

Wear-resistant steel

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High-quality tempered wear-resistant steel

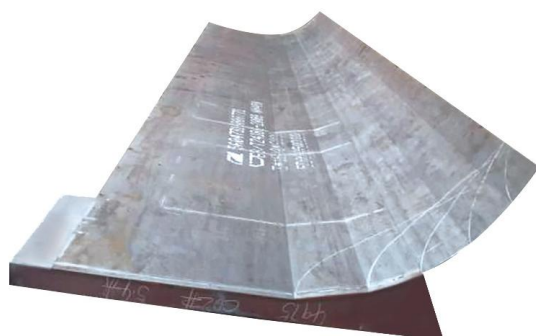
Delivery standard

Steel grades	Executive standard	Approximated products	
		JFE	SSAB
NM400	GB/T 24186~2009	EH400	HARDOX400
NM450	GB/T 24186~2009	EH450	HARDOX450
NM500	GB/T 24186~2009	EH500	HARDOX500
NM550	GB/T 24186~2009		HARDOX550
NM600	GB/T 24186~2009		HARDOX600

Steel grade	MPa Yield strength (Typical)	MPa Tensile strength (Typical)	A50% Elongation (Typical)	HBW Brinell Hardness (Typical)	Available specification mm
NM400	≥1000(1150)	≥1200(1380)	≥10(16.4)	370~430(405)	3.0~25.0 × 1000~2050
NM450	≥1100(1280)	≥1250(1490)	≥7(14.7)	420~480(452)	3.0~25.0 × 1000~2050
NM500	≥1200(1380)	≥1500(1670)	≥7(14.3)	≥470(506)	3.0~25.0 × 1000~2050
NM550	/	≥1650	≥6	≥530	4.0~25.0 × 1000~2050
NM600	/	≥1750	≥5	≥570	4.0~25.0 × 1000~2050

Currently wear resistant steel under 6 mm is mainly used in lightweight dumper carriage, the thinnest available specification is refer to 3 mm, its shape and bending property both in the domestic top level (the only cargo carriage made of wear-resistant steel with side wall and bottom plate of 3*3mm in China). The advantage of wear-resisting 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, it has better wear resistance (3.5 times higher), long life and less maintenance compared with the original material; 3, the anti-hit of carriage is improved for different working conditions.

Wear-resistant steel



The bottom plate and side plate of U-shaped groove dump truck are made of high quality tempered and wear-resistant steel NM450

High toughness crack-resistant and wear-resistant steel

Steel grades	MPa Yield strength (Typical)	MPa Tensile strength (Typical)	A50% Elongation (Typical)	HBW Brinell Hardness (Typical)	(-20°C), KV2, J Impact energy	Available specification mm
NM400Tuf	≥ 1000 (1180)	≥ 1200 (1390)	≥ 10 (18.3)	370~430 (405)	≥ 48 (113)	3.0~25.0 × 1000~2050
NM450Tuf	≥ 1100 (1290)	≥ 1300 (1540)	≥ 7 (16.5)	420~480 (453)	≥ 48 (106)	3.0~25.0 × 1000~2050
NM500Tuf	≥ 1200 (1390)	≥ 1500 (1680)	≥ 7 (14.5)	≥ 470 (506)	≥ 38 (70)	3.0~25.0 × 1000~2050



Carriage of NM450Tuf muck dump truck and NM500Tuf road transport mine dump truck

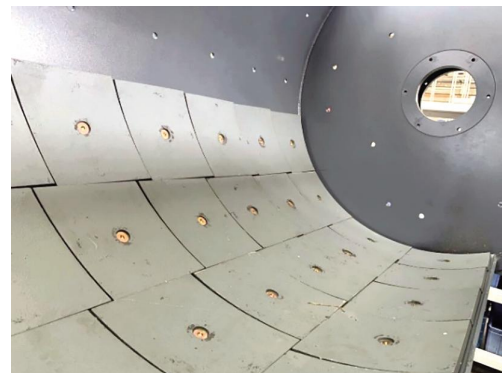
Wear-resistant steel

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.

Super wear-resistant steel

Steel grade	MPa Yield strength (Typical)	MPa Tensile strength (Typical)	A50% Elongation (Typical)	HBW Brinell Hardness (Typical)	mm Available specification
NM450SP	≥1100(1260)	≥1300(1480)	≥7(12.5)	420~480(453)	3.0~25.0 × 1000~2050

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 more than 1.6 times that of ordinary NM450 and more than 1.3 times that of NM550. LY Steel has successfully completed the task of "Industrial production of domestic extreme thin (4 × 2000mm) NM450SP" in the "13th Five-Year" national key research and development project. Currently, it is trial-produced in the concrete mixer industry to replace high Cr cast iron, which has the advantages of strong plastic toughness and improved wear resistance.



Lining plate in cement mixing tank made of super wear-resistant steel NM450SP

Corrosion-resistant and wear-resistant steel

Steel grade	MPa Yield strength (Typical)	MPa Tensile strength (Typical)	A50% Elongation (Typical)	HBW Brinell Hardness (Typical)	mm Available specification
NMS450-1	≥1100(1270)	≥1300(1560)	≥7(16.2)	≥420(458)	3.0~25.0 × 1000~2000

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-resistant 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.



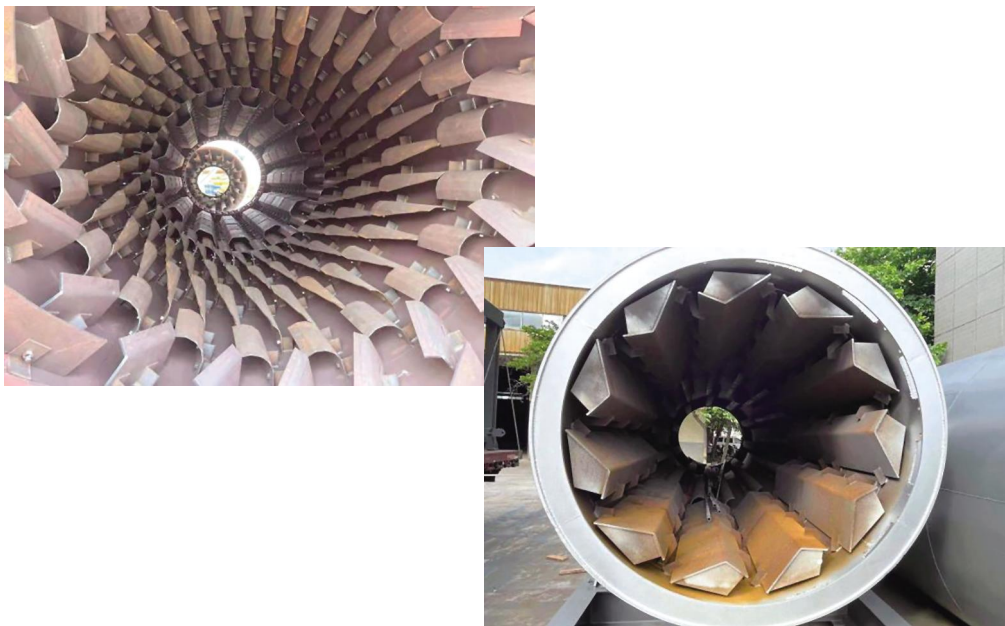
Application of corrosion-resistant and wear-resistant steel in dredged pipes (left) and sanitation trucks (right)

High temperature and wear resistant steel

Steel grade	MPa Yield strength (Typical)	MPa Tensile strength (Typical)	A50% Elongation (Typical)	HBW Brinell Hardness (Typical)	mm Available specification
NM450HiTemp	≥1100(1260)	≥1300(1540)	≥7(15.6)	≥420(456)	3.0~25.0 × 1000~2050

Wear-resistant steel

At present, common carbon steel + ceramic lining plate and other structures 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. High temperature and wear-resistant steel can effectively meet the lightweight, long life and cost saving needs of key components in metallurgical and other industries. NM450HiTemp is a high-temperature resistant wear-resistant steel plate, which can provide a cost-effective and wear-resistant solution for high temperatures ranging from 300 to 500 ° C.



Blade made of heat and wear-resistant steel NM450HiTemp: sand and stone heating drum (left) and recycled material heating drum (right)

Wear-resistant steel for concrete mixer drum

Steel grade	MPa Yield strength (Typical)	MPa Tensile strength (Typical)	A50% Elongation (Typical)	HBW Brinell Hardness (Typical)	mm Available specification
NM300TP	600~800(660)	≥900(1080)	≥8(15.9)	≥270(302)	3.0~5.0 × 1000~1800



The concrete mixer drum is made of low yielding strength ratio wear-resistant steel NM300TP

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.

High alloy steel

High alloy steel

High Manganese Wear-resistant Steel

Steel grade	MPa Yield strength (Typical)	MPa Tensile strength (Typical)	A50% Elongation (Typical)	HBW Brinell Hardness (Typical)	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

High manganese austenitic steel includes Mn13 and X120Mn12 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 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 jaw crusher, etc.



Mining machine (left) and shot blasting equipment (right) made of high-manganese austenitic wear-resistant steel Mn13

High manganese low-temperature pressure vessel steel

Steel grade	MPa Yield strength (Typical)	MPa Tensile strength (Typical)	A50% Elongation (Typical)	(-196°C), KV2, J Impact energy (Transversal)	mm Available specification
LGHM400	≥400(503)	800~950(893)	≥35(46)	≥60(180)	3.0~25.0 × 1000~2050