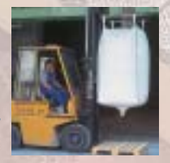
Construction films

Protection of scaffolds

Papermatch film

Fabrics



Container bags

Films

Twines

Ropes

Regranulates

Natural twines

motvoz

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motvoz since 1920

Polypropylene fibers for reinforcing concrete

New
new registered trademark

FIBRILs
SLOVENIJA

FIBRILs F
fibrilated fibres

FIBRILs FFR
uninflammable fibrilated fibres

FIBRILs S
monofilament fibres

FIBRILs SFR
uninflamable monofilament fibres

- *solution for more building problems at the same time*
- *reduction of cracks and micropores in the concrete*
- *increasement of pressure strength of the concrete*
- *increasement of bending strength of the concrete*
- *reduction of permeability of the concrete*
- *increasement of tenacity, resistance to cold, hits, abrasion, and rubbing*
- *reduction of necessary number of dilatation slots*
- *increasement of resistance against most of the acids and corrosion*
- *reduction of the elastic module, the concrete is more elastic*
- *high fire resistance*
- *reduction of risk of segregation and bleeding of concrete*
- *health save (polypropylene is an inert material)*
- *easy to use*
- *complete or partial abandoning of iron frames*
- *reduction of costs of building*
- *wide possibilities of usage*
- *good ability of dispersion*
- *environmentaly friendly*

FIBRILs fibres for reinforcing concrete

*From our wide production program for construction industry (PE films, PP and jute ropes, PP fabric for scaffolds) we also offer **FIBRILs** fibres for reinforcing concrete. With the addition of the fibres we achieve much better mechanical properties and we resolve the problems during the process of building (cracks in the concrete, etc.). **FIBRILs** is an addition which is verified in practice and has been tested at the Slovenian National Building and Civil Engineering Institute.*

Cracks in concrete without the addition of FIBRILs fibres

Improvement of concrete with the addition of FIBRILs fibres

Applications:

*The addition of **FIBRILs** fibres into concrete reduces the rise of cracks in micropores which start because of the different influences and shrinkage during the process of drying of concrete. Also the concrete becomes more water-sealant and the rocess lowers the danger of decay of concrete because of water or ice which in turn accelerate the rise of micropores during the phase of drying.*

*With the addition of **FIBRILs** fibre into the concrete mixture the pressure, bending, and wear out strength are increased. Also, the rise of cracks in the concrete which happen because of shrinking of concrete, is reduced.*

***FIBRILs** fibres increase the resistance of concrete and prolong the collapse time in case of fire.*

A large number of fibres which are spread over the concrete mass are with its large specific surface able to relax and absorb tensions which begin during the shringage of fresh concrete during the drying period.

***FIBRILs** fibres are made out of fibrilated or filament polypropylene fibres. According to the usage need they are produced in variety of lengths (6, 12, 18, 36, 54 and 66 mm).*

Areas of usage:

***FIBRILs** fibres are used when making industrial floors, pavements, screeds, plates, injected concretes, tunnels, fire-proof catching pools, roads, airports, silos, dams, support walls, hydroelectric station dams, partitionwalls, ports, parking lots, support pillars, edges of bridges, pools for purifying plants, plasters, facade linings, different concrete elements, and when building apartment buildings in general.*

Dosage:

***FIBRILs** fibres are packed in PE or paper packaging bag in the amount that guarantees optimal properties for 1m^3. The results of testing have shown that the optimal properties are achieved by adding 0,91kg/m^3 of concrete.*

For more demanding and special applications the dosage is performed according to a special project.

All other additions to the concrete are used in the same way as when working with the ordinary concrete.

Means of application:

***FIBRILs** fibres are blend into the concrete mixture and mixed for some minutes until the fibres are not spread out evenly in the concrete. We recommend gradual dosaging to ensure the even spreading of the **FIBRILs** fibres. The fibres are resistant to injuries during the mixing and do not make the quality of the surfaces worse.*

*The usage of **FIBRILs** fibres is easy as it does not cause any problems during mixing.*

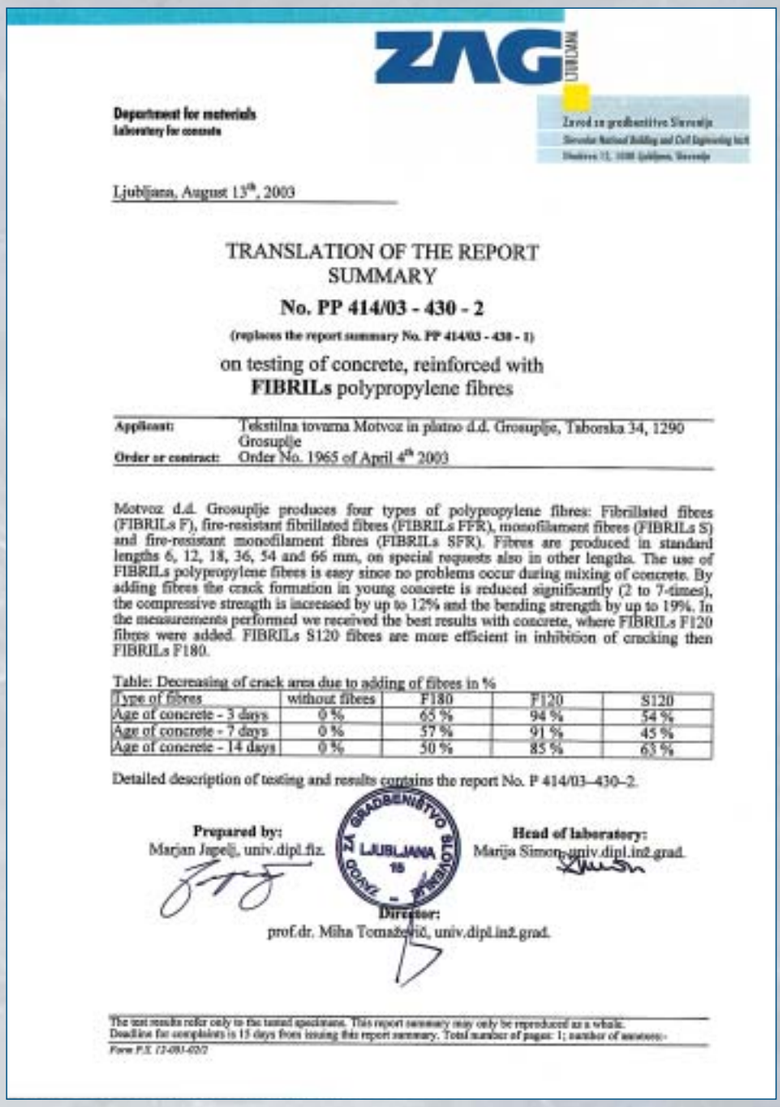
*In spite of the addition of **FIBRILs** fibres the care of concrete is essential and it is being performed as with the usual concrete.*

*The concrete with the **FIBRILs** fibres can be built in with the help of a holder, conveyor belt, pumps, or as injected concrete. It does not harm the pipe.*

Clean wiht water after usage.

***FIBRILs** fibres are stored in the original packaging in a dry place.*

Constant care for quality



ZAG LJUBLJANA

Department for materials
Laboratory for concrete

Zavod za gradbeništvo Slovenije
Slovenian National Building and Civil Engineering Institute
Dimičeva 12, 1000 Ljubljana, Slovenija

Ljubljana, August 13th, 2003

TRANSLATION OF THE REPORT
SUMMARY

No. PP 414/03 - 430 - 2

(replaces the report summary No. PP 414/03 - 430 - 1)

on testing of concrete, reinforced with
FIBRILs polypropylene fibres

Applicant: Tekstilna tovarna Motvoz in platno d.d. Grosuplje, Taborska 34, 1290 Grosuplje
Order or contract: Order No. 1965 of April 4th 2003

Motvoz d.d. Grosuplje produces four types of polypropylene fibres: Fibrillated fibres (FIBRILs F), fire-resistant fibrillated fibres (FIBRILs FFR), monofilament fibres (FIBRILs S) and fire-resistant monofilament fibres (FIBRILs SFR). Fibres are produced in standard lengths 6, 12, 18, 36, 54 and 66 mm, on special requests also in other lengths. The use of FIBRILs polypropylene fibres is easy since no problems occur during mixing of concrete. By adding fibres the crack formation in young concrete is reduced significantly (2 to 7-times), the compressive strength is increased by up to 12% and the bending strength by up to 19%. In the measurements performed we received the best results with concrete, where FIBRILs F120 fibres were added. FIBRILs S120 fibres are more efficient in inhibition of cracking then FIBRILs F180.

Table: Decreasing of crack area due to adding of fibres in %

Type of fibres	without fibres	F180	F120	S120
Age of concrete - 3 days	0 %	65 %	94 %	54 %
Age of concrete - 7 days	0 %	57 %	91 %	45 %
Age of concrete - 14 days	0 %	50 %	85 %	63 %

Detailed description of testing and results contains the report No. P 414/03–430–2.

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Director: prof.dr. Miha Tomaževič, univ.dipl.inž.grad.

ZAVOD ZA GRADBENIŠTVO SLOVENIJE LJUBLJANA 15

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Wide usage