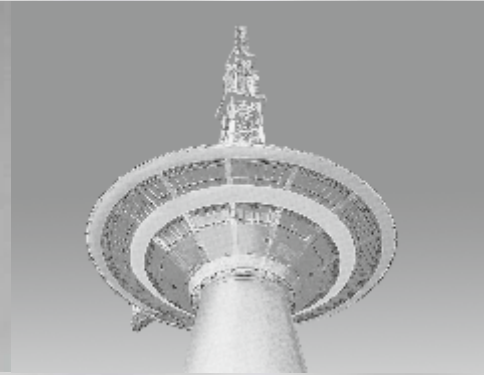
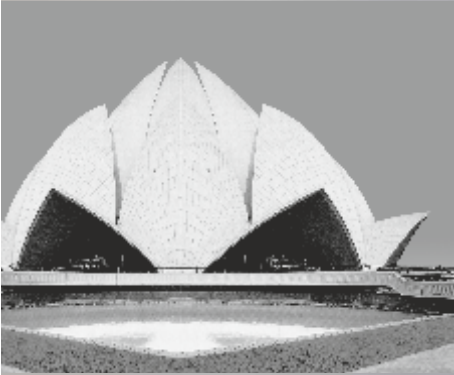


**RATHI**  
**SHAKTIMAN**  
CONSTRUCTION STEEL BARS



SHAPING VISIONS INTO REALITY



## Delhi Metro Rail Corporation



## Advantage RATHI

### Extra Bond Strength

Unique rib pattern ensures exceptional bonding with concrete and uniforms to IS:1786:2008 and international standards.

### Extra Tensile Strength

The higher tensile strength of RATHI SHAKTIMAN Re-Bars allows reduction in quantity of steel required in projects, with exceptional dimensional tolerance, they are rolled on the negative side of the Indian Standards Code, resulting in lower steel consumption.

### Extra Savings

Because of its inherent higher strength and enhanced elongation, you can save up to 20% on steel consumption, without compromising on safety.

### Extra Weldability

Due to the higher grade steel and controlled Carbon and Manganese content, there is no loss of strength at weld joints. This ensures that they can be butt-welded or lap-welded without any requirement for pre or post welding treatments.

### Extra Ductility

The higher strength allows elongation of up to 22% which is a measure of the superior ductility of the RATHI SHAKTIMAN Re-Bars.

### Extra Bendability

With their tough outer surface and soft core, RATHI SHAKTIMAN Re-Bars can be bent easily and safely around mandrels much smaller in diameter than those specified in IS:1786:2008.

### Extra Corrosion Resistance

Due to the superior manufacturing process, no corrosion residual stresses are left in the RATHI SHAKTIMAN Re-Bars, which results in superior corrosion resistance.

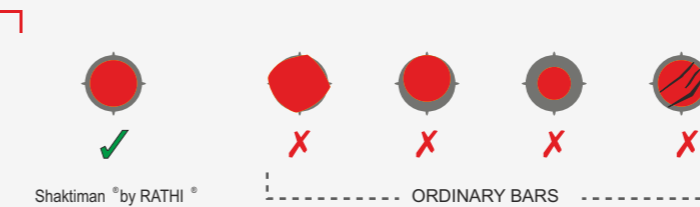
### Extra Seismic Resistance

The superior technology ensures a tough exterior and flexible core, this unique combination of high tensile strength and exceptional ductility, with high fatigue strength makes RATHI SHAKTIMAN Re-Bars resistant to any kind of stress and seismic activity and make them ideal for earthquake prone areas.

## Making Global Technologies work for you

RATHI Steel Bars draw their strength from the computer controlled in-line process of hardening and tempering during hot rolling (TMT). After leaving the last rolling stand at the precise temperature, the hot rolled bar passes through a set of specially designed cooling pipes. The outer layer gets cooled, while the core is still hot. The surface of the bar gets self-tempered by the heat from the core. The combination of a tempered martensite surface and ferrite + fine pearlite core provides considerably higher strength and ductility to the finished material, making it ideally suited for building strong structures.

## Advantage RATHI@SHAKTIMAN@ THERMEX@



**Sizes available:** 8mm, 10mm, 12mm, 16mm, 20mm, 25mm, 28mm & 32mm

## Growing from Strength to Strength. Every day. Every Moment.

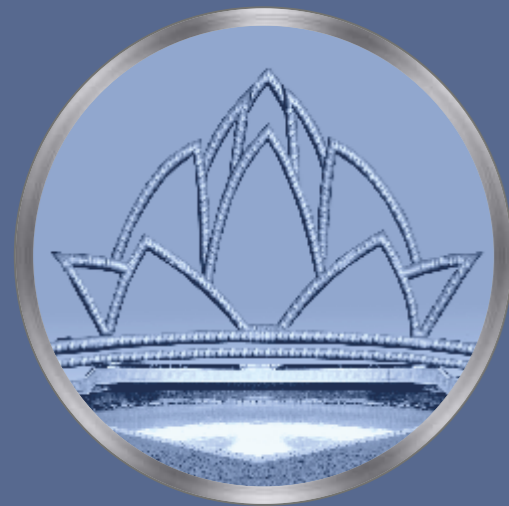
RATHI SHAKTIMAN has earned the trust of numerous corporate giants and millions of individuals through vision, conviction, leadership and a commitment to be at par with the world's best. Because, at RATHI, we believe, we have a promise to keep A promise to turn dreams into structures. Dreams that add impetus to the growth of the nation.

## TV Tower, Pitampur, Delhi





## Lotus Temple, Delhi



## Rooted in History. Routed Towards Tomorrow & Beyond.

RATHI®, a name that is at the core of numerous landmarks, infra-structural marvels and millions of homes for over six decades now. At RATHI®, the art of making steel is a magnificent obsession. And it has been so since the early 1940s, when a vision took the shape of reality. Starting from a re-rolling mill with a production capacity of 369 kilograms per day, today RATHI® has a production capacity of over 1 million tonnes annually, being produced at multi-locational, state-of-the-art plants. RATHI® stands tall as one of the most trusted and reputed brands for high strength steel bars in the secondary steel sector of India. The company takes pride in being the exclusive licensee for Thermex Steel Bars for entire Northern India in collaboration with H & K Germany.

Through decades, the company has remained at the forefront of the secondary steel sector with numerous Techno-Innovations. It was the first to introduce TOR Steel in India in collaboration with TOR Isteg Steel Corporation, Germany which ensured 40% saving in steel consumption.

No wonder that RATHI® is at the heart of monumental landmarks like Lotus Temple, Delhi Metro Rail, LIC Building, Chattarpur Mandir Complex, Narora Atomic Power Station and numerous flyovers, skyscrapers and millions of Indian homes.

In its endeavours to break new grounds in techno-superiority and service quality, RATHI® has now introduced RATHI SHAKTIMAN® and RATHI SHAKTIMAN® EXCEL® construction steel bars.

This has been done in keeping with its mission to produce steel bars that are technologically superior, earthquake resistant, cost efficient and are the basis of structures that will last for the generations to come.

## Many Firsts on the Journey to Excellence.

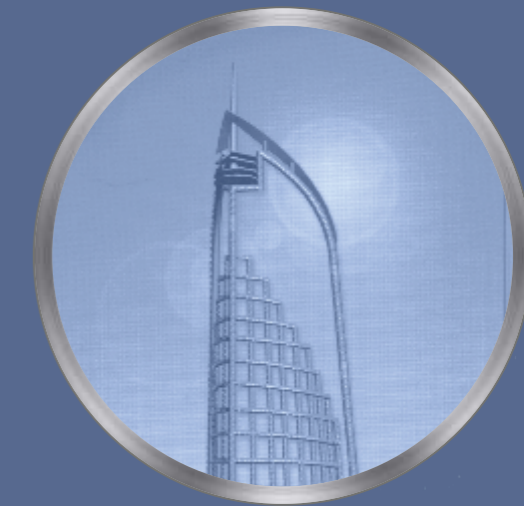
For more than 60 years, RATHI® has continued to set the standards for excellence and innovation in the steel industry with many firsts:

- First to win exclusive rights from TOR Isteg Steel Corporation, Germany to manufacture and market its TOR Steel in North India
- First to produce TOR Steel in India
- First to set new product parameters. With its extra strength, RATHI® reduces steel consumption by 25% and reduces cost by up to 40%
- First to install Natural Gas Fired Reheating Furnaces
- First to set up Mini Steel Plant in North India
- First to introduce the concept of Branded Retailing of steel through exclusive RATHI® Steel Shops
- First to launch the revolutionary Thermo Quench Technology in South Asia under the licence from H & K Germany
- First to introduce RATHI SHAKTIMAN® Construction Steel Bars
- Only ones to have 100% in-house capacity to produce chemically tested billets in their own furnace in North India
- First and only ones to have direct hot charging from their own furnaces in North India
- First to launch premium brand of RATHI SHAKTIMAN® EXCEL® into the market and adopt per piece selling method for the same
- First and only ones to have grade '500 D' in sizes ranging from 8 to 32mm

## RATHI® SHAKTIMAN® comes to you with the strength of:

- 3 state-of-the-art manufacturing plants in North India, with more in the pipeline
- Installed capacity of over 1000 tonnes per day
- In-house capacity of producing MS billets as raw material for producing high quality steel bars
- An integrated network of 900 dealers
- Global associations with Hennigsdorfer Stahl Engineering GmbH, Germany
- Globally the best technology-Thermex
- Global Quality Certifications for its products and manufacturing process such as IS:1786/1985, Grade Fe-415, Fe-500, ISO 14000 and ISO 9001

## Gateway Tower, Gurugram





Most steel Re-Bars available in India today, have an Fe grade of 415. According to a study conducted by German Institute of Reinforcing Steel, theoretically the increase from Fe 415 to Fe 500 means an improvement in strength and consequent reduction in consumption of steel, by about 16% In actual use, RATHI SHAKTIMAN Re-Bars has demonstrated a saving of up to 20% in steel consumption.

Studies have indicated, that the more the tensile strength, the lesser the consumption of steel. When the effective material-save factor is considered, the following table should be analysed: Saving in Steel Consumption when RATHI SHAKTIMAN using instead of other Steel Bars.

**Mechanical Properties of RATHI SHAKTIMAN THERMEX Steel Re-Bars**

Property	As Per IS1786:2008 (Fe-500)	RATHI SHAKTIMAN (Fe-500)	As per IS1786:2008 (Fe-500D)	RATHI SHAKTIMAN (Fe-500D)
0.2 Percent Proof Stress/ Yield Stress Min, N/ MM <sup>2</sup>	500.0	520.0	500.0	530.0
TS/YS Ratio N/MM <sup>2</sup>	≥1.08 but TS not less than 545 N/MM <sup>2</sup>	575.0	≥1.10 (but TS not less than 565 N/MM <sup>2</sup> )	≥1.15 (but TS not less than 595 N/MM <sup>2</sup> )
Elongation Percent Min.	12.0	14.0	16.0	17.0
Total Elongation at Max Force Percent Min.	-	-	5	7

**CHEMICAL COMPOSITION AS PER IS1786:2008, Fe-500**

Constituent	Percent, Maximum	RATHI SHAKTIMAN (Fe-500)	IS1786:2008 Fe-500D	RATHI SHAKTIMAN (Fe-500D)
Carbon	0.30	0.15-0.28	0.25	0.16-0.23
Sulphur	0.055	0.020-0.045	0.040	0.025-0.035
Phosphorus	0.055	0.030-0.048	0.040	0.025-0.035
Sulphur & Phosphorus	0.105	0.088	0.075	0.065
Carbon Equivalent	-	-	0.50	0.30



EXCELLENT • strength • safety • savings •

RATHI SHAKTIMAN EXCEL is India's first unique double-66-pattern design equivalent to British Standard B500C Steels Bars. It is designed and manufactured from the latest technology with international quality standards.

**Production that Performs**

Steel & concrete behave as a single unit in a reinforcement structure only when the concrete grips the steel rebar to form the strongest bond through the unique double-rib pattern of the bar. RATHI SHAKTIMAN EXCEL has a unique double rib pattern for better reinforcement solution in terms of greater rib depth / height and closer rib spacing at different angles. The CNC notch cutting machine ensures uniform rib pattern which allows uniform bonding with concrete for the whole structure. Due to uniformity & critically designed ribs, fatigue strength & ductility of RATHI SHAKTIMAN EXCEL is much superior to ordinary re-bars.

Moreover, meticulous testing throughout the steel making & rolling process is there to ensure the quality standards are maintained.

In fact, RATHI SHAKTIMAN EXCEL boasts of more than 200% higher values as compared to required bond strength of concrete structure.

RATHI SHAKTIMAN EXCEL Re-Bars are hot rolled from steel billets & subjected to PLC controlled online thermo mechanical treatment in three successive stages those are necessary for making a high quality re-bar. These three stages are Quenching Stage, Tempering Stage, and the Cooling Stage.

**Unique Service Offerings**

Selling by piece every RATHI SHAKTIMAN EXCEL Re-bar is sold in a standard length of 12 meters thereby removing the hassle of weighing.

Recommended Consumer Price (RCP): RATHI SHAKTIMAN EXCEL Re-bars are sold at RCP for better transparency. The RCP is displayed at all dealers outlets.

**Other excellent features:**

**Bending & Re-bending**

RATHI SHAKTIMAN EXCEL bars with its tough outer surface and ductile core can be bent around mandrels much smaller than those specified in IS: 1786 : 2008.

**High Temperature Resistance**

RATHI SHAKTIMAN EXCEL bars retain more than 80% of its ambient temperature yield at 300 C and 40% at 500 C.

**Execution**

RATHI SHAKTIMAN EXCEL should be applied where high ductility is desired. These applications include structures those are subject to forces difficult to quantify; because of the nature of those factors or due to lack of knowledge about those forces such as:

- Dynamic loading
- Explosions
- Sudden impact
- Compressive and tensile forces

**Mechanical Properties of RATHI SHAKTIMAN THERMEX Steel Re-Bars**

Property	As Per IS1786:2008 (Fe-500)	RATHI SHAKTIMAN EXCEL (Fe-500D)
0.2 Percent Proof Stress/ Yield Stress Min, N/ MM <sup>2</sup>	500.0	535.0
TS/YS Ratio N/MM <sup>2</sup>	≥1.08 but TS not less than 545 N/MM <sup>2</sup>	600 N/MM <sup>2</sup>
Elongation Percent Min.	12.0	18.0
Total Elongation at Max Force Percent Min.	-	7.5

**CHEMICAL COMPOSITION AS PER IS:1786:2008, Fe-500D**

Constituent	Percent, Maximum	RATHI SHAKTIMAN EXCEL (Fe-500D)
Carbon	0.30	0.16-0.20
Sulphur	0.055	0.020-0.030
Phosphorus	0.055	0.022-0.030
Sulphur & Phosphorus	0.105	0.055
Carbon Equivalent	-	0.40



## Product Range

Nominal Dia (mm)	Nominal Weight (Kg./Mtr.) As per IS1786:2008	Weight (Kg./Mtr.) As per IS1786:2008	RATHI® SHAKTIMAN® (Kg./Mtr.) Fe-500	RATHI® SHAKTIMAN® Fe-500D	RATHI® SHAKTIMAN® EXCEL® Fe-500D	Packaging (No. of pieces of per bundle)
8	0.395	0.367-0.423	0.370-0.385	0.367-0.423	0.370-0.385	18
10	0.617	0.574-0.660	0.575-0.590	0.574-0.660	0.575-0.590	12
12	0.888	0.844-0.932	0.850-0.870	0.844-0.932	0.850-0.870	08
16	1.580	1.499-1.657	1.500-1.530	1.499-1.657	1.500-1.530	05
20	2.470	2.392-2.540	2.390-2.420	2.392-2.540	2.390-2.420	03
25	3.850	3.737-3.969	3.739-3.800	3.737-3.969	3.739-3.800	01
28	4.830	4.689-4.979	4.700-4.800	4.689-4.979	4.700-4.800	01
32	6.310	6.123-6.502	6.187-6.376	6.123-6.502	6.187-6.376	01



**RATHI BARS LIMITED**  
**RATHI SPECIAL STEELS LIMITED**  
**BHIWADI IRON LTD.**  
**KHUSHKHEDA STEELS LTD.**

### REGD. OFFICE:

A-24/7, Mohan Co-operative Indl. Estate,  
Main Mathura Road, New Delhi - 110044

Tel.: +91-11-43165400

Fax: +91-11-41679787

Website: [www.rathisteels.com](http://www.rathisteels.com)

E-mail: [contact@rathisteels.com](mailto:contact@rathisteels.com), [rathibars@hotmail.com](mailto:rathibars@hotmail.com)