



TATA TISCON Fe 600



THE JOY OF BUILDING A STRONGER TOMORROW



THE CHANGING INDIAN LANDSCAPE

The phrase 'ivory tower existence' has been reinvented in urban India. The growing demand for accommodation has created a boom in the real-estate sector, but has led to an alarming increase in the number of high-rise buildings.

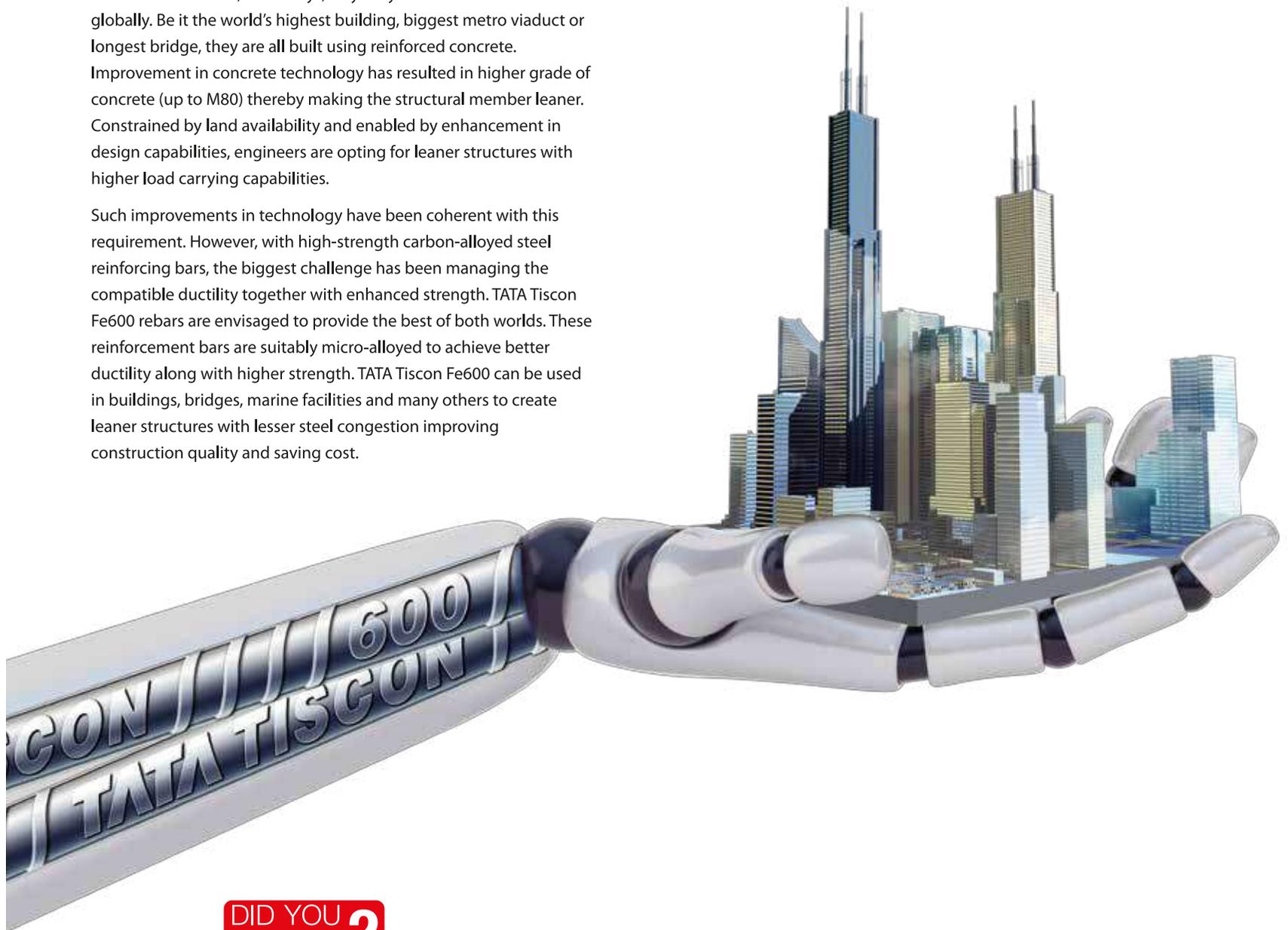
It is very clear that cities like Mumbai, Kolkata and Bangalore are stretched in terms of Floor Space Index (FSI). Accommodating an increasing population will require the FSI to be higher. This can only be increased by increasing the height (storey) of the buildings. Thus, it is not uncommon that high-rises or skyscrapers have come up in cities like Mumbai, Kolkata and many others. The biggest challenge for these skyscrapers is standing tall and strong in such limited space! This challenge has been taken care of by improvements in technology like reinforced concrete and high-steel reinforcing rebars globally.



SUPER STRENGTH HAS A NEW NAME – TATA TISCON Fe600

Reinforced concrete, these days, is synonymous with construction globally. Be it the world's highest building, biggest metro viaduct or longest bridge, they are all built using reinforced concrete. Improvement in concrete technology has resulted in higher grade of concrete (up to M80) thereby making the structural member leaner. Constrained by land availability and enabled by enhancement in design capabilities, engineers are opting for leaner structures with higher load carrying capabilities.

Such improvements in technology have been coherent with this requirement. However, with high-strength carbon-alloyed steel reinforcing bars, the biggest challenge has been managing the compatible ductility together with enhanced strength. TATA Tiscon Fe600 rebars are envisaged to provide the best of both worlds. These reinforcement bars are suitably micro-alloyed to achieve better ductility along with higher strength. TATA Tiscon Fe600 can be used in buildings, bridges, marine facilities and many others to create leaner structures with lesser steel congestion improving construction quality and saving cost.



DID YOU KNOW?

- Due to the reduction in area of steel, Fe600 can be used with column reinforcement in large infrastructural projects
- Costs drop due to the reduction in steel used when combined with conventional concrete, making Fe600 extremely advantageous

TATA TISCON Fe600 – MECHANICAL & CHEMICAL PROPERTIES

TATA Tiscon's unique method of manufacturing creates a combination of strength and ductility that far exceeds the minimum limit specified in IS:1786. TATA Tiscon Fe600 offers 20% higher

Yield Strength (YS) than the Fe500 grade rebar with similar ductility. While YS denotes the 'design' strength of rebar, UTS/YS ratio and percent elongation are important properties in a rebar as it reflects ductility characteristics. TATA Tiscon Fe600 rebars are suitably alloyed and micro-alloyed resulting in excellent ductility along with superior strength. The other undesirable impurities (like sulphur and phosphorus) that impair the overall longevity of rebars when used inside structures are also maintained at lower levels than specified limits.

Quality check of the Fe600 rebars at the laboratories



The test has been validated at TATA Steel test facilities as National Test House, Kolkata (BIS recognized labs)

CHEMICAL PROPERTIES

	Carbon % (max)	Sulphur % (max)	Phosphorus % (max)	Sulphur & Phosphorus % (max)
Tiscon Fe500D	0.25	0.040	0.040	0.075
Tiscon Fe600	0.30	0.040	0.040	0.075

MECHANICAL PROPERTIES

	YS in MPa (min)	UTS in MPa (min)	Elongation % (mim)	UTS/YS Ratio (min)
Tiscon Fe500D	500	580	16	1.12
Tiscon Fe600	600	720	18	1.12

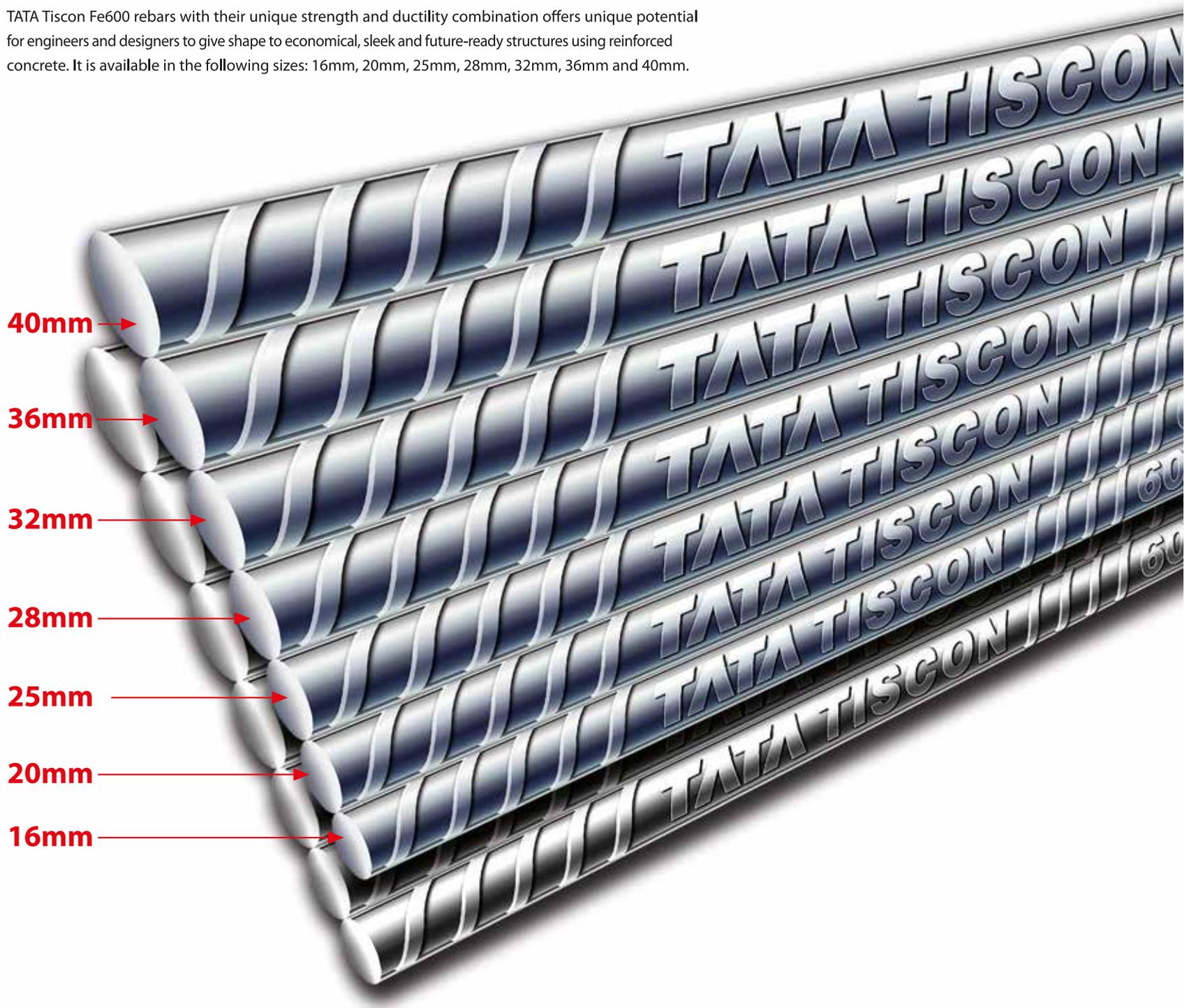
(Please note, it conforms to stringent specifications of Fe500D grade as per IS:1786)

DID YOU KNOW?

- Fe600 can be used with Fe500D without any change in the ductile behaviour of the structure because they have the same elongation and UTS/YS ratio

AVAILABILITY

TATA Tiscon Fe600 rebars with their unique strength and ductility combination offers unique potential for engineers and designers to give shape to economical, sleek and future-ready structures using reinforced concrete. It is available in the following sizes: 16mm, 20mm, 25mm, 28mm, 32mm, 36mm and 40mm.



TATA TISCON Fe600 – MORE BENEFITS THAN ONE

TATA Tiscon Fe600 rebars offer 45%* higher strength than conventional steel (415 MPa vs 600 MPa).

This results in:

- **Reduction of steel consumption:**
Redesigning the structure using Fe600 rebar, reduces the steel requirement for a project by up to 25%*
- **Reduction in labour cost:**
Less steel to handle and hence labour costs are lower by up to 15%*
- **Reduction in congestion:**
Higher strength requires lesser bars (section-area) to carry similar loads resulting in lesser congestion improving the quality of construction
- **Better ductility:**
TATA Tiscon Fe600 rebars offer characteristic elongation of 16%* (min)
- **Faster progress:**
Lesser steel handling and lower congestion enables faster project completion
- **Handling (cutting and bending):**
Can be fabricated using conventional equipment
- **Industrial reliability:**
More flexibility and efficiency in design

EXTRA STRENGTH. REDUCED STEEL USAGE. MORE SAVINGS



Normal rebar



TATA TISCON Fe600

*Varies from case to case

A CASE STUDY

Assuming the following parameters where:

Column dimensions = 1200 mm x 1200 mm

Axial load = 1000 Mt

$M_x = 360Mt - m$

$M_y = 360Mt - m$

Grade of concrete = M40

Unsupported length in a framed structure = 3.3m

Same parameter but using grade of steel =

Fe415, Fe500D, Fe550, Fe600

RESULT

STRONGER REBARS



LESSER STEEL USAGE

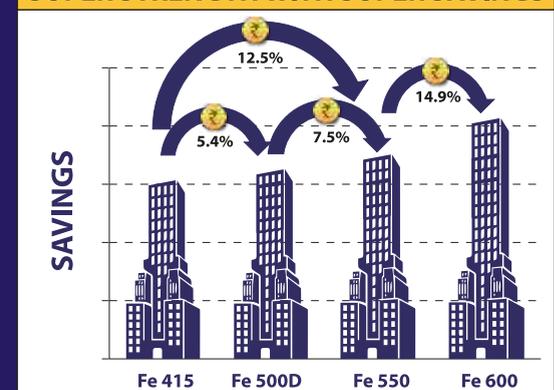


HIGHER FLOOR SPACE INDEX



HIGHER SAVINGS

SUPER STRENGTH WITH SUPER SAVINGS



Fe600 rebars are much stronger than other rebars. Because of this strength, there is no need for extra steel to reinforce the structure. There is also a gain in Floor Space Index due to the amount of material saved. These savings also translate into a monetary gain of almost 20%* during construction.

**WITH 45% HIGHER
STRENGTH THAN
CONVENTIONAL STEEL,
FE600 REBARS OFFER
UPTO 20% SAVINGS*.**



*Varies from case to case

APPLICATIONS

TATA Tiscon Fe600 rebars, with the dual advantage of enhanced strength and superior ductility, can be used as reinforcement for commercial, housing, industrial, utilities, infra, MRTS and other reinforced concrete applications, including:

- Buildings
- Bridges
- Underground walls in MRTS stations
- Retaining walls, marine facilities
- Grade separators and viaducts
- Precast reinforced concrete members



A Case Study



TATA TISCON EMERGES TO BE THE LEADING BRAND FROM TATA STEEL'S BRAND-WAGON

TATA TISCON comes from the family of long products of TATA Steel. It covers a variety of rebars ranging from Fe500D, Tiscon CRSD, Tiscon Super Ductile and Tiscon Readybuild which are produced for different geographies and for different customer needs.

THE UNBEATABLE REBAR



THE NEW BENCHMARK OF PERFECTION

TATA TISCON Fe500D is manufactured as per the latest BIS 2008 standard which has the lowest level of sulphur and phosphorous in the rebar category. Made from virgin iron ore in the blast furnace, it goes through the following process:

Basic steel making >> Secondary refining >> Billets casting route.

This is carried out in state-of-the-art plants resulting in rebars with minimum impurities.

This rebar is used in gauges varying from 6mm to 40 mm.

TATA TISCON CRSD is best suited for coastal areas and damp climates where corrosion occurs due to salinity, moisture or acid particles present in air. It increases the life span of structures by standing the test of time and the elements of nature. This rebar is available in sizes ranging from 8mm to 40mm.

SUPER BRAND WITH SUPER PROTECTION AGAINST CORROSION

ENHANCED PROTECTION FROM EARTHQUAKES WITH PURE STEEL

TATA TISCON SUPER DUCTILE has been developed keeping the earthquake-prone zones in mind. Ordinary rebars are lesser ductile causing more damages in cases of tremors. Tiscon SD rebars, on the other hand, resists vibrations to a higher degree and minimises the harmful effects of quakes.

TAILOR-MADE SOLUTIONS FOR EVERY NEED

TISCON READYBUILD is the latest offering from the TATA Tiscon brandwagon. It is a service which offers customised rebars for hassle-free construction practises to the consumers. One can get both cut and bend rebars and couplers at the site.

A SERVICE INNOVATION

TATA STEEL SALES OFFICES (LONG PRODUCTS)

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