Material Safety Data Sheet according to EC-regulation 91/155/ECC

1. Identification of the substance/preparation and of the company/undertaking

Identification of the substance or preparation
FRP Fiber Reinforced Polymer is a composite material made of 75% glass fibers as reinforcement of a polymer matrix. FRP is made in two processes, first whereby the glass fiber is manufactured and formed and second the bonding with the polymer matrix during the molding process.

Use of the substance/preparation Fiber Reinforcement Polymer

2. Composition/Information on Ingredients

Fiber glass reinforcement is a rod with a Ø 4 mm to Ø 32 mm with a spiral ribbed profile consisting of fiber glass related polymer based epoxy resin.

Comparative Characteristics	Steel	FRP
Ultimate tensile strength	460	1000
Tensile Modulus	200	50
Density	25	1.95
Corrosion resistance to aggressive media	Subject to corrosion	Not subject to corrosion
Thermal conductivity	48-58	0.25
Electro conductivity	Conducts electricity	Non conducting/dielectric
Environmentally friendly	Environmentally friendly	Subject to low hazard class 4

3. Hazards Identification

Non-toxic, the degree of impact on the human body and the environment relates to hazard class 4 (low hazard). Can be used in industrial and civil road construction, as well as in concrete structures instead of traditional steel reinforcement.

4. First Aid Measures

After Inhalation, dust may cause irritation to upper respiratory tract and lungs. Move victim to fresh air.

After Skin Contact, dust can cause rash, conjunctivitis, itching and coughing. Wash effected area with soap and water. Wear protective clothes..

After Eye Contact, prolonged or repeated exposure to fiberglass dust can cause pain and irritation. Flush eyes with running water and consult a doctor.

After Ingestion, is required to consult a doctor. Do not induce vomiting or give anything by mouth before consulting a doctor.

5. Fire-Fighting Measures

Suitable Extinguishing Agents
Carbon Dioxide dry chemical for small fires and Foam/Water Fog by large fires.

Unsuitable extinguishing agents: none
Burning bar will create an acrid black smoke and odor that is offensive.
Fire fighters must wear self-contained breathing apparatus. Others must seek fresh air immediately.

6. Handling and Storage

Deliver, store and handle Fiberglass bars or coils in accordance with manufacturer's instructions to prevent damage. Do not store bars or coils directly on the ground. All times use pallets underneath to keep the material free from dirt and to guarantee easy handling.
Store Fiberglass bars and coils under covers to avoid direct sunlight and to prevent in contact with chemical substances.

7. Personal Protective Equipment

Wear safety glasses with side shields during mechanical cutting operations

8. Stability and Reactivity

Dangerous Reactions: No dangerous reactions known.

Primary Irritant Effect: No irritant effect
The product does not have any harmful effects, when used and handled according to specifications. The product is not subject to classification according to the calculation method of the general Classification Guidelines.

9. Physical/Chemical Characteristics

Characteristics	
Solubility in Water	Insoluble
Appearance and Odor	Gray Solid
Specific Gravity (Water = 1)	2.0
Boiling Point	NA
Evaporation Rate (Butyl Acetate = 1)	NA
Vapor Density (Air = 1)	NA
Vapor Pressure (mm Hg.)	NA

10. Application Areas

Composite reinforcement does not corrode when used in environments harmful to steel reinforcement such as salt, acid and including in an alkaline environment of concrete.
Used in the construction of sewers and structures below ground to exclude the occurrence of stray currents and electro osmosis.
When repairing concrete structures damaged by the influence of aggressive media (especially chloride).

Radio transparent (conducts radio waves)

The proposed fixture is diamagnetic and has dielectric properties, which allows it to be used in buildings and facilities such as hospitals, airports, radar stations and various military installations.

Lighting columns, electric poles and power lines traverse isolation.

Used in structures subjected to constant heat up to 60˚ C and short to 100 ˚ C.
The coefficient of thermal expansion of the reinforcement and concrete are similar to each other, which prevents cracking under temperature changes.

Used in the construction of agricultural structures and poultry barns as reinforcement does not contain phenol resins, as shown by Sanitary-Epidemiological Conclusion.

11. Material Characteristics

Characteristics		
Tensile Strength	Ø 4 – 14 mm	1100 N/mm^2
Tensile Strength	Ø 16 – 20 mm	1000 N/mm^2
Tensile Strength	Ø 22 – 32 mm	800 N/mm^2
Shear Strength		150 N/mm^2
Electrical Strength	Ø 4 – 32 mm	40 KV/mm
Thermal Conductivity	Ø 4 – 32 mm	0.25 W/mK
Density	Ø 4 – 32 mm	1.95 Kg/dm^3
Tensile Modulus	Ø 4 – 32 mm	50 KN/mm^2

12. Control Measures

Respiratory Protection
None normally required; if airborne dust concentrations exceed permissible exposure levels, use protection for nuisance dust.

Ventilation
Use local exhaust if necessary to prevent nuisance dust.

Eye and Face Protection
Wear safety glasses with side shields.

Skin Protection

Wear protective gloves to reduce irritation from dust or slivers.

13. Disposal considerations

The product is classified as urban waste according to EC Resolution of 20.12.93 which establishes a list of wastes under requirements of EC Directive 75/442, modified by EC Directive 91/156. The material can be either recovered or recycled according to EC Directive 94/62 requirements.

14. Transport information

Not classified as hazardous for land, maritime and air transport.

15. Legal Note

This information is based on current knowledge and is intended to describe the product for the purpose of health, safety and environmental requirements only. It should therefore not be construed as guaranteeing any specific property of the product.

This Material Safety Data Sheet has been prepared in accordance with the EC Directives 91/155.