FORTA-FERRO® is an easy-to-finish, colour blended fibre, made of 100% virgin copolymer/polypropylene consisting of a twisted bundle non-fibrillating monofilament and a fibrillating network fibre, yielding a high-performance concrete reinforcement system that maximises each of the critical fibre characteristics that contribute to long-term durability and crack-control performance.

FORTA-FERRO is superior to other macro fibres in two important user-friendly ways: Best mixing and Best finishing.

FORTA-FERRO offers complete 3-dimensional reinforcement that reliably allows replacement of non-structural steel in slab-on-grade concrete.

Features and Benefits
What benefits do FORTA-FERRO® fibres have over steel fibres?
FORTA-FERRO® (which means “Strong as Steel”) fibres are non-corrosive, non-magnetic and 100% alkali proof. In comparison testing vs. three types of steel fibres it was determined that it requires 1 kg of FORTA-FERRO® fibre to offer equivalent A.R.S. (Average Residual Strength) values to that of 10 kg of steel fibres. This one-to-ten dosage ratio offers tremendous advantages for FORTA-FERRO® fibres in the batching, pumping, placing and finishing processes.

Can FORTA-FERRO® replace wire mesh, steel mats or rebar in slab-on-grade concrete?
In most situations, FORTA-FERRO® can safely and reliably replace all non-structural steel in slab-on-grade concrete. Factors such as requirements from rack or point load, average daily traffic, slab thickness and sub-base must be considered. As always, it is best to contact Stratmore Construction Solutions Ltd before eliminating steel reinforcement.

How does FORTA-FERRO® affect placement and finishing?
FORTA-FERRO® fibres are added at the concrete batch plant and require 4-5 minutes at normal mixing speed for proper distribution. At low dosages, placement and finishing is similar to finishing normal concrete. They will reduce visual slump approximately 75mm at the 4.5kg/m² dosage, and will typically require a super-plasticiser or mid-range water reducer to provide flowability for placement. Using excessive mix water will naturally reduce concrete strength and create bleed water that will make the surface less durable. Good concrete finishing practices should be exercised. Dosages of 6kg/m³ upwards can be placed with ease (we recommend the use of a bug roller to push the fibres into the concrete paste before final finishing operations). FORTA-FERRO® fibres can be used in exposed aggregate and ground and polished floors and cannot rust or corrode.

Advantages of Using FORTA-FERRO® at 4.5kg per cubic metre of concrete
FORTA-FERRO® used at 4.5kg per cubic metre of concrete can allow for significantly extended joint cracking curling.

Reduced Curling and joint maintenance issues
FORTA-FERRO® at 4.5kg per cubic metre has been shown to significantly reduce or even eliminate slab curling in large slab on grade installations. Typical slab on grade applications exhibit diamond cracking at joints where curling has occurred and heavy traffic has caused the concrete to crack. These cracks require expensive and time-consuming maintenance over the life of the slab. Using FORTA-FERRO® at 4.5kg per m² of concrete helps reduce the number of joints required and the potential for curling at these joints thereby saving money.

Extended control joint spacing
With a properly proportioned concrete mix, good placing and finishing techniques and adherence to the techniques described to minimise cracking, floors with extended joint spacing of 120 to even 200 times the thickness of the slab can be achieved (18 to 30 metres for a 150mm thick slab). Good joints are expensive to create and maintain and coupled with a reduction in curling of the slab, significant long-term maintenance costs can be reduced by using FORTA-FERRO® at 4.5kg/m² of concrete.
Dosage (as a guide only)

2kg/m³  Temperature and shrinkage reinforcement only. Use for light duty applications including footpaths, cattle races, light-duty driveways, smaller precast items, etc.

3kg/m³  For moderate benefits to reduce cracking. Use for light commercial applications (including warehouse slab on grade), precast tanks & troughs, driveways, etc. As a superior alternative system to 668/665 wire mesh, dosage of 3.0 to 3.5kg.

4.5kg/m³  For best benefits and highest probability to reduce cracking from tension, curling and fatigue. Use for applications requiring maximum performance including industrial and commercial warehouse floors with extending joint spacing, applications where curling and joint maintenance are a concern, etc.

For specific applications, including those where steel reinforcement is specified (mesh, rebar or steel fibres), an engineering calculation for FORTA-FERRO® dosage can be provided. Typically, for most slab on grade applications demanding the best performance, specify and use 4.5kg of FORTA-FERRO® fibres per cubic metre of concrete.

Contact Stratmore Construction Solutions for more details. We have over 20 years experience with fibre reinforcement for concrete.