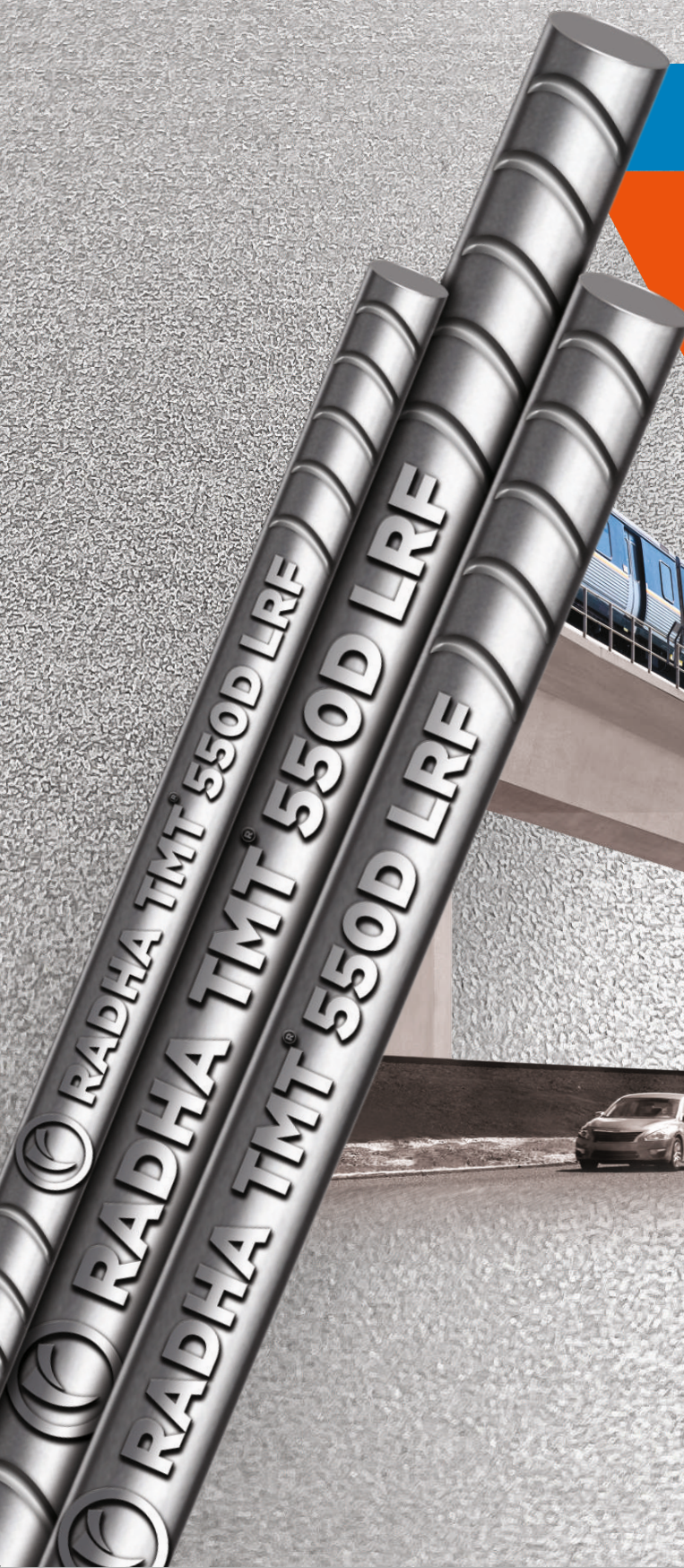


# MAHA SHAKTISHALI

SOUTH INDIA'S FIRST  
INFRASTRUCTURE STEEL

THE UNMATCHED AND  
REVOLUTIONARY  
INFRASTRUCTURE STEEL



**RADHA TMT**<sup>®</sup>  
**550 D LRF**







Large Infrastructure Projects and modern High-rise buildings are built with reinforced concrete frameworks which require Steel of higher tensile strength and ductility. Such Steel Rebars which are embedded in these concrete frameworks not only help the structures to support their weight but also resist earthquakes.

Radha TMT<sup>®</sup> 550D LRF Steel Rebars undoubtedly, the very first in South India, are made using advanced LRF Technology which ensures higher ductility and greater strength. These Steel Rebars not only have good bonding properties to concrete but are also highly durable.



**Here are a few reasons why it makes a perfect sense to choose Radha TMT<sup>®</sup> 550D LRF Rebars:**

- Only high quality raw materials used
- Fully automated high-speed mill
- Superior LRF Technology
- German Quenching and Self-tempering technology -THERMEX<sup>®</sup>
- Stringent testing and quality control system

With such technology and processes in place, one can rest assured that every single TMT Rebar from Radha Smelters' plant bears the distinct Radha stamp of quality and reliability.

Radha TMT<sup>®</sup> 550D LRF is all set to create new benchmark and achieve the status of being the preferred brand of every leading Builders, Architects and Structural Engineers across the country.









# RADHA TMT® 550D LRF – UNMATCHED ADVANTAGES

In Radha TMT 550 D LRF, "550" stands for minimum yield stress. The letter "D" denotes Ductility which means that the Steel Rebars have a higher percentage of elongation that offer greater resistance to natural calamities and other stress factors.

Radha Smelters uses the clean Iron ore as primary raw material and deploys world class LRF and Thermex as the process technologies to produce the highest quality of 550D grade of TMT Rebars in 8mm to 32 mm sizes.

## Ladle Refining Furnace (LRF) Technology

LRF or Ladle Refining Furnace technology is used to improve the quality of liquid steel through refining, purifying and fine-tuning of its chemistry. This process requires additional heat.

Therefore, the ladle is provided with electrodes which heat the liquid metal and minimize thermal losses.

## Inside Ladle Refining Furnace

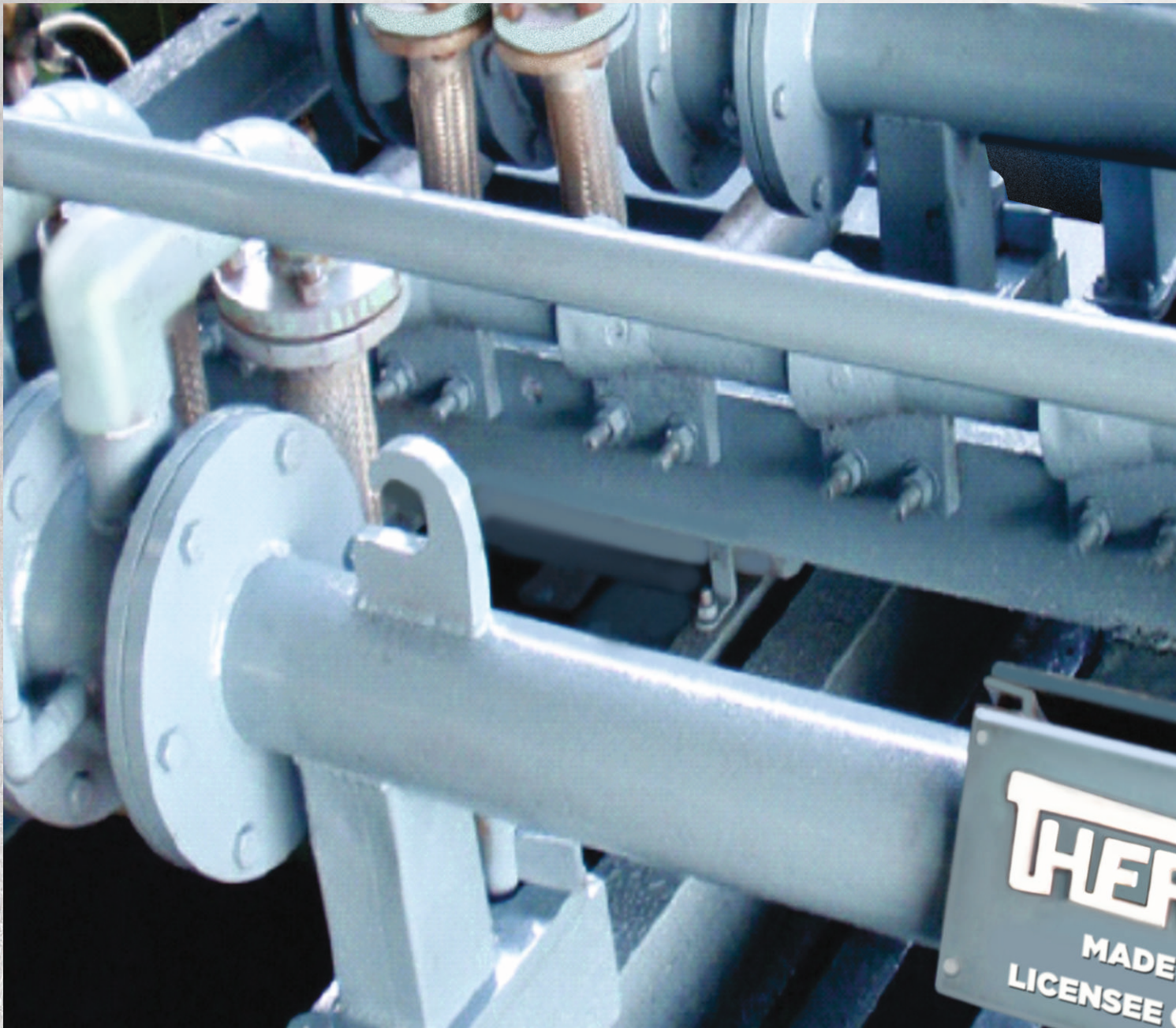
In LRF, the liquid metal is refined and purified by lowering the Sulphur, Phosphorous and dissolved Gases levels and homogenized in terms of temperature and chemical composition as per stringent BIS norms to provide the ideal strength and flexibility to the TMT Rebars.

Inclusions are also removed to ensure that steel is of the highest quality and exhibits superior mechanical properties.



LOW **SP**  
GAS LEVELS  
IMPURITIES





Sr no.	Details	BIS Standard	Radha TMT 550D LRF
4	Chemical	C%	0.25 Max
2		S%	0.04 Max
3		P%	0.04 Max
4		P + S %	0.075 Max
5		CE%	0.42% Max
6	Mechanical	0.2% Proof Stress	550 Min
7		UTS (Tensile Strength)	600 Min
8		Stress Ratio (UTS/YS)	1.08 Min
9		Elongation %	14.5% Min
10		Total E at Max Force	5% Min
11	Bend Test	8-20mm	ϕ4(dia x 4)
12		over 20mm	ϕ5(dia x 5)
13	Re Bend Test	8-10	ϕ6(dia x 6)
14		over 10mm	ϕ7(dia x 7)





## TECHNOLOGY THAT ADDS STRENGTH TO THE CORE

The finest technology is at play to ensure that Radha TMT Rebars remain far superior in quality. German Thermex Technology - to provide a unique property of extra Strength in combination with higher Ductility.

### **Quenching**

The first stage of the Thermex process begins as soon as the Rebar leaves the finished mill. Pure water from our captive RO plant is sprayed on the Rebar to quickly cool down its outer surface up to a required depth and this in turn results in the formation of a martensitic rim while the core still remains hot. This process is called Quenching.

**Self-Tempering** – Since, the core remains hot compared to the surface, heat flows from the core to the surface causing Tempering of the outer Martensite layer thus forming a structure called 'Tempered Martensite'.

**Atmospheric Cooling** – The Rebar is further cooled on cooling bed under normal temperature. In this step, the hot core turns as ferrite-pearlite structure. Thus, the resultant bar gets strong outer layer and ductile core. This process increases the tensile strength of the Rebar and makes it highly ductile and weldable.

**THERMEX<sup>®</sup>**









# IDEALLY SUITED FOR A WIDE RANGE OF PROJECTS

The inherent properties of RADHA TMT® 550D LRF makes it the ideal choice across the spectrum.

- INFRASTRUCTURE IN SEISMIC ZONES
- DAMS & WIND TURBINE FOUNDATION
- INDUSTRIAL & UNDERGROUND STRUCTURES
- PORTS & AIRPORTS
- BRIDGES & FLYOVERS
- HIGH RISE BUILDINGS
- CONCRETE ROADS
- INDEPENDENT BUNGALOWS



## FEATURES

**HIGHER DUCTILITY**  
AS LOWER PHOSPHORUS REDUCES BRITTLINESS

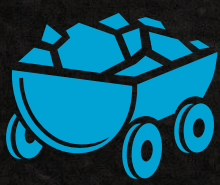
**LOWER CARBON LEVEL**  
ADDS TO DUCTILITY, CORROSION RESISTANCE AND TOUGHNESS

**BETTER WELDABILITY**  
AS LOWER SULPHUR IMPROVES HEAT RESISTANCE

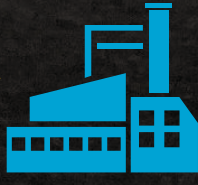
**HIGHER FIRE RESISTANCE**  
MAKES IT IDEAL FOR HIGH-RISE CONSTRUCTIONS

**UPTO 18% ELONGATION**  
MAKES IT IDEAL FOR CONSTRUCTION IN SEISMIC ZONES





Iron Ore



Sponge Iron Unit



Sponge Iron

The Iron Ore is processed at our DRI plant to obtain the primary raw material i.e., Sponge Iron. Stringent quality measures are undertaken at our DRI plant to ensure that only the finest raw materials are used to produce Sponge Iron.

The Sponge Iron is then melted in EIF (Electric Induction Furnace) and processed through the LRF (Ladle Refining Furnace). In LRF, the liquid metal is refined and purified by lowering the Sulphur, Phosphorous and dissolved Gases levels and homogenized in terms of temperature and chemical composition as per stringent BIS norms to provide the ideal strength and flexibility to the TMT Rebars. Inclusions are also removed to ensure that Steel is of the highest quality and exhibits superior mechanical properties.



Electric Induction Furnace



Ladle Refining Furnace

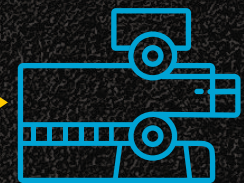


Automized Continuous Casting Machine for Billets

The molten steel from LRF is passed through the Automized Continuous Casting Machine for producing quality Billets with uniform length to avoid any variations at later stage. Continuous Casting is the process where molten metal is allowed to solidify until it becomes a semi-finished slab or Billet.



Hot Conveyor Belt for Billets



Automized Mill

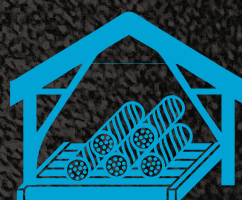
The casted hot Billets are then immediately rolled into the Automized Mill through hot Conveyor Belt. This avoids the reheating and changes in the chemical composition of the Billets.



Thermex Quenching

THERMEX technology is used for Thermo-Mechanical treatment of the Rebars to ensure uniform quality across its length in terms of strength and ductility. Dissolved solids and hardness in water impact the quality of TMT Bars. Radha TMT® Bars are corrosion-resistant as they are quenched using RO purified water.

The final products are then stored in 1,50,000 Sq. ft., of fully covered shed. Only after the physical test and thorough quality checks are executed, Radha TMT 550D LRF Rebars are packaged and dispatched.



Cooling Bed and Shed Storage



Dispatch



**STATE-OF-THE-ART  
INTEGRATED  
STEEL PLANT**





**RADHA TMT**<sup>®</sup>  
**550 D LRF**

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