

# LEKSO® 410

## Macro-Synthetic Monofilament Copolymer Fibre

LEKSO® 410 is a monofilament macro-synthetic copolymer fibre for reducing crack density and width, preventing plastic shrinkage and plastic settlement crack risk in concrete. LEKSO® 410 is used by adding to fresh concrete mixture.

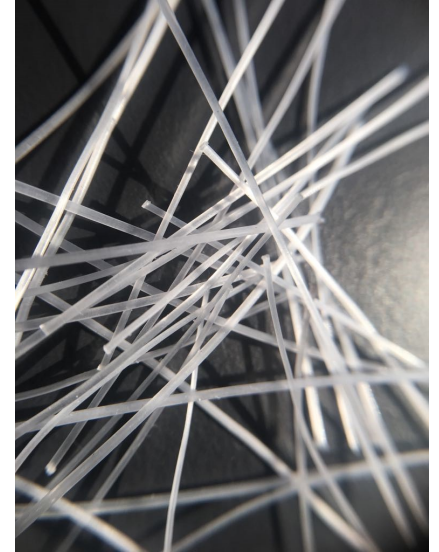


### Uses

- ◆ Large-area slab-on-grade concrete, slabs and coating concretes
- ◆ Industrial slabs
- ◆ Parking lots and loading areas
- ◆ Precast panel, facade and wall element production
- ◆ Concrete canal, precast concrete saddle and water structures
- ◆ Agricultural structure slab and ground concretes

### Advantages

- ◆ Reduces plastic shrinkage and settlement crack risk
- ◆ Increases the energy absorbing capacity of concrete
- ◆ Enhances flexural performance of hardened concrete
- ◆ Improves durability of concrete by reducing and limiting cracks
- ◆ Improves fire resistance of concrete
- ◆ Increases impact resistance of concrete
- ◆ Improves the cohesiveness of fresh concrete, reduces bleeding.
- ◆ Reduces the amount of steel mesh reinforcement



## LEKSO® 410 PROVIDES AN EFFECTIVE CRACK CONTROL

Plain concrete



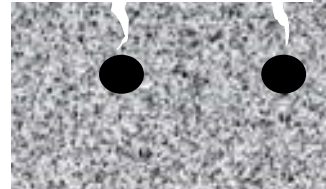
In plain concrete, the crack-tip concentration is very high and leads to a very rapid crack propagation.

LEKSO 410 added concrete



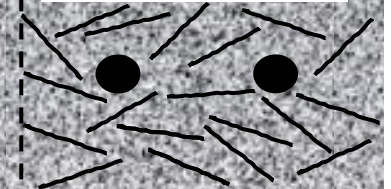
The crack-tip concentration of the cracks encountering the LEKSO 410 fibres reduces and hence their widths lessen and propagation is limited.

Plain concrete



In plain concrete, the settlement of fresh concrete is restrained by the reinforcement and the cracks form at the surface.

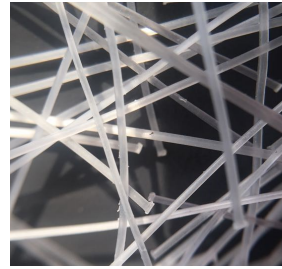
LEKSO 410 added concrete



LEKSO 410 prevents plastic settlement cracks and provides crack-free surface.

	Welded steel mesh	Hooked-end steel fibre	Micro-synthetic fibre	LEKSO® 410
Ease of handling & lightness	☹️	☹️	😊	😊
Corrosion resistance	☹️	☹️	😊	😊
Preventing plastic settlement cracks	☹️	😐	😐	😊
Preventing plastic shrinkage cracks	☹️	☹️	😊	😊
Performance as a secondary reinforcement	-	😊	☹️	😊
Load carrying capacity after peak load	😊	😊	☹️	😊

Technical Properties	
Color	White
Chemical structure	Synthetic copolymer
Nominal density (g/cm <sup>3</sup> )	0,91 (EN 13392)
Water absorption	None
Elliptical diameter, D <sub>1</sub> (mm)	0.35 ± 0.01
Elliptical diameter, D <sub>2</sub> (mm)	0.55 ± 0.01
Equivalent diameter (mm)	0.450 (acc. to EN 14889 – 2)
Length (mm)	40.0 ± 4.0
Number of fibres per kg	185,000 (± 1%)
Tensile strength, R <sub>m</sub> (MPa)	> 600
Modulus of elasticity (MPa)	~ 8000 (between %10R <sub>m</sub> -%30R <sub>m</sub> )
Elongation at break (%)	~ 9
Melting temperature (C°)	200
Ignition point (C°)	365
Heat & electrical conductivity	Low
Acid resistance	High
Alkali & salt resistance	High
Corrosion resistance	Does not corrode



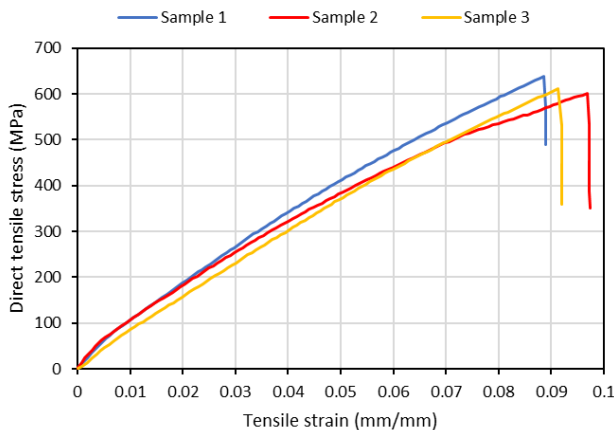
### Package, storage & shelf life

- LEKSO® 410 is available in 1 kg nylon bags.
- Depending on the target performance, the recommended dosage ranges 1 kg—6 kg per m<sup>3</sup> concrete.
- The shelf life is 36 months. Protect from high temperature and direct sunlight.

### Usage

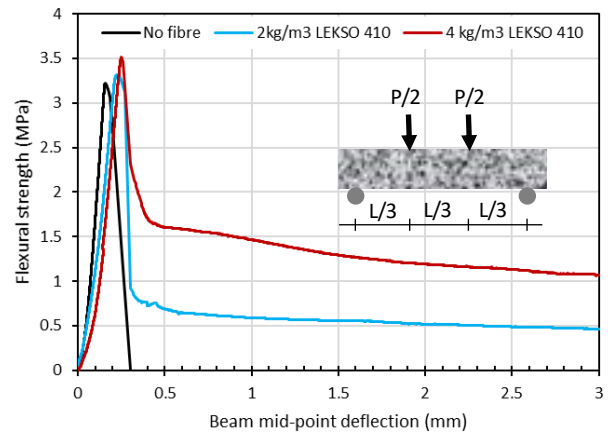
- Lekso 410 should be added to fresh concrete at the concrete plant. In case of adding at the concrete plant, LEKSO 410 should be added to the aggregate belt homogeneously. If it is possible, LEKSO 410 is advised to be added to the half of the mixing water and mixed in a high speed together with the other concrete ingredients for obtaining more homogeneous fibre dispersion. LEKSO 410 can directly be added to the fresh concrete inside a mobile mixer at the construction site. In case of adding to fresh concrete inside the mobile mixer, Lekso 410 should be added step by step by avoiding fibre clustering and coagulation. To obtain more homogeneous fibre dispersion, an additional mixing time (3 – 5 minutes at normal speed) should be applied and must be ensured that the homogeneous fibre dispersion is obtained.

### DIRECT TENSILE TEST ON LEKSO 410 FIBRE



BASED ON THE DIRECT TENSILE TEST CARRIED OUT AT THE TECHNICAL TEXTILES RESEARCH & DEVELOPMENT CENTER LOCATED IN DOKUZ EYLÜL UNIVERSITY TINAZTEPE CAMPUS—İZMİR WITH AN INSTRON 5969 UNIVERSAL TEST MACHINE EQUIPPED WITH A VIDEO EXTANSOMETER

### FOUR-POINT BENDING TEST ON LEKSO® 410 ADDED CONCRETE



BASED ON THE FOUR-POINT BENDING TEST CARRIED OUT AT THE CONSTRUCTION MATERIALS LABORATORY OF DOKUZ EYLÜL UNIVERSITY, DEPARTMENT OF CIVIL ENGINEERING WITH A CLOSED-LOOP UNIVERSAL TESTING MACHINE



LEKSO 410 presents homogeneous and random fibre dispersion with an appropriate mix design (4 kg/m<sup>3</sup> fibre dosage)



LEKSO 410 enhances the post-peak load carrying capacity of concrete by bridging the cracks (See ASTM C1018 toughness indices) (4 kg/m<sup>3</sup> fibre dosage)

	Plain concrete	2 kg/m <sup>3</sup> LEKSO 410	4 kg/m <sup>3</sup> LEKSO 410
Compressive str. (MPa)	36	36	35
Flexural strength (MPa)	3.20	3.30	3.50
<i>ASTM C1018 Toughness indices</i>			
<i>I<sub>5</sub></i>	1.0	2.29	3.61
<i>I<sub>10</sub></i>	1.0	3.25	6.26
<i>I<sub>20</sub></i>	1.0	4.96	10.61

### Legal liability

The technical recommendations in this product data sheet are based on the experimental studies performed on reference concrete mixtures designed in the R&D laboratories of LYKSOR. The results may not be applicable to different concrete mixtures produced with different materials than the ones used in the experiments in Lyksor. All customers and users are required to determine the appropriate LYKSOR products for their intended use and to test the suitability of LYKSOR product for their application. Please contact LYKSOR for the appropriate product selection and usage details. LYKSOR is not responsible for the improper usage of the products.