

GNEE STEEL can supply Mn13 X120Mn12 Mn12 High Manganese Wear-resistant Steel, High Manganese Non-magnetic Steel 20Mn23AlV, NM400、NM450、NM500、NM550、EH400、EH450、EH500、HARDOX400、HARDOX450、HARDOX500、HARDOX550、HARDOX600 High-quality tempered wear-resistant steel.
Email:info@gneesteels.com

高合金钢 HIGH ALLOY STEEL

- 高锰耐磨钢 03
High Manganese Wear-resistant Steel
- 高锰无磁钢 04
High Manganese Non-magnetic Steel

高锰耐磨钢

High Manganese Wear-resistant Steel

● 产品性能和可供规格 Product Performance and Available Specification

牌号 Steel grade	屈服强度 (典型值)MPa Yield strength (Typical)	抗拉强度 (典型值)MPa Tensile strength (Typical)	延伸率 (典型值)A _{50mm} (%) Elongation (Typical)	布氏硬度 (典型值)HBW Brinell Hardness (Typical)	可供规格 (mm) Available specifications
Mn13	≥300 (471)	≥700 (1010)	≥24 (45)	≥170 (210)	3.0~25.0×1000~2050
X120Mn12	≥300 (465)	≥700 (1020)	≥20 (41)	≥170 (220)	3.0~25.0×1000~2050
Mn12	≥300 (475)	≥700 (1020)	≥20 (42)	≥170 (220)	3.0~25.0×1000~2050

● 用途及特点 Purpose and characteristics

高锰奥氏体钢Mn13、X120Mn12、Mn12具有良好的韧性和显著的表面加工硬化特性,在强烈冲击载荷或挤压载荷作用下,受力表面被加工硬化,表面硬度可从初始HB200级左右显著提高至HB750级以上,而钢板心部仍保持着良好的冲击韧性。被广泛应用于矿山设备、机械制造业,如:抛丸设备、大型颚式破碎机等。

High manganese austenitic steel such as Mn13 and X120Mn12, Mn12 have good toughness and remarkable surface work hardening properties. Under strong impact load or extrusion load, the stressed surface is work hardened, and the surface hardness can be significantly increased from the initial HB200 to over HB750, while the core of steel plate still maintains good impact toughness. It is widely used in mining equipment, machinery manufacturing industry, such as shot blasting equipment, large-scale jaw crusher, etc.

● 应用案例 Application case



采用高锰奥氏体钢耐磨钢 Mn13 制作的矿山机器
Mining machine made of high-manganese austenitic wear-resistant steel Mn13

采用高锰奥氏体钢耐磨钢 Mn13 制作的抛丸设备
Shot blasting equipment made of high-manganese austenitic wear-resistant steel Mn13



高锰无磁钢

High Manganese Non-magnetic Steel

● 产品性能和可供规格 Product Performance and Available Specifications

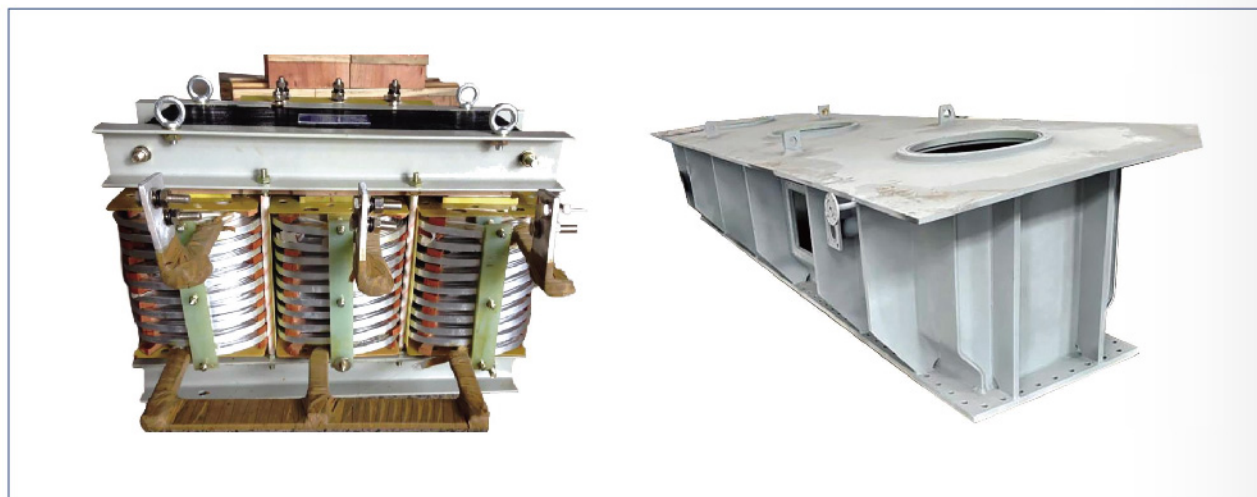
牌号 Steel grade	屈服强度 (典型值) MPa Yield strength (Typical)	抗拉强度 (典型值) MPa Tensile strength (Typical)	延伸率 (典型值) A _{50mm} (%) Elongation (Typical)	绝对磁导率 (典型值)H/m Absolute permeability	可供规格 (mm) Available specifications
20Mn23AlV	≥225 (331)	≥520 (608)	≥30 (50)	≤1.319×10 ⁻⁶ (1.26×10 ⁻⁶)	3.0~25.0×1000~2050

● 用途及特点 Purpose and characteristics

20Mn23AlV具有极低的磁导率、良好的力学性能及加工性能,可以替代低磁奥氏体不锈钢用于制造变压器、发电机及特殊冶炼电炉等设备中不导磁部件,防止部件发热,保障设备安全运行。广泛应用于:1、大中型变压器油箱内磁屏蔽、铁芯拉板等漏磁场的结构件;2、大中型发电机定子线圈绑环、护环等结构件;3、大电压、大电流输送线路的高压套管零部件及邻近钢结构件。

20Mn23AlV has extreme low magnetic conductivity, good mechanical properties and processing properties, which can replace low-magnetic austenitic stainless steel used in the manufacture of non-magnetic parts in transformers, generators and special smelting furnaces and other equipment to prevent parts from radiation and ensure safe operation. It can be widely used in: 1. structural parts of magnetic shielding, tensile plate of core limb in oil tank of large and medium-sized transformers; 2. structural parts as stator coil ring, protective ring in large and medium-sized generators; 3. high voltage casing parts and adjacent steel structure parts of high voltage and high current transmission lines.

● 应用案例 Application case



20Mn23AlV 在变压器等设备上应用
20Mn23AlV used in transformers and other equipment

耐磨钢

WEAR-RESISTANT STEEL

优质调质耐磨钢 High-quality tempered wear-resistant steel	06
高韧性止裂耐磨钢 High Toughness Crack-resistant and Wear-resistant Steel	08
超级耐磨钢 Super wear-Resistant Steel	09
耐腐蚀耐磨钢 Corrosion-resistant and Wear-resistant Steel	10
耐高温耐磨钢 High Temperature and Wear Resistant Steel	12
混凝土搅拌筒用耐磨钢 Wear-resistant Steel for Concrete Mixer Drum	13

优质调质耐磨钢

High-quality tempered wear-resistant steel

● 交货标准 Delivery standard

牌号 Steel grade	执行标准 Executive standard	相近产品 Approximated products	
		JFE	SSAB
NM400	GB/T 24186~2022	EH400	HARDOX400
NM450	GB/T 24186~2022	EH450	HARDOX450
NM500	GB/T 24186~2022	EH500	HARDOX500
NM550	GB/T 24186~2022		HARDOX550
NM600	GB/T 24186~2022		HARDOX600

● 产品性能和可供规格 Product Performance and Available Specification

牌号 Steel grade	屈服强度 (典型值) MPa Yield strength (Typical)	抗拉强度 (典型值) MPa Tensile strength (Typical)	延伸率 (典型值) A _{50mm} (%) Elongation (Typical)	布氏硬度 (典型值) HBW Brinell Hardness (Typical)	可供规格 (mm) Available specifications
NM400	≥1000 (1150)	≥1200 (1380)	≥10 (16.4)	370~430 (405)	2.0-25.0×1000-2050
NM450	≥1100 (1280)	≥1250 (1490)	≥7 (14.7)	420~480 (452)	2.0-25.0×1000-2050
NM500	≥1200 (1380)	≥1500 (1670)	≥7 (14.3)	≥470 (506)	2.0-25.0×1000-2050
NM550	/	≥1650	≥6	≥530	4.0-25.0×1000-2050
NM600	/	≥1750	≥5	≥570	4.0-25.0×1000-2050



● 用途及特点 Purpose and characteristics

目前6mm以下耐磨钢主要应用于轻量化需要的汽车自卸车货厢,可供规格最薄为3mm,板形、折弯性能均处于国内最高水平(国内唯一用耐磨钢制作边3底3的货厢),耐磨自卸车相比传统自卸车的优势在于:1、整车轻量化,相对345MPa级别减重50%;700MPa级别减重33%,降低能耗;2、与原有材料相比具备更好的耐磨损性能(提高了3.5倍),长寿命,少维护;3、针对不同工况,提高了车厢的抗砸性。

are both in the domestic top level (the only cargo carriage that side wall and bottom plate are made of 3mm wear-resistant steel). The advantage of wear-resistant dump truck compared with traditional one lies in: 1. light weight and reduced energy consumption, 50% and 33% weight loss compared with grade of 345 MPa and 700MPa respectively; 2. compared with the original material, it has better wear resistance (3.5 times higher), longer service time and less maintenance; 3. the anti-smashing performance of carriage is improved under different working conditions.

● 应用案例 Application case



采用优质调质耐磨钢 NM450 制作的 U型槽自卸车底板及边板
The bottom plate and side wall of U-shaped groove dump truck are made of high quality tempered and wear-resistant steel NM450

高韧性止裂耐磨钢

High Toughness Crack-resistant and Wear-resistant Steel

产品性能和可供规格 Product Performance and Available Specifications

牌号 Steel grade	屈服强度 (典型值) MPa Yield strength (Typical)	抗拉强度 (典型值) MPa Tensile strength (Typical)	延伸率 (典型值) A _{50mm} (%) Elongation (Typical)	布氏硬度 (典型值) HBW Brinell Hardness (Typical)	冲击功 (-20°C、纵向), KV2, J Impact energy	可供规格 (mm) Available specifications
NM400Tuf	≥1000 (1180)	≥1200 (1390)	≥10 (18.3)	370~430 (405)	≥48 (113)	2.0~25.0×1000~2050
NM450Tuf	≥1100 (1290)	≥1300 (1540)	≥7 (16.5)	420~480 (453)	≥48 (106)	2.0~25.0×1000~2050
NM500Tuf	≥1200 (1390)	≥1500 (1680)	≥7 (14.5)	≥470 (506)	≥38 (70)	2.0~25.0×1000~2050

用途及特点 Purpose and characteristics

涟钢高韧性止裂耐磨钢NM400Tuf-NM500Tuf是系列传统耐磨钢的最新升级产品,在保证同级别产品强度和硬度不变的前提下,大幅度提高冲击韧性,可有效抑制钢板开裂和裂纹扩展,是目前国内市场强韧性匹配最佳的工程机械用耐磨钢。NM450Tuf产品在-20°C冲击性能可以达到100J以上,比传统耐磨钢提升约60%-80%,达到国标要求值的4倍。

High toughness crack-resistant and wear-resistant steel NM400Tuf-NM500Tuf of LY Steel, the latest upgrade of traditional wear-resistant steel, is the best strength and toughness matching wear-resistant steel for construction machinery in the domestic market, of which the cracking and crack propagation can be effectively inhibited by greatly improving impact toughness under the premise of ensuring the same level of product strength and hardness unchanged. The impact property of NM450Tuf at -20°C can reach more than 100J, which is about 60%-80% higher than the traditional wear-resistant steel, up to 4 times of national standard.

应用案例 Application case



NM450Tuf渣土自卸车车厢
Carriage of dump truck for muck (NM450Tuf)



NM500Tuf 公路运输矿卡自卸车车厢
road transport mining dump truck(NM500Tuf)

超级耐磨钢

Super wear-Resistant Steel

产品性能和可供规格 Product Performance and Available Specifications

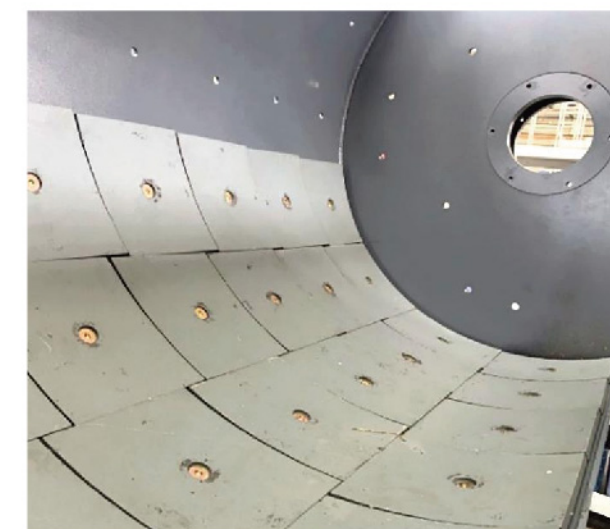
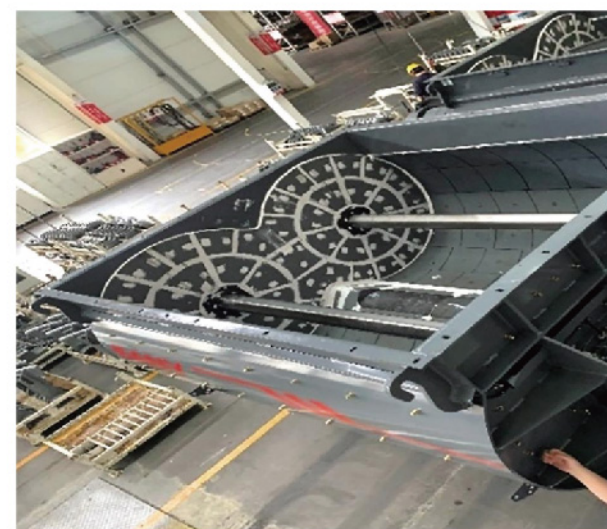
牌号 Steel grade	屈服强度 (典型值) MPa Yield strength (Typical)	抗拉强度 (典型值) MPa Tensile strength (Typical)	延伸率 (典型值) A _{50mm} (%) Elongation (Typical)	布氏硬度 (典型值) HBW Brinell Hardness (Typical)	可供规格 (mm) Available specifications
NM450SP	≥1100 (1260)	≥1300 (1480)	≥7 (12.5)	420~480 (453)	3.0~25.0×1000-2050

用途及特点 Purpose and characteristics

利用超硬TiC粒子的析出增强耐磨钢的耐磨性,其硬度和力学性能与NM450相当,且抗磨损性能达到普通NM450的1.6倍以上,是NM550的1.3倍以上。涟钢圆满完成“十三五”国家重点研发项目中“国内极限薄规格(4×2000mm) NM450SP工业生产”任务,用于替代高Cr铸铁,具备塑韧性强,耐磨性提升的优势。

The wear resistance of the wear-resistant steel is enhanced by the precipitation of superhard TiC particles. Its hardness and mechanical properties are equivalent to those of NM450, but the wear resistance is 1.6 times more than that of ordinary NM450 and 1.3 times more than that of NM550. LY Steel has successfully completed the task of "Industrial production of domestic extreme thin-gauge (4 × 2000mm) NM450SP" in the "13th Five-Year" national key research and development project, which has advantages of strong plastic toughness and improved wear resistance.

应用案例 Application case



采用超级耐磨钢 NM450SP 制作的水泥搅拌罐衬板
Lining plate in cement mixing tank made of super wear-resistant steel NM450SP

耐腐蚀耐磨钢

Corrosion-resistant and Wear-resistant Steel

产品性能和可供规格 Product Performance and Available Specifications

牌号 Steel grade	屈服强度 (典型值) MPa Yield strength (Typical)	抗拉强度 (典型值) MPa Tensile strength (Typical)	延伸率 (典型值) A _{50mm} (%) Elongation (Typical)	布氏硬度 (典型值) HBW Brinell Hardness (Typical)	可供规格 (mm) Available specifications
NMS450-1	≥1100 (1270)	≥1300 (1560)	≥7 (16.2)	≥420 (458)	3.0~25.0×1000-2000
NMS450-2	≥1100 (1250)	≥1300 (1450)	≥7 (15.5)	≥420 (448)	3.0~25.0×1000-2000

用途及特点 Purpose and characteristics

涟钢开发的耐腐蚀耐磨钢主要应用于环卫车、疏浚工程、疏浚管道等行业。腐蚀磨损发生时,材料的磨损性能受到耐蚀性的影响,单纯的提高硬度已不能有效的解决磨损性能较差的问题。本产品以低合金耐磨钢为基础,添加特殊的成分提高自腐蚀电位,降低自腐蚀电流密度,减少腐蚀对磨损的促进作用。

The corrosion and wear resistant steel developed by LY Steel is mainly used in sanitation trucks, dredging projects, dredging pipelines and other industries. When corrosion wear occurs, the wear property of materials is affected by corrosion resistance, and the problem of poor wear property cannot be effectively solved by simply increasing hardness. The product is based on low alloy wear-resisting steel, with the addition of special composition to improve the self-corrosion potential, reduce the self-corrosion current density and decrease the acceleration of corrosion on wear.

应用案例 Application case



采用超级耐磨钢 NM450SP 制作的水泥搅拌罐衬板
Lining plate in cement mixing tank made of super wear-resistant steel NM450SP

耐高温耐磨钢

High Temperature and Wear Resistant Steel



产品性能和可供规格 Product Performance and Available Specifications

牌号 Steel grade	屈服强度 (典型值) MPa Yield strength (Typical)	抗拉强度 (典型值) MPa Tensile strength (Typical)	延伸率 (典型值) A _{50mm} (%) Elongation (Typical)	布氏硬度 (典型值) HBW Brinell Hardness (Typical)	可供规格 (mm) Available specifications
NM450HiTemp	≥1100 (1260)	≥1300 (1540)	≥7 (15.6)	≥420 (456)	2.0~25.0×1000~2050
NM450HiT	≥1100 (1270)	≥1300 (1540)	≥8 (16.2)	≥420 (467)	2.0~25.0×1000~2050
NM500HiT	≥1200 (1380)	≥1500 (1740)	≥8 (14.8)	≥470 (524)	2.0~25.0×1000~2050

● 用途及特点 Purpose and characteristics

目前国内冶金、炼焦等行业高温抗磨损构件普遍采用普板+陶瓷衬板等结构，构件重量较高，使用安全性差且成本较高，耐高温耐磨钢可有效满足冶金等行业关键构件轻量化、长寿命化以及成本节约的需求。NM450HiTemp是一种耐高温的耐磨钢板，可为300-500°C范围的高温环境提供颇具成本效益的耐磨解决方案。

At present, common carbon steel+ceramic lining plate are generally used for high temperature and wear resistant components in domestic metallurgy, coking and other industries, with poor safety, high component weight and cost, however, high temperature and wear resistant steel can effectively meet needs on lightweight, longer service time and cost saving for key components in metallurgical and other industries. NM450HiTemp is a high temperature and wear resistant steel, which can provide a cost-effective and wear-resistant solution under high temperatures ranging from 300 to 500°C.

● 应用案例 Application case



采用耐热耐磨钢 NM450HiTemp制作的叶片:砂石加热滚筒
Blade made of heat and wear resistant steel NM450HiTemp: sand and stone heating drum



采用耐热耐磨钢 NM450HiTemp制作的叶片:回收料加热筒
Blade made of heat and wear resistant steel NM450HiTemp: recycled material heating drum

混凝土搅拌筒用耐磨钢

Wear-resistant Steel for Concrete Mixer Drum

● 产品性能和可供规格 Product Performance and Available Specifications

牌号 Steel grade	屈服强度 (典型值) MPa Yield strength (Typical)	抗拉强度 (典型值) MPa Tensile strength (Typical)	延伸率 (典型值) A _{50mm} (%) Elongation (Typical)	布氏硬度 (典型值) HBW Brinell Hardness (Typical)	可供规格 (mm) Available specifications
NM300TP	600~800 (660)	≥900 (1080)	≥8 (15.9)	≥270 (302)	3.0~5.0×1000~1800

● 用途及特点 Purpose and characteristics

涟钢NM300TP产品能稳定生产至3.0mm薄规格，屈强比、板形等各项指标达到国内领先水平。应用超薄规格高强NM300TP可大幅提高搅拌车产品的核心竞争力，筒体重量比普通车可以实现减重30-40%，采用宽幅1800mm整板后焊接减少30%以上，减少切割量40%以上，制造成本降低30%以上，同时将车厢的使用寿命与传统使用普碳钢和高强钢比提高1-3倍，降低了车辆运营过程中的成本。

NM300TP of LY Steel can be stably produced with thin thickness of 3.0mm, with yield ratio, shape and other indicators come up to the domestic leading level. The application of ultra-thin and high strength NM300TP can greatly improve the core competitiveness of mixer products. The weight of the drum can be reduced by 30-40% compared with ordinary truck. The welding of the whole plate with a width of 1800mm can be reduced by more than 30% with the cutting decreased by more than 40%, and the manufacturing cost can be cut by more than 30%. At the same time, the service life of the carriage is 1-3 times higher than that of the traditional use of general carbon steel and high-strength steel, which reduces the cost in the process of vehicle operation.

● 应用案例 Application case



采用超级耐磨钢 NM450SP 制作的水泥搅拌罐衬板
Lining plate in cement mixing tank made of super wear-resistant steel NM450SP