



RUREDIL Group

A tradition of excellence in sustainable innovation



Ruredil X Fiber 54 Synthetic structural fibers

A step forward in the innovation of composite non-steeled construction materials







From the iron age..... to the age of non-steel composite materials



Fibers in construction materials

Fibers have been used in construction to reduce the fragility of materials ever since ancient times. Nowadays a lot of materials in the building sector have fibres inside in order to improve the properties of the composite.







The fibers used are:

Steel

(SFRC -steel reinforced concrete)



Synthetic (SNFRC -syntetic fiber reinforced concrete)

Natural (NFRC -natural fiber reinforced concrete)





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STEEL FIBERS

Steel fibers have been used in construction materials since the '50s.

These fibers confer good mechanical properties on concrete mixes, but their use is gradually declining because they corrode easily.







Synthetic fibers

These fibers are the product of technological Research in the petrolchemical and textiles industry. Early applications in concrete date back to the '70s. The mostcommonly used fibers, varying in length from 0.5 to 6.0 cm are: Acrylic, aramidic, carbon, nylon, polyester, polyethylene and polypropylene.









Synthetic fibers properties

The mechanical properties and durability of Synthetic fibers vary depending on the polymer used to make them. This means that a particular fiber may be used to obtain specific performances on concrete.







RUREDIL







Ruredil has been working on research/ development of composite non-steel materials since the '80s, focusing on the study of structural synthetic fibers which improve the mechanical properties of mortars and concretes.



Product Description "RUREDIL X FIBER 54"

is a synthetic structural fiber designed to improve the durability and mechanical properties of concrete and s prayed concrete. Benefits using RXF 54:

- **1 Reduces or entirely eliminates plastic shrinkage.**
- 2 Increase durability, ductility, flexural strength, impact and fatigue resistance of concrete.

Ruredil - Chemicals for building

- **3** No corrosion, is not magnetic.
- **4** Chemically inert
- **5** Doesn't change concrete ability to be pumped
- **6 Perfect homogenisation on concrete**



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CHEMICAL, PHYSICAL AND MECHANICAL PROPERTIES OF RXF54

Material Shape Density Length Tensile strength Resistence to chemicals Conformity Copolmer/polypropylene Monofilament/fibrillated 0,91 kg/dm3 54 mm 620 - 758 Mpa TOTAL ASTM C-1116



Use of Ruredil X Fiber 54

- Dosage: 1.0 to 5.0 kg/m3 of concrete
- Special design software helps to calculate exactly the dose of RXF54 in floor applications.
- 1/12 or 1/15 the ratio between RXF 54 and steel fibers.
- Addition in concrete: on aggregates conveyor belt (on aggregates) or directly to the mixer at the concrete batching plant.







Industrial and residential floors

Replacing of wire mesh:

Advantages:

- No steel corrosion
- Reduce thickness of concrete.
- No problems in buying, stock, handling wire mesh.
- RXF 54 doesn't need spacers, connection tools and others that wire mesh needs.

- No manpower for placing wire mesh.
- Use of special floor design software.



Industrial and residential floors

Replacing of steel fibers:

Advantages:

- No corrosion
- less quantity to handle, 1/12 or 1/15 is the ratio between RXF 54 and steel fibres.

- Perfect homogenisation on concrete
- RXF 54 doesn't influence slump of concrete
- Better behaviour against fire.
- Use of special floor design software.



APPLICATIONS

-Industrial and residential floors (in and outdoor):

parking lots, storage areas, workshops, service stations, highways, airport runways, harbour(port) floors, foundations slabs, etc.

-Tunnelling and underground constructions: tunnels, supporting walls, sprayed concrete, etc.

- Precast industry:

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sewer pipes, wall panels, utility cabins, drinking water tanks, cable ducts, railway sleepers, roofing elements, etc.





References Greece Road Administration Egnatia Highway Toll Station







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References Egnatia Highway Toll Station





Ferrara Road Administration

<u>Impresa</u> C. & Figli Ferrara

Surface 5000 mq

<u>R'CK</u> 30

Additive Concretan 200 L













Ferrara road Administration























Military airport Galatina (Italy)





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Military airport Galatina (Italy)





Torino Caselle airport (Italy)





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Carbon stock in Statte (Italy)





















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Thank you for your attention !



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