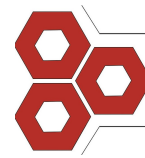


Livoton PFA - protein foaming agent

LIGHTWEIGHT CONCRETE TECHNOLOGIES LLC

UKRAINE, KHARKIV, MOSKOVSKIY AVENUE, BUILDING 273

Phone: +380(66)888-72-02 e-mail: livoton@ukr.net www.livoton.com.ua



LIVOTON
PROTEIN FOAMING AGENT

Livoton PFA - protein foaming agent for cellular concrete

We offer you protein foaming agent **Livoton PFA** for foam concrete.

Livoton PFA is a foaming agent made up of protein hydrolyzed, which form highly stable foam.

Livoton PFA is used in mixes of cellular concrete from 150 to 1200 kg/m³, where it is important to reach the best mechanical strength, for the production of cellular concrete blocks.

Livoton PFA warrants high stability of the foam, which causes no chemical reaction in the concrete but merely serves as wrapping material for the air entrapped. **Livoton PFA** produces no toxic fumes or emission over its lifetime. Store-life of the **Livoton PFA** is guaranteed to be at least 12 months when adhered to instructions.

The application rate of of the foaming agent depends on the density of the foam concrete and ranges from 0.9 to 2 kg / m³ (D1000-D200).

SPECIFICATION

| No | Name of product | unit | Type of packaging | price in USD |
|---|-------------------------------------|------|--|--------------|
| 1 | Protein foaming agent "Livoton PFA" | Kg | IBC of 1070 kg, or plastic barrels of 230 kg | 0.9 |
| Including custom duties & clearance in exporting country. conditions FCA c.Kharkiv, Ukraine in accordance with «INCOTERMS-2020» | | | | |

I hope that you are interested in offer.

Sincerely,
Gennady Dubovik

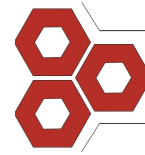
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PROTEIN FOAMING AGENT LIVOTON PFA FOR FOAM CONCRETE



BASE RECIPE OF FOAM CONCRETE

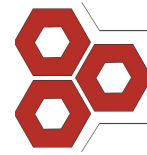
| 1 cubic meter | | | | | |
|---|---------------------------|----------|------|----------|------------------|
| Density of foam concrete, kg/cub. Meter | Cement, CEM I – 42.5N, kg | Sand, kg | W/c | Water, l | Water in foam, l |
| 300 | 270 | 0 | 0,70 | 122 | 60 |
| 400 | 300 | 0 | 0,66 | 135 | 57 |
| 500 | 305 | 100 | 0,65 | 138 | 53 |
| 600 | 310 | 210 | 0,64 | 140 | 50 |
| 700 | 315 | 305 | 0,62 | 142 | 47 |
| 800 | 320 | 400 | 0,61 | 145 | 45 |
| 900 | 335 | 480 | 0,59 | 151 | 42 |
| 1000 | 350 | 560 | 0,58 | 158 | 39 |

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DIRECTIONS FOR USE:

1. It is necessary to prepare a 2.5% solution of a foaming agent. (Working solution is prepared in a ratio of 1: 40). It is necessary to take 2.5 kg of foam concentrate and 97.5 liters of water. The water temperature should not exceed 35 ° C.
2. To obtain a foam foaming agent solution is passed through a foam generator. The recommended air and the liquid pressure in the foam generator - 0,6 MPA. Recommended weight of the foam – 65-80 g / liter. Properly obtained foam is very stable, has a very high load-bearing capacity. The first drop is removed after 6-8 minutes..
3. Foam must be mixed with the cement mortar with w/c 0.6-0.7 (should consider mixing water and water in the foam). The mixing time depends on the type of foam mixer. This time should be sufficient to obtain a homogeneous mixture.

OTHER NOTES:

After prolonged storage, freezing or at high ambient temperatures foaming agent before use must be thoroughly mixed.

For consistent quality foam is necessary to wash the foam generator nozzle and hose after use.

If you previously used synthetic foaming agent it is necessary to wash the foam generator, the container with the solution hoses, replace the packing foam generator, to avoid damping foam.

At higher ambient temperature, to prevent loss of properties for storing foaming working solution is not more than 48 hours.





Safety Data Sheet

Protein foaming agent Livoton PFA

1. Identification of the substance

Foam agent Livoton PFA

Application: Concentrate for technical foams for cellular building materials
Manufacturer: **LIGHTWEIGHT CONCRETE TECHNOLOGIES LLC, UKRAINE**
IN 2894802276
address: 61000, Ukraine, c. Kharkiv, MOSKOVSKIY AVENUE, building 273
Tel. 0668887202, 0674161488,
e-mail: livoton@ukr.net

2. Risks

No special risks.

3. Composition / information on ingredients

Chemical characterization: Colloidal surfactants.

| Components | CAS No. |
|---------------------|----------------------------|
| Water | 7732-18-5 |
| Protein Hydrolysate | 69430-36-0 |
| Inorganic Salts | No single CAS # applicable |
| Ferrous Sulfate | 7720-78-7 |

4. Measures for first aid

Eye contact: rinse immediately with clean running water, keeping eyelids open. During long-term disorders, consult a doctor.

Ingestion: Rinse the mouth with water. If you have symptoms, consult a doctor.

5. Fire fighting measures

Special risks: none.

6. Accidental Release Measures

Personal precautions: Avoid contact with eyes.

Environmental protection: Do not allow to enter the environment.

7. Handling and Storage

Handling: Do

not allow product to the stomach, eyes, avoid prolonged and repeated contact.

Storage: Storage temperature - 10 ° C to + 35 ° C. Keep away from heat!

8. Limitation of exposure and personal protective equipment

Boundary value: No, see. 7.

Hand protection: waterproof gloves

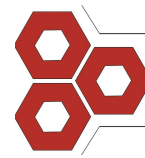
Eye protection: protective gloves

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9. Physical and chemical properties tested for Form: Liquid

Color: dark brown

Smell: typical

Boiling point: 100 ° C

Density: 1.09 g / cm³ DIN 53 217 Solubility in water: miscible in water

PH-value: 7.2 ± 0.5

Flash point: Not applicable

Flammability: Not applicable

Explosion Limits: Not applicable

10. Stability and reactivity

Thermal decomposition: The product does not support combustion.

Hazardous decomposition products:

Under ordinary conditions: no

Thermal decomposition: no

Conditions to avoid: high temperature

Conditions to avoid: acids and bases

11. Toxicological

The properties of the individual components are not described.

Primary cutaneous effects are not annoying

The initial impact on the mucous does not irritate

12. Ecological information

Removability: The product should not enter without prior treatment in sewage treatment plants, the environment or water.

The product may be removed from water absorption treatment by activated sludge plants.

Comply with local regulations for drainage.

Ecotoxicity: The properties of the individual components are not described

13. Note on disposal

Always comply with local official regulations.

14. Transport information

Non-dangerous goods according to transport regulations

UN number: none

15. Regulatory

Classification:

It does not require labeling according to Gef. Stoff V and EU regulations

The above in this safety data sheet information is based on our current level of knowledge and experience and describe the product in terms of safety requirements. These should in no way be considered properties of the product. Other properties or applicability of the product for the specific purposes of the application of these safety data sheet of the product should not be. The recipient of the product is solely responsible for complying with possible copyrights and existing laws and regulations
This safety data sheet replaces the previous product version.