1.00	Bal		发动机气门、高温高压阀门、涡轮机叶片等 engine valve, high temperature, pressure valves, turbine balde, etc	Stellite 6
CAG-Co12	42-48	1.40	30.00	1.40	8.50	≤3.00	≤3.00	≤1.00	≤1.00	Bal		高温高压阀门、锯齿、螺旋推杆等 high temperature, pressure valves, sawteeth, screw flights, etc	Stellite 12
CAG-Co20	52-57	2.50	32.00	1.00	18.00	≤3.00	≤3.00	≤1.00	≤1.00	Bal		轴承套筒、耐磨板等 bearing sleeve, wear plate	Stellite 20
CAG-Co21	20	0.20	28.00	2.00	0.15	≤3.00	2.00	≤1.00	5.50	Bal		各种流体阀、阀座、涡轮机叶片等 fluid valve, valve seat, turbine blades, etc	Stellite 21
CAG-Co25	冷硬	0.10	20.00	1.00	15.00	10.00	≤3.00	≤2.00	≤1.00	Bal		冲压、挤压模等 extrusion die	Stellite 25
CAG-Co31	28-34	0.50	26.00	1.00	8.00	10.50	2.00	≤1.00		Bal		挤压模、涡轮机叶片等 extruding die, turbine blade, etc	Stellite 31
CAG-Co157	50-56	0.10	22.00	1.50	5.00	≤3.00	≤3.00	≤0.50	≤1.00	Bal	2.50	摩托车气门顶端 top of motor car valve	Stellite 157
CAG-Co158	40-46	0.80	29.00	1.50	5.50	≤3.00	≤3.00	≤1.00	≤1.00	Bal	0.80	锯齿、高温高压阀门、螺旋推杆等 high temperature, pressure valves, sawteeth, screw flights, etc	Stellite 158
CAG-CoF	38-44	1.70	26.00	1.20	12.00	22.00	≤3.00	≤1.00	≤1.00	Bal		内燃机进排气门等 engine inlet and exhaust valve	Stellite F

*Deloro Stellite 注册商标



















钴基合金 系列 Cobalt-Base Alloy

钴基电焊条 Cobalt-Base Electrodes

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)									典型用途 Application	国际国内参考标准 Reference Standard
		C	Cr	Si	W	Ni	Fe	Mn	Mo	Co		
CAG-D Co1	48-54	2.10	30.00	1.00	14.00	≤3.00	≤5.00	≤2.00	≤1.00	Bal	阀座、轴承、刀口等 valve seat inserts, bearing, cutter edge, etc	EDCoCr-C Stellite 1
CAG-D Co6	38-44	1.00	30.00	1.00	4.60	≤3.00	≤5.00	≤2.00	≤1.00	Bal	高温高压阀门、锯齿、涡轮机叶片 high temperature valves, sawteeth, turbine balde	EDCoCr-A Stellite 6
CAG-D Co12	44-48	1.40	30.00	1.00	9.00	≤3.00	≤5.00	≤2.00	≤1.00	Bal	高温高压阀门、螺旋推杆、锯齿等 high temperature valves, screw flights, sawteeth, etc	EDCoCr-B Stellite 12
CAG-D Co21	20-40 冷硬	0.20	28.00	1.00	–	≤3.00	≤5.00	≤2.00	5.50	Bal	阀座、热冲模等 valve seat inserts, brass casting die, etc	EDCoCr-E Stellite 21
CAG-D Co25	冷硬	0.15	20.00	1.00	14.00	10.00	≤5.00	≤2.00	≤1.00	Bal	高温耐腐密封面、压铸模 high temperature and corroson-resistant valve sealing surface, pressure casting dies	Stellite 25

*Deloro Stellite 注册商标

钴基合金铸件 Cobalt-Base Alloy Casting

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)									典型用途 Application	国际国内参考标准 Reference Standard
		C	Cr	Si	W	Ni	Fe	Mn	Mo	Co		
CAG-Z Co1	50-56	2.50	30.00	1.00	12.00	≤3.00	≤3.00	≤1.00	≤1.00	Bal	阀座、轴承等 valve seat inserts, bearing, etc	Stellite 1
CAG-Z Co3	50-58	2.40	30.00	1.00	12.50	≤3.00	≤3.00	≤1.00	≤1.00	Bal	轴套、密封环、耐磨衬板、阀芯球等 bearing sleeve, sealing rings, wear pads, valve balls, etc	Stellite 3
CAG-Z Co4	46-56	0.90	30.00	1.00	14.00	≤1.00	≤1.00	0.50	0.50	Bal	热冲压模、挤压模、锯齿、电池模等 hot impact and hot extrusion die, saw teeth, dry cell die, etc	Stellite 4
CAG-Z Co6	38-44	1.20	30.00	1.20	4.50	≤3.00	≤3.00	≤1.00	≤1.00	Bal	蒸汽和化学阀座等 steam, chemical valve seat, etc	Stellite 6
CAG-Z Co12	44-50	1.60	30.00	1.20	8.00	≤3.00	≤3.00	≤1.00	≤1.00	Bal	挤压模、热冲模等 extruding die, brass casting die, etc	Stellite 12
CAG-Z Co20	54-60	2.50	31.00	1.00	17.00	≤3.00	≤3.00	≤1.00	≤1.00	Bal	泵的轴套、旋转密封环、耐磨衬垫、轴承套 pump sleeves, rotary rings, wear pads, bearing sleeves	Stellite 20
CAG-Z Co21	32	0.20	27.00	1.00	–	≤3.00	≤3.00	≤1.00	5.50	Bal	热挤压模、涡轮机叶片等 hot extruding die, turbine blade, etc	Stellite 21
CAG-Z Co31	30-35	0.50	26.00	1.00	7.00	10.00	≤3.00	≤1.00	0.50	Bal	热挤压模、涡轮机叶片等 hot extruding die, turbine blade, etc	Stellite 31

*Deloro Stellite 注册商标















镍基合金 系列
Nickel-Base Alloy

镍基合金具有的较好的高温强度和良好的耐磨损、耐高温、抗冲击、抗氧化性能及一定的耐腐蚀性能等。主要产品有：镍基合金铸棒、镍基合金粉末、镍基合金铸件。

Nickel-based alloy with a good high temperature strength and good wear resistance, high temperature resistance, impact resistance, oxidation resistance and corrosion resistance of some such. The main products are: cast nickel alloy rods, nickel-based alloy posder, nickel-based alloy casting.

镍基合金铸棒 Nickel-Base Alloy Casting

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)										典型用途 Application	国际国内参考标准 Reference Standard
		C	Cr	Si	W	Ni	Fe	Mn	Mo	Co	B		
CAG-Ni22	20-26	≤0.10	0.50	2.50		Bal	1.00	0.50		≤0.50	1.40	玻璃模具、制砖模、各类成型模 glass mlods, brick molds, various forming dies	
CAG-Ni25	25-30	≤0.10	4.50	2.00		Bal	≤0.50	≤0.50		≤1.00	1.00	玻璃模具、制砖模、铜模等 glass mlods, brick molds, various forming dies	
CAG-Ni40	35-44	0.50	11.00	3.80		Bal	4.00	≤0.50		≤1.00	2.50	泵轴、送料螺旋、排气阀密封面等 pump shaft, feeding spiral, outlet valves sealing surface, etc	
CAG-Ni50	45-54	0.60	12.00	3.70		Bal	4.00	≤0.50		≤1.00	2.50	泵轴、纸浆刀、阀门、柱塞等 pump shaft, pulp cutter, valve, plunger, etc	
CAG-Ni60	55-60	0.80	15.00	4.00		Bal	4.00	≤0.50		≤1.00	3.50	泵轴、纸浆刀、柱塞等 pump shaft, pulp cutter, plunger, etc	



















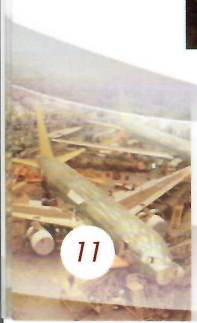
镍基合金 系列 Nickel-Base Alloy

镍基合金粉末 Nickel-Base Alloy Powder

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%) C	Cr	Si	W	Ni	Fe	Mn	Mo	Co	B	P	典型用途 Application	国际国内参考标准 Reference Standard
CAG-Ni20A	18-22	≤0.10	4.50	2.00		Bal					0.70		玻璃模具、各类成型模 glass mlods, various forming dies, etc	
CAG-Ni22A	20-24	0.20	1.00	2.80		Bal	≤1.00	≤0.10			1.40		玻璃模具、各类成型模 glass mlods, various forming dies, etc	
CAG-Ni28A	26-30	≤0.10	3.00	2.60		Bal					1.00		玻璃模具、各类成型模 glass mlods, various forming dies, etc	
CAG-Ni30A	28-34	0.15	3.00	2.60		Bal	≤5.00	≤0.10			1.40		齿轮、滑轨等 gear teeth, slide rail, etc	
CAG-Ni35A	32-37	0.20	4.00	3.20		Bal	≤5.00	≤0.10	≤0.10		1.60		阀座等 valve seat, etc	
CAG-Ni37A	35-40	0.15	4.50	2.60		Bal					1.20		玻璃模具、冲头、各类成型模 glass mlods, plunger, various forming dies, etc	
CAG-Ni40A	36-44	0.30	7.50	3.60		Bal	≤5.00	≤0.10	≤0.10		1.70		螺旋送料器、模芯等 screw feeder, die inserts, etc	
CAG-Ni50A	46-54	0.40	12.00	3.80		Bal	≤5.00	≤0.10	≤0.10		2.20		泵轴、纸浆刀、各类螺杆等 pump shaft, pulp knives, screw rod, etc	
CAG-Ni60A	57-62	0.70	15.00	4.00		Bal	≤5.00	≤0.10	≤0.10		3.20		柱塞、挤压模、泵叶等 plunger, extrusion press, pump inpeller, etc	
CAG-Ni6325A	57-62	0.70	16.00	4.00		Bal	≤5.00	≤0.10	3.00	CU: 3.00	3.40		耐蚀泵轴、轴套等 corrosion resistance pump shaft, bearing sleeve, etc	
CAG-Ni25	22-27	0.20	1.00	3.50		Bal	8.0				1.50		玻璃模具、各类成型模 glass mlods, various forming dies, etc	
CAG-Ni35	32-37	0.30	10.00	3.50		Bal	10.00				2.00		玻璃模具、各类成型模 glass mlods, various forming dies, etc	
CAG-Ni45	42-48	0.50	12.00	3.80		Bal	10.00				2.40		排气阀、柱塞等 exhaust valve, plunger, etc	
CAG-Ni55	52-58	0.80	15.00	4.00		Bal	14.00		3.00	CU: 3.00	3.00		柱塞、拉丝卷筒等 plunger, drawing roller, etc	
CAG-Ni60	58-62	0.90	15.00	3.80		Bal	15.00				3.50		柱塞、机械易损件等 plunger, easily worm, etc	
CAG-Ni62	59-64	1.00	16.00	3.80	10.00	Bal	14.00				3.80		铲车铲齿、造纸机磨盘、机械易损件等 Shovel teeth, paper break wheel, easily worm parts, etc	















镍基合金铸件 Nickel-Base Alloy Casting

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)											典型用途 Application	国际国内参考标准 Reference Standard
		C	Cr	Si	W	Ni	Fe	Mn	Mo	Co	B	P		
CAG-Z Ni600		0.45	16.00	3.00		Bal	10.00	1.50					热交换管道、阀门等 heat exchanger pipe, valve, etc	
CAG-Z Ni625		0.05	22.00	1.00		Bal	5.00	1.00	9.50	Nb: 4.00			化学工业、环保、油气提炼、海洋、核工业等 chemical industry, environmental protection, petroleum and gas refinery, marine and nuclear industry, etc	
CAG-Z Ni718		0.08	19.00	0.35		53	Bal	≤0.50	3.00	1.00	Ti0.9 Nb5.0	Al0.6	航天、油气体提炼及核工业等 aerospace, petroleum and gas refinery, nuclear industry, etc	
CAG-Z Ni30	28-32	≤0.20	3.00	3.00		Bal	≤5.00				2.20		玻璃模具等 glass molds, etc	
CAG-Z Ni34	28-34	≤0.20	3.00	3.10		Bal	≤5.00				2.30		玻璃模具等 glass molds, etc	
CAG-Z Ni40	35-42	≤0.20	3.00	3.20		Bal	≤5.00				2.40		玻璃模具等 glass molds, etc	
CAG-Z Ni44	38-44	≤0.20	3.00	3.30		Bal	≤5.00				2.40		玻璃模具等 glass molds, etc	

镍基合金焊丝 Nickel-Base Deforming Alloy (Bare Rods)

牌号 Trademark	化学成分（重量%） Nominal Chemical Composition(wt%)									典型用途 Application	国际国内参考标准 Reference Standard
	C	Si	Cr	Mn	Fe	Cu	Ti	Al	Ni		
CAG-Ni-1	≤0.15	≤0.75	–	≤1.00	≤1.00	≤0.25	3.00	≤1.50	Bal	用于焊接纯镍合金的轧材、冷拔产品或铸态产品 welding wrought and cast foums of commercially prue nickel alloy	AWS A5.14 ERNi-1
CAG-NiCr-4	0.50	≤0.20	44.00	≤0.20	≤0.50	≤0.50	0.60	–	Bal	镍－铁－铬管材，和熔铸修理 cladding nickel-chromium alloy onto nickel-iron-chromium tubing, and casting repair	AWS A5.14 ERNiCr-4
CAG-NiCr-3	0.10	0.50	20.00	3.00	3.00	≤0.50	0.75	Nb+Ta: 2.50	Bal	用于焊接镍-铬-铁合金 used for welding nickel-chromium-iron alloy	AWS A5.14 ERNiCr-3
CAG-NiCu-7	0.15	1.25	–	4.00	2.50	Bal	3.00	1.25	64.00	用于焊接镍铜合金 used for welding nickel-copper alloy	AWS A5.14 ERNiCu-7



















镍基合金 系列 Nickel-Base Alloy

碳化钨合金粉 Tungsten Carbide Alloy Powder

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)	典型用途 Application
CAG-Ni wc25	60	75%Ni60+25%WC	混料机叶片、风机叶片、刮板等 mixer blades, sweeps, fan blades
CAG-Ni wc35	60	65%Ni60+35%WC	混料机叶片、风机叶片、刮板等 mixer blades, sweeps, fan blades
CAG-Ni wc1	60	50%Ni60+50%WC	混料机叶片、风机叶片、刮板等 mixer blades, sweeps, fan blades
CAG-Ni wc2	60	65%Ni60+35%WC	混料机叶片、风机叶片、刮板等 mixer blades, sweeps, fan blades
CAG-Ni wc3	60	85%Ni60+15%WC	混料机叶片、风机叶片、刮板等 mixer blades, sweeps, fan blades
CAG-Ni wc4	60	40%Ni60+60%WC	混料机叶片、风机叶片、刮板等 mixer blades, sweeps, fan blades
CAG-Ni wc7	60	70%Ni60+30%WC	混料机叶片、风机叶片、刮板等 mixer blades, sweeps, fan blades
CAG-Ni wc8	60	60%Ni60+40%WC	混料机叶片、风机叶片、刮板等 mixer blades, sweeps, fan blades

铁基合金铸棒 Iron-Base Alloy Casting

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)										典型用途 Application	国际国内参考标准 Reference Standard
		C	Cr	Si	W	Ni	Fe	Mn	Mo	Co	B		
CAG-Fe90	50-55	2.50	27.00	1.40			Bal	1.20	≤0.50			斗齿、泵套、锯齿等 relieved teeth, pump sleeve	
CAG-Fe94	56-60	3.20	30.00	1.70		3.00	Bal	1.50	≤0.50		0.80	强烈磨损场合、挖掘机、破碎机等 excellent wear-resistance, secavator, cracker roller, etc	

铁基合金粉 Iron-Base Alloy Powder

牌号 Trademark	硬度 HRC	化学成分（重量%） Nominal Chemical Composition(wt%)										典型用途 Application	国际国内参考标准 Reference Standard
		C	Cr	Si	W	Ni	Fe	Mn	Mo	Co	B		
CAG-F356	38-44	1.80	28.00	1.30		17.00	Bal	0.70	4.50			内燃机气阀、阀座 inlet and exhaust valve, valve seat	



PTA设备制造及应用

PTA Technology Application



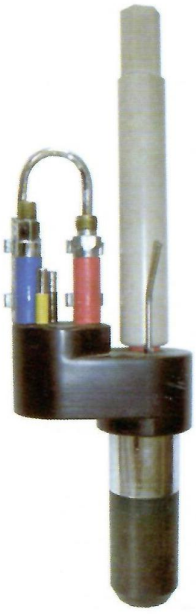
PTA-3型 等离子粉末堆焊机（适用于船用气门、阀座）

PTA-3 Plasma Powder welding machines (for marine valve, valve seat)



PTA-4型 等离子粉末堆焊机（适用于汽车气门、摩托车气门）

PTA-4 Plasma Powder welding machines (for automotive valves, motorcycle valve)



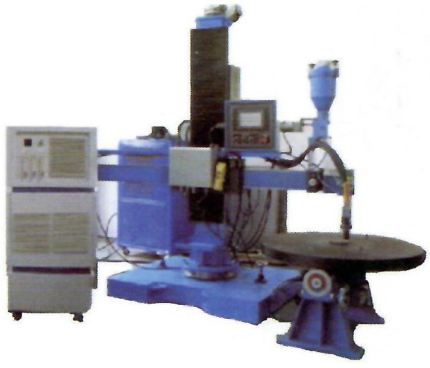
等离子焊枪

Plasma torch



PTA-6型 等离子粉末堆焊机（适用于油锯、导板堆焊）

PTA-4 Plasma Powder welding machines (for chain saw, guide plate welding)



PTA-7型 等离子粉末堆焊机（适用于阀门厂堆焊阀座、阀圈）

PTA-4 Plasma Powder welding machines (for the valve seat welding plant, valve ring)







硬面技术应用 Hard-Facing Technology Application

上海司迈尔（smile）特种合金材料有限公司不仅拥有众多从事硬面材料及应用技术研究的资深技术人员，且在该行业中从事达二十年以上，而且与行业中从事硬面材料应用的科技精英、专家保证良好的协作关系，具有硬面焊接设备的制造、硬面加工、硬面材料的应用提供技术服务。

公司自成立以来，不仅在国内国际的硬面技术领域成功的推行自己的产品及应用技术，还为众多的客户提供技术咨询等。产品涉及阀门、化纤刀具、电池、汽车、塑料、铸造、冶金等诸多行业，特别对原进口设备部件的国产化做出了极大的贡献，给用户带来了巨大的经济效益。

公司雄厚的技术力量和完善的质量管理体系，可为客户提供各种工况条件下要求耐磨、耐高温、耐腐蚀部件的制造与修复，完整的技术手段必将会给各行各业在提供生产效率、节约能源和降低消耗等方面做出有益的贡献。

Shanghai Smile Special Alloy Materials Company not only has number of pieces of hard facing materials and applied techniques in the study experienced technical staff, and engaged in the industry over more than two decades, and hard facing materials and the industry in the application of scientific and technological elite, the experts to ensure good coordination relations, with hard surface welding equipment manufacturing, hard surface processing, the application of hard facing materials to provide technical services.

Since its inception, the hard surface, not only in domestic and international success of the implementation of their technology products and application technology, but also for many of our customers to provide technical consulting, Products related to valves, chemical fiber cutting tools, batteries, automotive, plastics, casting, metallurgy industry, in particular, the original localization of imported equipment components made great contributions to the users of the tremendous economic benefits.

Companies with strong technical force and perfect quality management system, to provide parts manufacturing and repair under various operating conditions when requirements of wear-resistant, high temperature, corrosion-resistant. Complete technical means will give all walks of life to make a useful contribution to production efficiency, saving energy and reducing consumption.



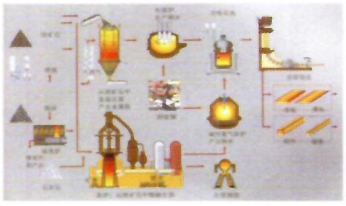




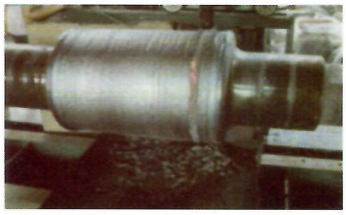




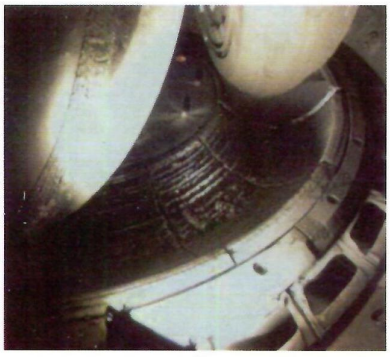
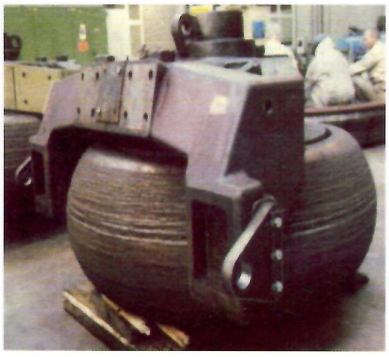
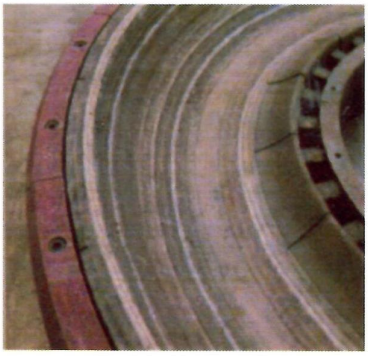
钢铁行业的应用 Steel Industry





电力行业的应用 Electric Power Industry



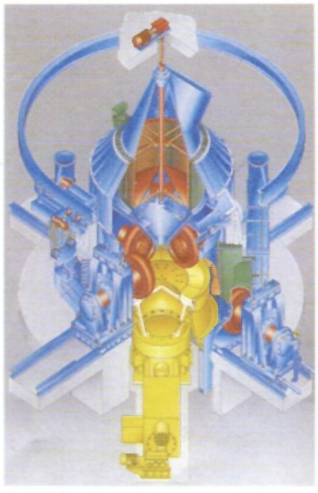






硬面技术应用 Hard-Facing Technology Application

水泥行业的应用 Cement Industry



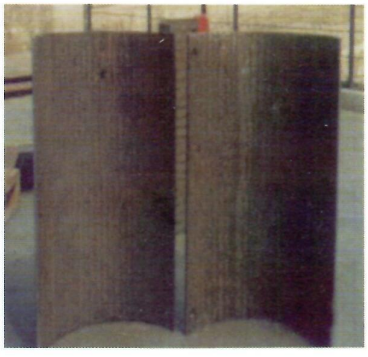






耐磨板的应用 Wear Plate





质量控制 介绍
Quality Control

质量是企业的生命，完善的质量控制体系是确保产品的长期稳定。公司领导加强在技术和管理方面的投入，严格按照ISO9001标准认真贯彻执行“精心制造、产品质优、诚信服务、顾客满意、持续改进、勇创精品”的质量方针。

Quality is the life, perfect quality control system to ensure the long-term stability of the product. The leadership of the company to strengthen investment in technology and management, Seriously implement the quality policy—— “Carefully manufactured, high quality, integrity and service, customer satisfaction, continuous improvement, and create a boutique” in strict accordance with the ISO9001 standard.



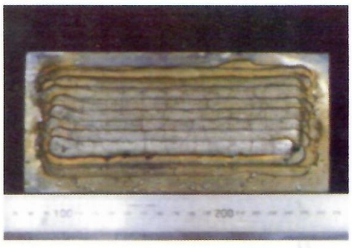
高频红外碳硫分析仪
High frequency infrared ray carbon sulphur analyser



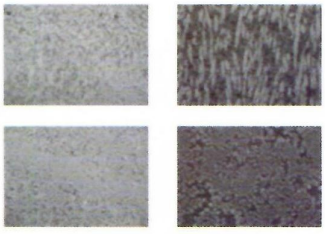
化学分析室
Chemical analysis room



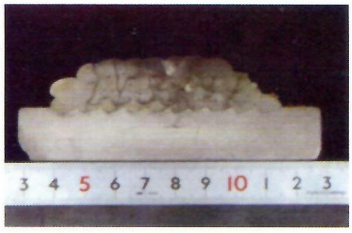
X荧光光谱仪
x-ray fluorescence spectrometer



堆焊试样块
Welding test pieces



晶像分析
Silicon image analysis



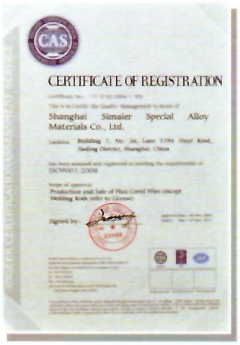
试样纵切图像
Sample slitting image



资质证书及设备 ACertificate and Equipment





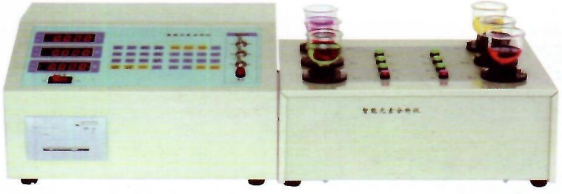






ICP光谱仪

ICP spectrometer



智能元素分析仪

Smart elemental analyzer



高频红外碳硫分析仪

High frequency infrared ray carbon sulphur analyser



携手合作 互利共赢

现代社会，企业要想获得长久持续的发展，就必须扎实基本功，团结员工，确立自己的优势项目。这样才能在与他人合作中，截长补短，互惠互利，真诚的合作，最后达到互利共赢。

Join Hands to Create the Future

21st century, enterprises in order to obtain long-term sustainable development, it is necessary to be familiar with the basic skills and united staff, to establish their own advantages of the project. Way to cooperate with others, short and finally, mutual benefit, sincere cooperation, and finally reached a win-win situation.











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