



First in Nepal, for Nepal

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Message from the chairman

Shanker Lal Agrawal

Chairman – Shanker Group

Dear Friends,

With the ever growing economy, Nepal is witnessing an opportunity of continued growth in the Infrastructure sector including Housing. However with the recent experience of the earthquake, we also face the big challenge of safe and earthquake resistant construction that can help in minimizing the loss of both tangible and intangible assets.

To support and meet this challenge, Jagdamba Steel has introduced Rhino 500D High Ductile Steel Rebars in the grade Fe 500D which is the first and only of its kind of High Strength and High Ductile Rebar introduced in Nepal. Construction of be it Home or large Infrastructure Projects is a cherished dream and investment made by an Individual and Nation. Our aim is to provide finest quality reinforced bars to the construction industry and commitment to empower every home and infrastructure project in Nepal with strength and safety.

Our philosophy and brand values are rooted in excellence, innovation and commitment to world class quality and Nation Development. With these guiding principles we aspire to serve the emerging needs of a safer construction in Nepal.



MOST MODERN REBAR MILL IN NEPAL

“ Excellence, Innovation and Commitment to World Class Quality ”

Our belief

Jagdamba Steels Pvt. Ltd is a flagship company of US \$ 700 Million Shanker Group, one of the leading and largest business conglomerate in Nepal with business engagements in diverse sectors like Steel, Cement, Automobiles, Trading, Foods, IT, Packaging etc. The company started operations at Simara in Bara District, Nepal in the Year 1994 with a setup of cross country mill producing CRT Bars. Over the years the company has grown over to become the only integrated and the largest steel company in Nepal. Jagdamba Steel offers a wide range of world class steel products that includes Steel Rebars, Torkari , Wire Rods, Structural's, Angle, Channel, Beam, Plain Round & Square Rods, Flat, GI Wire, Gabion Box, Barbed Wire etc.

Our commitment to offer world class quality and newer product range has strongly connected us to the lives of people and the Nation and inspires us to achieve excellence and contribute to improving lives of people, the growth of the Steel Industry and the Nation. Our philosophy and brand values are rooted in excellence, innovation and commitment to world class quality, Nation Development as envisioned. With these guiding principles we aspire to serve the emerging needs of a safer construction in Nepal.

WORLD CLASS TECHNOLOGY

“ State of the art automated plant ”

How We Fulfill Our Commitment

All of our products are manufactured at the state of the art automated plant with prime focus on maintaining highest standards in quality and make. We are the only in Nepal to follow a stringent 3 level Controlled Production Process to ensure that we only deliver World Class products.

Controlled Raw Materials

The first stage in the Controlled level of production is the 'Control of Raw Materials'. To ensure high quality of the products, the raw materials are exclusively imported from world class steel companies like TATA Steel, JINDAL Steel, IISCO and SAIL. Additionally the raw materials undergo stringent quality tests at the state of the art computerized laboratory.

Controlled Production Process

All of the products are manufactured at state of the art automated plant. The one and only one of its kind in Nepal. The automation ensures uniformity in quality across every single product. The products in due course of production undergo stringent chemical and physical testing at the state of the art completely computerized labs. This ensures instant results and faster intervention and compliance of the quality as per the NS and BIS(IS) standards.

Controlled Parameters

Uniformity of physical and chemical parameters is highly important to ensure superior quality of the products. This is ensured through the application of automated systems in production, and both physical and chemical testing. The physical and chemical parameters are stringently controlled and comply to the minimum and maximum standards outlined by NS:191, Nepal Bureau of Standards and Metrology Certification Standards and Indian BIS, IS:1786:2008 Certification Standards for the Steel Rebar.

THE NEW QUALITY BENCHMARK FOR STEEL REBAR



RHINO 500D High Ductile Steel Rebar

Rhino 500D is the new generation steel rebar with superior ductility and elongation. It is superior from other normal rebars in its method of manufacturing and combination of both mechanical and chemical properties. Rhino 500D comes with a combined restriction of impurities like Sulphur, Phosphorous and Carbon to a maximum of 0.75% and 0.25% which ensures superior ductility, elongation and strength of the rebar. Rhino 500D marks the beginning of quality benchmark for steel rebars in Nepal !



High Ductile Rebar; First Time in Nepal and For Nepal.

Rhino 500D Rebar is the first and the only steel rebar in grade Fe 500D with superior ductility introduced in Nepal. It also marks the beginning of the New Industry Quality Benchmark for Steel Rebars in Nepal. With superior ductility and earthquake resistance properties, Rhino 500D compared to other normal grade rebars is highly suitable for applications in areas and region highly prone to seismic risks like Nepal. Rhino 500D is the only new generation rebar that truly fits in to the need of seismic resistant construction in Nepal.

Because Safety Matters! Rhino 500D Steel Rebar Matters!

As the largest integrated steel company in Nepal, Jagdamba Steel has carried forward the challenge and responsibility of staying the very best, and in keeping with the tradition of being a leader, we have innovated and moved a step ahead now with the introduction of Rhino 500D Steel Rebars, Redefining steel making, the company has developed Fe 500D grade Rhino Rebars through the 100% special quality raw material specially imported and manufactured through automated controlled production process, quality control management route. It is the first time in Nepal that Rebars have been produced through this process to meet the changing and more stringent needs of our country and seismic zone. With High Ductility and superior earthquake resistance properties, Rhino 500D Rebar assures highest standards in quality and safety of construction and lives.

Chemistry Controls Steel Quality...We Control the Chemistry of Steel!

The chemistry and thus the properties of the Steel Bars get compromised by the presence of the harmful impurities like Sulphur, Phosphorous and Carbon, in extreme weather conditions. Through the advanced steel rebar making process the impurities are restricted in Rhino 500D Rebars to a maximum value at; Sulphur and Phosphorous 0.40%, Carbon at 0.25%. To control the chemistry we ensure the highest standard in quality of the raw materials, the billets, blooms are exclusively imported from world class steel companies like TATA Steel, JINDAL Steel and IISCO. For stronger assurance the raw materials undergo spectrometer quality testing at the state of the art automated lab before going in to production. The 3 level automated Controlled Production Process with controlled environment ensures the maintenance of the chemical and physical properties in compliance to NS:191 and BIS (IS:1786:2008) Certification Standards.

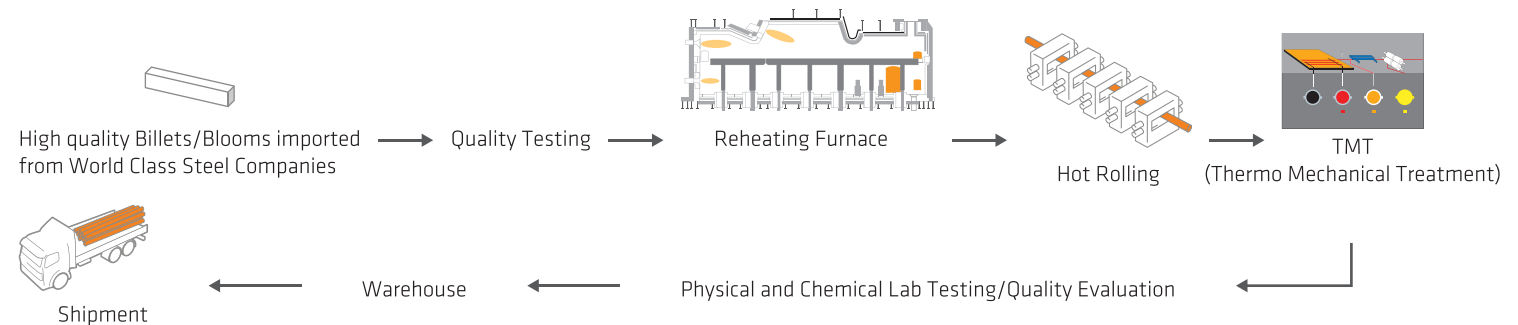


Superior Process and Product Quality

Why Rhino 500D Rebars are superior to traditional Rebars in the market? The answer is Superior Making and Precision in the maintenance of physical and chemical properties. Since Sulphur & Phosphorous (S&P) are harmful impurities in Steel, High level of Phosphorous can lead to '**Cold Shortness**' in Steel a condition in which the steel tends to become very brittle under extreme cold conditions and thus highly vulnerable to cracking. High level of Sulphur can lead to '**Hot Shortness**' in steel, a condition in which the melting point of steel gets lowered thereby reducing its strength dramatically under high temperature conditions. However the levels of S&P can be achieved only through advanced Steel making. The low levels of S&P as specified in NS and BIS specification are impossible to achieve under normal Steel making and Rebar production process. But due to the practice of import of raw materials, the billets and blooms from world class steel companies and manufacturing through the state of the art automated and controlled Rebar production technology and stringent quality controls at every step right from the input of the raw materials to the output, the finished Rebars comply 100% to the quality standards of Fe 500D grade specification of NS:191 and BIS (IS:1786:2008) Certifications.

The Process and Technology

Rhino 500D High Ductile Rebars are manufactured at the most modern rolling mill in Nepal at Simara, Bara. The Rebars are manufactured with latest 'TMT Technology" through the 3 level Controlled Production Process to offer quality standards exceeding the NS:191 and BIS (IS: 1786:2008) certification Standards.



"Rhino 500D Rebar is the first and only steel bar certified by NS (NS:191) (Nepal) and BIS (ISI 1786:2008) (India) quality certifications"



Raw Materials

Producing Rhino 500D Premium High Ductile Rebars require special Fe 500D Grade Billets and Blooms which are exclusively imported from world class steel companies like TATA Steel, JINDAL Steel, IISCO and SAIL. The sourcing of high quality raw materials is followed by stringent quality test to ensure that only the raw materials with right composition go in to production.



High Sulphur Effect, Phosphorous Effect and Carbon Effect

Rhino Fe 500D Rebars have lower percentage of Carbon, Sulphur, and Phosphorus. The low carbon content ensures sufficient ductility and superior weldability for all types of welding without preheating. The impurities like Sulphur and phosphorous tend to decrease the strength of steel in extreme weather conditions as hot shortness and cold shortness.



Steel Rolling

Most modern automated Rolling Mill applying latest "TMT Technology" to produce Rhino 500D Rebars with consistently high quality in every single Rebar.



Automated Re-heating Furnace

The Automated Gasified Re-heating Furnace not only ensures Uniform Heating but also ensures less fuel consumption.

TMT-Thermo Mechanical Treatment

The Rebars Undergo Thermo Mechanical Treatment in 3 successive stages;

a) Quenching

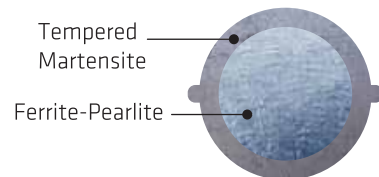
The hot rolled bar leaving the final mill stand is rapidly quenched by a special water spray system. This hardens the surface of the bar to a depth optimized for each section through formation of martensitic rim while the core remains hot and austenitic.

b) Self-Tempering

When the bar leaves the quenching box, the core remains hot compared to the surface, allowing heat to flow from the core to the surface, causing tempering of the outer martensitic layer in to a structure called '*Tempered Martensite*'. The core still remains austenitic at this stage.

c) Atmospheric Cooling

This takes place on the automatic cooling bed where the austenitic core is transformed in to ductile '**Ferrite-Pearlite**' Structure. Thus the final structure consists of an optimum combination of a strong outer layer (tempered martensite) with a ductile core (ferrite - pearlite). This gives Rhino 500D its unique combination of higher ductility and strength.



Chemical Properties

With the low levels of Sulphur and Phosphorous, the Carbon levels are maintained at much lower than the specifications which results in its excellent ductility, high strength, high bendability, better corrosion resistant and superior weldability and earthquake resistant.

Particulars	Fe 500 NS: 191 & IS 1786:2008	Fe 500D NS: 191 & IS 1786:2008	Rhino 500D (Values)*
Carbon %	0.30 Max	0.25 Max	0.25 Max
Sulphur (s) %	0.055 Max	0.040 Max	0.040 Max
Phosphorus (p) %	0.055 Max	0.040 Max	0.040 Max
S + P %	0.105 Max	0.075 Max	0.075 Max
Nitrogen (PPM)	120	120	120

as obtained in 90% of heats

Mechanical (Physical) Properties

The modern, automated and precision in quality control approach of manufacturing creates a combination of strength and ductility that far exceeds the minimum limit specified in the standards; NS:191 and BIS (IS:1786:2008). The typical values for Tensile Strength are Min 580 as against the Min 565 and elongation 18% as against 16% in the standard values. The superior values of strength and ductility is the guarantee of Rhino 500D Rebar for higher levels of safety for years.

Particulars	Fe 500 NS: 191 & IS 1786:2008	Fe 500D NS: 191 & IS 1786:2008	Rhino 500D (Values)*
Yield stress - YS (N/mm ²)	Min 500	Min 500	Min 500
Tensile Strength - UTS (N/mm ²)	Min 545	Min 565	Min 565
UTS/YS Ratio	1.08	1.10	1.10
% Elongation	Min 12 %	Min 16 %	Min 16 %

as obtained in 90% of heats

Superior Features



Excellent Bonding with Concrete

Rhino 500D Rebars have precise, parallel and uniform rib pattern engraved through computer controlled notch making machines resulting in excellent bond strength with concrete. The computer controlled production ensures 100% uniform rib patterns across the length of the Rebar. This is in contrast to ordinary Rebars in which the ribs are cut manually and are non uniform.



Excellent Bendability

The Special Microstructure of Rhino 500D gives it excellent bendability (inspite of High Strength). The bar can be bent easily and sharply. Rhino 500D Rebars can be bent to exact angle unlike ordinary Rebars as desired by the design around mandrels and is much smaller in diameter than what is specified in NS:191 Standards and IS: 1786:2008. This gives a better advantage by facilitating easy bending, making work easier and faster at construction sites.



Superior Weldability

Due to its low Carbon Equivalent, Rhino 500D has Weldability which is superior to other normal Rebars. It can be butt-welded or lap-welded using ordinary rutile coated electrodes of matching strength. In case of manual arc welding no pre-warming or post-welding treatment is necessary.



Greater Earthquake Resistant Properties

Due to high UTS/YS Ratio Rhino 500D Rebar offers high strength and ductility and thereby excellent Earthquake Resistant property which helps in minimum damage to the structure and hence minimizes casualties.



More Superior Elongation/Ductility





Fe 500D is produced under controlled manufacturing process and have excellent bendability. It is worth mentioning that the minimum specified elongation for Fe 500D is 16%. They have lower percentage of carbon, sulphur and phosphorus that ensures high/superior ductility compare to other Fe 500 grade bars.



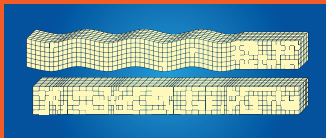
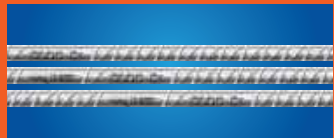
Greater Resistance to Fire

The quenching and the self-tempering treatment at a temperature of approximately 650°C results in a consistent and thick layer of tempered Martensitic-ring on the outer surface of the rebar imparting higher capacity to retain strength at elevated temperatures.

How Rhino 500D Premium High Ductile Rebar is Superior to other Normal Rebars

				
		Raw Material	Process CR → CPP → CP	Uniform Microstructure
Rhino 500D		Produced from High Quality Fe 500D grade Billets and Blooms imported from World Class Steel Companies like TATA Steel, JINDAL Steel, IISCO and SAIL.	3 Level Controlled Production process Controlled Raw Materials Controlled Production Process Controlled Parameters.	Manufactured with latest TMT Technology Worldwide in practice.
You Get		Highly Clean and Homogenous Steel Quality.	A highly controlled steel chemistry with very low levels of Sulphur and Phosphorous. Uniform quality in every Rebar.	High strength and ductility due to fine grain multiphase composite structure.





Uniform Rib Pattern	Computerized Quality Testing	Earthquake Resistant	Surpasses Standards	Uniform Prices
Provides precise and uniform parallel Rib pattern engraved through computer controlled notch making machines.	Computerized automated Physical and Chemical Testing Provides Instant and Credible Results with no room for Human Error.	Meets UTS/YS (Ultimate Tensile Strength to Yield Strength) ratio-specifications and high percentage elongation.	Surpasses minimum specified level of Nepal Bureau of Standards and Metrology (NS:191) and Bureau of Indian Standard BIS (IS:1786:2008)	Has Predefined and Uniform Pricing.
Excellent Bonding Strength with Concrete.	Faster Intervention and 100% Assurance on Quality Compliance with NS:191 and BIS (IS:1786:2008) standards.	High Strength and High Ductile Superior earthquake resistant properties due to high capability of absorbing energy.	NS:191 and BIS (IS:1786:2008) certified Assurance in quality and more Value for Money.	Fixed and uniform rates evidenced through a well displayed price list at our dealer shops.



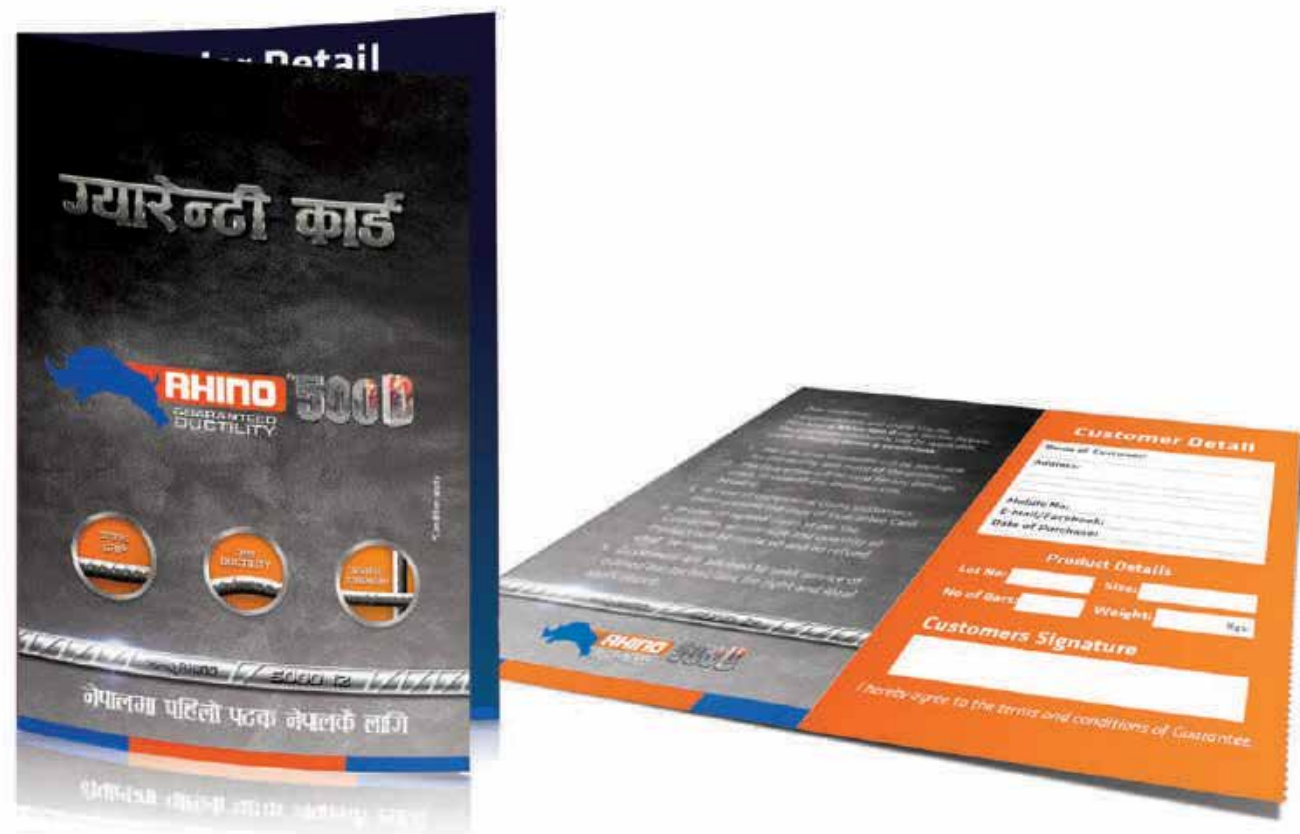
GUARANTEED DUCTILITY



Guarantee Card

Rhino 500D introduces with its unmatched quality for the first time in Nepal, The Rhino 500D Guarantee Card*.

The assurance of excellence of material, making and deliverance, Rhino 500D seeks to give your construction the best assurance in quality and safety.



*Conditions Apply.



MADE FOR NEPAL

“ Rhino 500D is ideally suitable and made for Nepal conditions ”

Applications

Rhino 500D Premium High Ductile Rebars are ideally suitable for application in areas prone to seismic risks and highly recommended for applications in construction of ranging from small individual houses to large infrastructure projects. It is ideally suitable for Nepal, considering the high seismic risk potential and the recent occurrence of the major earthquake. Ideal for:

- Small Individual Homes and Critical structures in seismic zones III, IV, V
- High -rise buildings
- Bridges • Flyovers • Dams
- Foundation of wind turbines
- Industrial Structures • Concrete Roads
- Underground Structures - Tunnels
- Thermal and hydro electric power stations
- General purpose Concrete re-enforcement structures

Availability

Rhino 500D Rebars are conveniently available in **sizes 8 mm and up to 32 mm** through exclusive retail points spread across Nepal. Also available in **sizes 36 mm and 40 mm** as per customary/project requirements. Each Rebar is supplied in a fixed length of 12 Meters to ensure standard processing and thereby causing less wastage during fabrication.

5 Good Reasons why you should buy Rhino 500D Rebars

- Globally Accepted Quality and highly recommended worldwide for applications in regions prone to high seismic risk. Ideally suitable for Nepal.
- Clean Steel with very low levels of impurities like Sulphur and Phosphorous.
- Guaranteed Ductility, First and only available in a Rebar in Nepal.
- Guaranteed Assurance in Quality.
- Fair Price and Easy Availability.



THE ASSURANCE

“ NS and ISI Certified ”

The Mark of a Leader

- With an annual capacity of 1.2 Million tones which is 20 times higher than the competitors, Jagdamba Steel is the largest and only integrated steel company in Nepal and one among the leading and fastest growing in South Asia.
- Prime Billets imported from world renowned companies used as raw material in manufacturing of all range of Steel Products.
- Automated, Streamlined and controlled manufacturing process to ensure highest quality standards of all the product ranges.
- Automated and stringent physical and chemical quality testing of raw materials in during Pre-Production of Products, during Production and Post completion of Production.
- Computerized Physical and Chemical Test Labs to ensure faster and accurate results, reducing any chances of human and manual error.
- Computerized weighing and tamper proof labeling system to ensure right weight and quantity in each set/bundle.
- Computerized delivery processing system for faster, efficient and timely delivery.
- Easy availability across Nepal.
- All products manufactured to stringent NS:191 and BIS (IS:1786:2008) quality Standards.
- ISO 9001:2008 Certified.

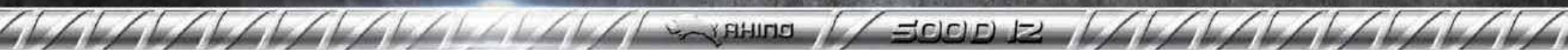
A safer future



Working towards future

Rhino 500D looks to bring to Nepal, a name that showcases quality and gives Nepal, the steel it needs. The evolution of steel technology and the assurance of the people, is Rhino 500D Premium High Ductile Rebar.





देशको मेरुदण्ड

AN ISO CERTIFIED COMPANY

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