

STAHLCON[®]

Steel Fibre



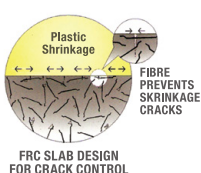
There are a number of factors that influence the behavior and strength of SFRC. These include: type of fibre, fibre length, aspect ratio of the fibre, the volume fraction of the fibre, fibre orientation and fibre shape.

Aspect Ratio (AR) is the ratio of fibre length against the diameter (l/d). The higher the AR and volume concentration of the fibres, the better is the performance with respect to the flexural strength, flexural fatigue, toughness, abrasion, impact and crack resistance.

Equivalent Flexural Ratio, $Re,3$ is defined as the ratio between the equivalent flexural strength, $fe,3$ and concrete strength, f_{ct} at which the first crack occurs. The design flexural strength, f_a takes into account the plastic moment distribution after the concrete crack. The higher the $Re,3$ value, the better the concrete performance.

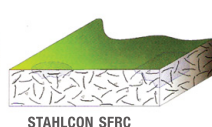
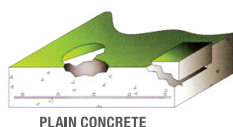
The main purpose of STAHLCON steel fibre is to increase the energy absorption capacity and toughness of the concrete which grant it with superior crack resistance. Steel fibres suppress and bridge the cracks in the concrete matrix hence avoid total loss of the bearing capacity after first crack (which happens in brittle fracture) by enhancing the concrete matrix a ductile behaviour.

Crack Prevention



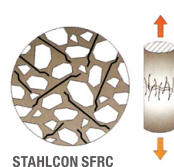
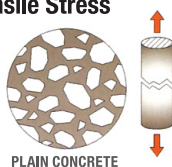
- STAHLCON Steel Fibres bridge across the micro-crack and prevent it from growing.
- It minimizes and even eliminates the shrinkage crack, giving in a better surface quality.

Ductility



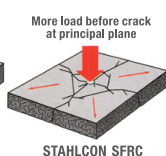
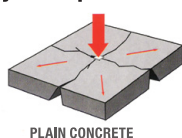
- STAHLCON Steel Fibres are evenly distributed throughout the concrete to prevent the delamination of concrete surfaces and edges.
- Fibres force a ductile behaviour to brittle concrete.

Tensile Stress



- Tensile force is transferred to STAHLCON Steel Fibres across the crack.
- The fibre with deformed shape provide additional anchorages which improve tensile load bearing capacity of concrete.

Energy Absorption



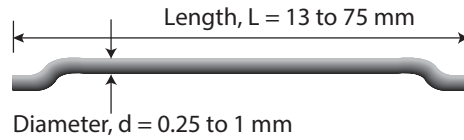
- STAHLCON Steel Fibres reinforcing in all direction and distribute load more evenly.
- SFRC has relatively much higher load bearing capacity due to its ability in absorbing large amount of energy before failure.

Steel fibres are commonly used in shotcreting, commercial as well as industrial floors with heavy loadings. Steel fibres is able to be applied as an addition or a total replacement for conventional steel bars or meshes in its applications.

Practical Advantages

- No reinforcement PLACEMENT MISTAKES & HANDLING PROBLEM
- Enhanced EDGE PROTECTION
- Shorter CONSTRUCTION TIME
- Reduced FLOOR THICKNESS
- Direct DISCHARGE CONCRETE
- Increased JOINT SPACINGS
- Provide COST SAVING

| | Fibre Type | MEGA MESH Polypropylene Fibre | STAHLCON Steel Fibre |
|------------------------------|------------|-------------------------------------|-------------------------|
| Cause | | | |
| Cracking in Concrete | | | |
| Reduced Plastic Shrinkage | | BEST | |
| Reduced Plastic Settlement | | BEST | |
| Reduced Segregation | | BEST | |
| Improved Hydration | | BEST | |
| Maximum Toughness Index | | BEST | |
| Fire Resistance | | BEST | BEST |
| Permeability | | BEST | BEST |
| Corrosion Resistance | | BEST | BEST |
| Greater Ductility | | | BEST |
| Flexural Toughness | | | BEST |
| Post-Crack residual strength | | | BEST |
| Crack width control | | | BEST |
| Fatigue Improvement | | | BEST |
| Impact Resistance | | | BEST |
| Abrasion Resistance | | | BEST |
| Long Term Shrinkage | | | BEST |
| Freeze-Thaw Damage | | | BEST |
| Tensile Load | | | BEST |
| Load Bearing Capacity | | | BEST |
| Additional Durability | | | BEST |



Aspect ratio (L/d) = 30 to 100
Tensile strength = 350 to 1700 MPa

Specification

| | |
|-----------------------------|---|
| Description | Hooked-end steel fibre glued in bundles to facilitate concrete mixing process |
| Material | Cold drawn wire |
| Elastic Modulus, E | 205,000 MPa |
| Coating | None |
| Packaging | Non-degradable bag (Non-water soluble) |
| Net Weight/ pallet | 1,200kgs = 60bags |
| Standard Compliances | Conforms to BS EN 14889-1:2006 & MS 2388:2010 - Group I - cold drawn wire |

| Profile | HE 0.75/60 | HE 0.55/35 |
|-------------------------------|--------------|--------------|
| Fibre Diameter, d (mm) | 0.75 (±0.04) | 0.55 (±0.03) |
| Fibre Length, L (mm) | 60 (±3) | 35 (±1.75) |
| Aspect Ratio, λ | 80 (±6) | 65 (±4.5) |
| Tensile Strength (MPa) | 1,100 (±5%) | 1,200 (±5%) |
| Quantity (pc/kg) | ±4,653 | ±14,490 |

*The above tolerances are allowed for their respective mean values and at least 95% of the individual specimens shall meet the specified tolerances as conformed to BS EN 14889-1:2006 specifications.

| | | |
|---------------------|---|--|
| Applications | <ul style="list-style-type: none"> -Industrial or residential flooring (jointed or joint less slab on grade, suspended slab on piles) -overlays -pavements -floor topping -precast products -segmental lining -cellar walls -blast-proof structures -safety vaults and etc | <ul style="list-style-type: none"> -Shotcrete applications (tunneling, slop stabilization, rehabilitation of old structures, swimming pools) -overlays -floor topping -pre-cast products -segmental linings -cellar walls -blast proof structures -safety vaults and etc |
|---------------------|---|--|

**Data given is liable to change and is given without obligation*



Segmental Lining



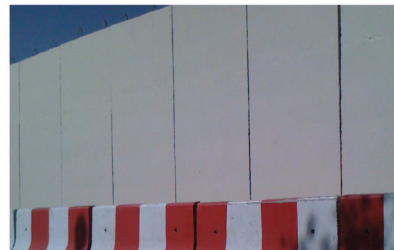
Industrial Flooring



Tunnel



Precast Products



Road Barrier & Noise Wall



Safety Vaults