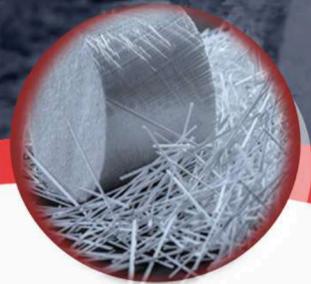


Up to 318,000 Fibre Tuff are evenly distributed in every cubic metre of concrete.

MUSCLE TO YOUR CONCRETE



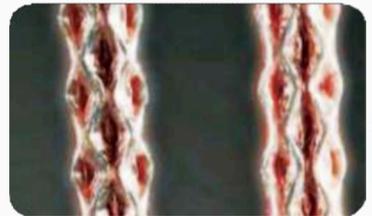
INTRODUCING BAJAJ FIBRE TUFF

Bajaj Fibre Tuff (Macro synthetic polypropylene fibre) is a heavy duty synthetic fibre especially engineered for use as a reinforcement, providing excellent resistance to the post cracking capacity of concrete and are replacing steel rebar & steel Fibre in wide range of applications, including ground supported slab (both internal and external) sprayed concrete (shotcrete), precast concrete units, tunnel in-site and precast lining. The properties of Fibre are covered by BS EN 14889 fibre of concrete part 2, Polymer Fibres- Definition, specification and conformity.

CHARACTERISTICS OF FIBRE TUFF

Bajaj Fibre Tuff features a unique highest tensile strength, Modulus of elasticity & continuous embossed surface, enabling the Fibre to achieve maximum bonding with the cement matrix for optimum performance.

Polypropylene is a completely inert material used as a raw material for manufacturing, which is a resistant to acidic and alkaline environments. Thus they do not require concrete cover as protection against corrosion.



Technical Specifications (Confirm to EN 14889-2, ASTM C1116-II)

Characteristics	Base resin	Length	Tensile Strength	Surface Texture	No. Fibres per kg	Specific Gravity	Young's Modulus	Melting Point	Ignition Point
Material Property	Modified Olefin	36mm	650 MPa	Continuously Embossed	54,054	0.90 - 0.93	9 Gpa	160°C - 179°C	Greater than 450°C
		50mm			39,215				
		54mm			36,363				

Note: Any other length on request



Benefits:

- Increases flexural strength
- Increases impact resistant
- Increases residual strength
- Increases tensile strength
- Increases energy absorption
- Increases ductility
- Increases durability
- Increases post crack load capacity
- Significantly improves shrinkage and temperature crack control
- Safer and lighter to handle than steel
- Reduces carbon footprint
- Reduces plastic settlement crack
- Reduces permeability
- Reduces bleeding
- Unlike steel, doesn't produce rust stain on concrete
- Potential for increase in joint spacing

APPLICATIONS

Tunnelling & Mining

- Portal Stabilisation
- Ventilation Shaft
- Shotcrete FRS
- Segment Lining
- Invert Slab
- Roadways
- Drains
- Crash Barriers

Residential

- Concrete Pavements
- Swimming pools
- Parking Lots
- Basement car park
- Driveways
- Concrete Footpaths
- Concrete Roadways
- Grade Slab

Commercial & Industrial Flooring

- Hardstands
- Engineered Slabs
- Flooring
- Composite Slab
- Driveways
- Tilt-Up Walls
- Grade Slab

Marine Structures

- Foreshore Protection
- Marinas Wharfs & Jetties
- Retention Basins
- Offshore Platforms
- Artificial Reefs
- Culverts
- Canals
- Waterways

Precast Concrete

- Precast Blocks
- Precast Paving Slabs
- Precast Boundary walls
- Precast units
- Precast concrete stairs
- Hume Pipes

Dosage : Recommended dosage of FibreTuff varies from 3 Kg/m³ - 9 Kg/m³.

Before use, consultation with the Bajaj Reinforcement representative is recommended to discuss the application. Designs are available, if asked for.

Key Applications Areas



Tunnel



Warehouses



Marine Structures



Precast Structure



Concrete Roads



Shotcrete Sprays



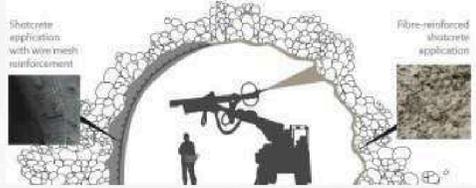
Precast Tunnel Lining



Runways & Flooring

PRODUCT DESCRIPTION :

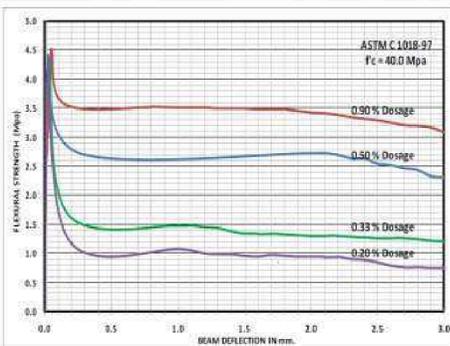
Fibre Tuff is a macro synthetic fibre designed specifically for the reinforcement of concrete and shotcrete by Bajaj Reinforcements Pvt. Ltd. confirms the classification BS EN 14889-2, under class II: Macro Fibre >0.30mm in diameter with tensile strength of 650 MPa, length 36 to 64mm with continuous embossed surface anchorage mechanism. Fibre Tuff have an engineered contoured profile, which serves to effectively anchor the fibre into the concrete thus resisting matrix pull out and enhancing the concrete's performance even after it has developed stress cracks.



Benefits :

- ✓ Redistribute load Increase ductility/toughness
- ✓ Eliminates corrosion long term durability
- ✓ Reduces Permeability thus increases concrete life
- ✓ Improves shrinkage and temperature crack control
- ✓ Safer and lighter to handle than steel
- ✓ 85% reduction in carbon footprint compare to steel
- ✓ Strong bonding with concrete
- ✓ Increases post crack load capacity
- ✓ Speed up construction by eliminating steel mesh set up.
- ✓ Reduces wear on concrete pumps and hoses.

Effect of Fibre Tuff on Residual Strength



Note: These curve are based on average of several beam test & it will be based on concrete mix design used.

Technical Specification :

Characteristics	Fibre Tuff
Base Material	Modified Olefins
Specific Gravity	0.90 - 0.91
Eq. Diameter (mm)	0.8 to 0.9
Length(mm)	36/50/54/64
Aspect Ratio	≥ 64
Tensile Strength(MPa)	650 MPa
Young Modulus	9 Gpa
Melt Point	160°C - 165°C
Anchorage	Continuous Embossing
Alkali Resistance	Excellent

Fibre Tuff Dosage	Fe3 (MPa)	Fe3 %
0.2% (1.82)	0.74	16.8
0.33% (3.00)	1.2	27.9
0.50% (4.95)	2.38	53.8
0.90% (8.20)	3.09	70.1

Comparison against steel fibres

Aspect	Bajaj Fibre Tuff (Macro PP Fibre)	Steel Fibre
Corrosion Resistance	Completely non-corrosive, no rust even in wet, marine, or chemically aggressive environments.	Prone to rust/corrosion, especially in chloride-rich or humid conditions.
Weight & Handling	Very lightweight (density ~0.91 g/cm ³); easy to mix, pump, and handle; no clumping issues.	Heavy (density ~7.8 g/cm ³); requires more material by weight; can clump or settle during mixing.
Mixing & Workability	Excellent dispersion; slightly reduces workability; no special equipment needed;	Considerably reduces workability (stiffer mix); may need superplasticizers; harder to pump long distances.
Toughness & Post-Crack Behaviour	Good ductility and energy absorption; matches performance of steel in toughness.	Good ductility and energy absorption; Superior post-crack behavior
Fire/Spalling Resistance	Excellent – melts at ~160–170°C, creating voids for steam escape → prevents explosive spalling in high-strength concrete	Can worsen spalling (steel retains heat, expands); not ideal without additives.
Cost (Material + Installation)	Around 40 to 50% cost will be saved compared to steel rebar/fibre/mesh; lower dosage per cub. Meter	Higher material cost; higher dosage per cub. Meter but heavier handling/storage.
Environmental Impact	Lower carbon footprint, emits 2 to 2.6 kg of CO ₂ per cub. Meter. Promotes sustainable development	Higher carbon footprint, emits 116 to 309 kg of CO ₂ per cub. Meter. Increases global warming.
Typical Dosage	3–9 kg/m ³ (0.3–0.9% by volume)	25–50 kg/m ³ (higher weight for equivalent performance in some cases).

Cost Comparison against conventional reinforcements :

FIBRE	COST PER Kg (Approx)	Typical Dosage per m ³	Number of Fibres	Rate per Cubic meter of Concrete	Percentage Saving
Steel Rebar	70	40	–	2800	33 to 67% (based on application)
Wire mesh	60	30	–	1800	40 to 50% (for shotcrete application)
Steel Fibre	80	25	23,166	2000	50 to 70% (based on application)
Bajaj Fibre Tuff	300	3	1,62,162	900	

Standard References & codes:

- ASTM C108 (Standard test method for first crack loadof FRC)
- ASTM C1609 (Standard Test Method for flexural performance of FRC)
- EFNARC: EN 14889 Part 2
- ASTM C1018 (Test Method for flexural toughness and first crack strength)
- TR 34: (Concrete Industrial Ground Floor)
- ASTM C1116
- ACI 544 (series)
- ACI PRC -506.1-21
- BTS 4th edition_ specification for tunneling
- ITA guidelines

Completed projects:

- Rishikesh- Karnaprayag Railway Project- All Packages
- Samruddhi Mahamarg Expressway
- Bilaspur- Bhanupalli Railway Project- All Packages
- Zoji-La Tunnel, Ladakh
- Yavatmal – Nanded Railway Project
- Khurda- Bolangir Railway Project, Odisha
- Ramban Banihal Road Project, J & K
- Raipur Vishakhapatnam Expressway
- Mumbai- Ahmedabad High speed rail_ C2

Ultra-High-Performance PP Fibre: Powering the Future of Tunneling

Ultra-high-performance PP Fibre is shaping the future of tunneling by delivering stronger, safer, and more resilient concrete solutions. It enhances crack control, fire resistance, and energy absorption while eliminating corrosion risks common in underground environments. By reducing reliance on traditional steel reinforcement, PP Fibre accelerates construction, lowers labor costs, and improves on-site safety. Its long service life and reduced maintenance needs support sustainable infrastructure development. As tunneling projects grow more complex, PP Fibre stands out as a smart, future-ready material choice.

The next generation of tunneling demands materials that combine performance, efficiency, and sustainability, and ultra-high-performance PP Fibre delivers on all fronts. It offers a strategic advantage for the future of tunneling by combining innovation with performance reliability.

Visits by Industry Experts:



Visit By Dr. Nick Barton
(Developer of Q-System)



Visit By KTLR Project
Team, Mumbai



Visit By Shinkunla Tunnel
Project Team

Our Clientele:



Usage Information

MIXING

Synthetic fibres are incorporated into the concrete either before or during the mixing process, without any modification to the original mix design.

PUMPING:

Fibre Tuff can be pumped through rubber Hoses without any difficulty.

HANDLING AND STORAGE:

Fibre Tuff is packaged according to requirements and supplied in durable PP woven laminated bags. Storage should be in cool locations. For sample packets, coordination with our representative is required.

EASY FINISH FIBRE:

Surface finish is a major concern with many fibre reinforcements. Fibre Tuff's unique design and material composition ensure that it remains embedded below the concrete surface, with very little protruding from the surface.

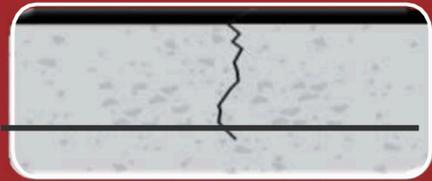
COMPATIBILITY

Fibre Tuff is compatible with all concrete admixtures and performance enhancing chemicals.

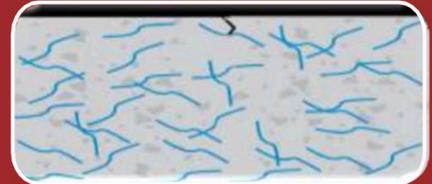
SAFETY

Fibre Tuff requires no special handling during use. A complete Material Safety Data Sheet (MSDS) is available upon request.

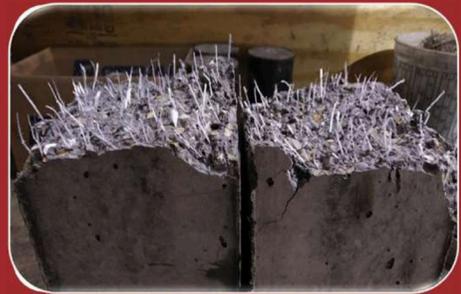
FIBRE TUFF AGAINST CRACK



Steel mesh



Bajaj Fibre Tuff



Finished Floor with Fibre Tuff



FibreTuff Replacing Steel



Shotcrete with Fibre Tuff

Our Other Product Micro Synthetic Fibre



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