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POLITERM® BLU FEIN

COATED POLYSTYRENE BEADS FOR THERMO-ACOUSTIC SCREEDS LIGHTWEIGHT CONCRETE

EDILTECO® Canada

FEATURES

POLITERM® BLU FEIN aggregate is the essential element for our entire flooring line. These virgin, expanded polystyrene beads are granulometrically controlled, coated with our patented E.I.A. a specially designed adjuvant developed in our laboratory. Lightweight concrete developed with POLITERM® BLU FEIN offer good insulating properties and can be used for all kinds of floor covering substrates, screeds, insulating underfloor forms and under screeds, feather levelling, slope structures, various other fills, etc. They provide thermal insulation and soundproofing against impact sound. **Our granulates are expanded and processed in our plants: they're made of pure virgin high quality raw material.**

Application

Lightweight concrete containing POLITERM® BLU FEIN have densities varying between 200 kg/m³ *(12.49 lb/ft³)* and 1500 kg/m³ *(93.64 lb/ft³)*, these densities are lower than that of traditional concrete: between 40% and 90% lower weight, which will make structures much lighter.
This reduction in mass is a result of the reduction of traditional granulate through the addition of POLITERM® BLU FEIN which provides conductivity coefficients as low as 0.066 W/mK. It's an ideal insulator for development of various formulations of lightweight thermo-acoustic concretes, for adding insulating and soundproofing properties to various kinds of existing substrates in apartment buildings and single-family houses during new construction and renovation. It can be used for all floor surfacing, screeds, underfloor forms, insulating underfloor forms and under screeds, feather levelling, slope structures, thermal insulation and soundproofing against impact sound.
Other fills as well.
In the case of POLITERM® BLU FEIN lightweight concrete with formulations starting at 500 kg/m³ *(31.21 lb/ft³)*, when finished with a ruler (and depending on thickness), the properties of the beads mean that tiles can be **directly installed after just 48 hours. No smoothing needed.**

Technical details

MOST COMMON POLITERM® BLU FEIN LIGHTWEIGHT CONCRETE FORMULATIONS							TRADITIONAL CONCRETE
Density	**200 kg/m³** *(12.49 lb/ft³)*	**300 kg/m³** *(18.73 lb/ft³)*	**500 kg/m³** *(31.21 lb/ft³)*	**800/900 kg/m³** *(49.94/56.19 lb/ft³)*	**1200 kg/m³** *(74.21 lb/ft³)*	**1500 kg/m³** *(93.64 lb/ft³)*	
Weight savings (compared to a traditional concrete)	90%	88%	80%	65%	50%	40%	Average weight of a traditional cement is 2400 kg/m³ *(149.83 lb/ft³)*
Thermal conductivity $\lambda_{10,dry}$	0.066 W/mK LNE trial No. K0601065	0.082 W/mK	0.104 W/mK	0.176 W/mK	-	-	1.75 W/mK
Reaction to fire	A2 - s1, d0						
Acoustic reduction for impact sound	14 dB with 5 cm *(2 in)* thickness (estimate)	15 dB with 5 cm *(2 in)* thickness (estimate)	17 dB with 5 cm *(2 in)* thickness (estimate) 19 dB with 5 cm *(2 in)* thickness + SC1 thin acoustic underlay in FCBA Test No° 404/08/140	19 dB with 5 cm *(2 in)* thickness (estimate)	19 dB with 5 cm *(2 in)* thickness (estimate)	19 dB with 5 cm *(2 in)* thickness (estimate)	
Min. thickness	3 cm *(1 3/16 in)*	3 cm *(1 3/16 in)*	5 cm *(2 in)*	5 cm *(2 in)*	4 cm *(1 9/16 in)*	4 cm *(1 9/16 in)*	
Max. thickness	No maximum						
R value (RSI) for 1" thickness	2.22 *(0.39)*	1.8 *(0.317)*	1.38 *(0.243)*	0.817 *(0.1439)*	0.4384 *(0.077)*	N/A	
Compression value Mpa (PSI)	0.69 *(100)*	1.61 *(234)*	2.24 *(385)*	5 - 5.77 *(725 - 836)*	10.01 *(1452)*	15.67 *(2273)*	
Application temperature	+ 5 °C and + 30 °C *(+ 41 °F and + 86 °F)*						
Uses	- Underfloor forms. - Supplement for thermal and acoustic insulation (impact sounds). - Fill. - Slope structures. - Floor levelling.	- Underfloor forms. - Supplement for thermal and acoustic insulation (impact sounds). - Fill. - Slope structures. - Floor levelling.	- Underfloor forms. - Supplement for thermal and acoustic insulation (impact sounds). - Fill. - Slope structures. - Floor levelling. - Substrate for composite coverings.	- Underfloor forms. - Supplement for thermal and acoustic insulation (impact sounds). - Fill. - Slope structures. - Floor levelling. - Screeds.	- Underfloor forms. - Supplement for thermal and acoustic insulation (impact sounds). - Fill. - Slope structures. - Floor levelling. - Screeds.	- Underfloor forms. - Supplement for thermal and acoustic insulation (impact sounds). - Fill. - Slope structures. - Floor levelling. - Substrate for composite coverings.	
Certification	CC FAT AVIS TECHNIQUE POLITERM® 200 et 300	CC FAT AVIS TECHNIQUE POLITERM® 200 et 300		CC FAT DTA DOCUMENT TECHNIQUE D'APPLICATION POLITERM® 900 et 1200	CC FAT DTA DOCUMENT TECHNIQUE D'APPLICATION POLITERM® 900 et 1200		

PREPARATION

POLITERM® BLU FEIN
Adjuvanted beads, 2 mm *(1/8 in) granulometry.*

Available in 170 litre bags *(44.90 gallons)*.

Cement mixer preparation

- Always keep the cement mixer rotating, then first pour cement and sand (if any).
- Add 2/3 of the water required by the formulation (see formulation table).
- Add POLITERM® BLU FEIN beads.
- Allow it to mix for 2 minimum minutes.
- Add the rest of the water.
- Allow it to mix for minimum 5 minutes, until a homogeneous paste, uniform in colour, is obtained.
- To obtain a homogeneous mixture, do not fill more than 80% of the volume of cement mixer.
- On the first trowel, the cement mixer will be dry and the product will tend to stick to the walls. Add a bit of water to the mixer walls and allow it to mix for another 1 to 2 minutes, but be careful not to add any other water.
- Creating lightweight concretes with a manual mixer or a mixer pump is also possible, follow the same instructions.
- When using a mixer pump, feed a mixture of water + cement into the pipe prior to the first mix.

Bag formulation

Quantity for 1 bag	**170 litre bag** *(44.90 gallons)*		
Density kg/m³ *(lb/ft³)*	300 *(18.73)*	500 *(31.21)*	800 *(49.94)*
Cement in kg *(lb)*	60 *(132.28)*	60 *(132.28)*	75 *(165.35)*
Sand in kg *(lb)*	0	38 *(83.78)*	125 *(275.58)*
Water in litres *(gallons)*	28 *(7.39)*	28* *(7.39*)*	35* *(9.24*)*

*adjustable according to sand moisture level.

PREPARATION

Preparation at a concrete mixing plant (truck mixer)

Two methods are possible, depending on recommendations regarding different formulations:

1st method

- Add POLITERM® BLU FEIN beads into the truck mixer manually or by using appropriate equipment (POLITERM® BLOW READY MIX blowing machine to load POLITERM® BLU FEIN into the truck mixer).
- Add a portion of the water (30 to 50%) and allow truck mixer to revolve at high speed for 5 minutes.
- In the planetary mixer, prepare the grout, composed of cement, sand (if needed) and the remaining water.
- Pour the grout into the truck mixer and mix at high speed for 5 to 10 minutes, until resulting paste is homogeneous in colour.

2nd method

- Add POLITERM® BLU FEIN beads into the truck mixer manually or by using appropriate equipment (POLITERM® BLOW READY MIX blowing machine to load POLITERM® BLU FEIN into the truck mixer).
- In the planetary mixer, prepare the grout, composed of cement, sand (if needed) and all the water.
- Pour the grout into the truck mixer and mix for 5 to 10 minutes, until resulting paste is homogeneous in colour.

Upon arriving at the construction site, prior to pouring out the lightweight concrete, allow the truck mixer to turn at high speed for 1 minute for each cubic metre (35.31 ft³) (anyway for not less than 4 minutes).

Usage warning for preparation of POLITERM® BLU FEIN formulations

- Equipment used must be clean and free of any materials from previous operations.
- If synthetic anti-cracking fibres are used, it is essential that they are introduced at the time of mixing (either directly into the planetary mixer at the plant, or at the time sand is added).
- Follow water quantities.
- Never wet lightweight concrete after mixing.
- Mixture must be liquid but compact and foamy.
- Fluid application of POLITERM® BLU FEIN cements require training of the operator and calibration of the formulation at each mixing plant (contact us regarding instructions for fluid application).

Formulations

Density kg/m³ *(lb/ft³)*	Cement kg *(lb)*	POLITERM® BLU FEIN litres *(gallons)*	Sand kg *(lb)*	Water litres *(gallons)*
200 *(12.49)*	200 *(440.93)*	850 *(224.55)*	-	80 *(21.13)*
300 *(18.73)*	300 *(661.39)*	850 *(224.55)*	-	140 *(36.98)*
500 *(31.21)*	300 *(661.39)*	850 *(224.55)*	190 *(418.88)*	140* *(36.98*)*
800/900 *(49.94/56.19)*	300 *(661.39)*	680 *(179.64)*	500 *(1102.31)*	140* *(36.98*)*
1000 *(62.43)*	300 *(661.39)*	600 *(158.50)*	650 *(1433)*	140* *(36.98*)*
1200 *(74.21)*	300 *(661.39)*	510 *(134.73)*	850 *(1873.93)*	140* *(36.98*)*
1500 *(93.64)*	300 *(661.39)*	420 *(110.95)*	1050 *(2314.85)*	140* *(36.98*)*

* Adjustable according to sand moisture level. Other formulations and applications: contact us.

APPLICATION

Lightweight concrete formulated with POLITERM® BLU FEIN is easy to apply because it is perfectly pumpable over long distances and from high heights. Its foamy consistency means simple and efficient application for levelling and creation of cover substrate. Lightweight concrete is ready to directly receive glued tiles and other coverings.

Support advisories

Lightweight concrete can be used on all kinds of flooring and substrate if they can bear the necessary loads and conform with current norms.
Flooring and substrate must be cleaned of any scrap, waste, plastering sheets and any other materials left on the jobsite. Minimum application thickness is 5 cm *(2 in)* and 4 cm *(1 9/16 in)* starting with 1200 kg/m^3 *(74.21 lb/ft^3)*. Same minimum thickness is required over ducting, pipes, etc.

Application

1/ Substrate separation

For separation, place a band of resilient material with minimum thickness of 3 mm *(1/8 in)*, except 5 mm *(1/4 in)* for heating floors, around the room and around any elements coming in contact with the lightweight concrete (walls, window or door frames, pipes, etc.).
This will prevent acoustic transmission and cracking, in compliance with current standard.
Any construction joints in the substrate must be extended into the lightweight concrete. In addition to substrate construction joints, division joints are placed every 40 m^2 *(430.56 ft^2)*, and at least every 8 linear metres *(26.24 ft)*, and at each corner angle and staircase. Provide door thresholds between each room and the next one. Guide-rails can be used to create division joints, dressing guides and thickness markers to ensure perfectly level installation.

2/ Non-attached installation (separated from substrate)

Place micro-perforated PE (polyethylene) film or a thin acoustic underlay on the entire surface to improve substrate acoustics by reducing impact sounds. No other interposition products, including sheets, rolls or loose are acceptable (EPS, XEPS, fibreglass, etc.). The PE film or thin acoustic underlay must completely follow and cohere to the substrate as well as at corners so that there is no air (space) between the film/underlay and the substrate.
If a thin acoustic underlay is installed, concrete thickness must not be less than 5 cm *(2 in)* for a class SC1 thin acoustic underlay and 8 cm *(3 1/8 in)* for a class SC2 thin acoustic underlay.

3/ Attached installation (concrete substrate only)

It is essential to apply a sufficient amount of suitable bonding agent.

4/ Guide rail installation

Use dabs of concrete to install your guide rails. If necessary, use small dabs to prevent excessive reduction of the thickness of the lightweight concrete.

5/ Mesh

With non-fibrous formulations, lay a 50 x 50 mm *(2 x 2 in)* welded metal mesh. Do not use larger panels on the surface, and make sure that panels overlap by at least one square.
Place wedges or concrete dabs under the mesh so that it becomes well set in the middle of the lightweight concrete (poorly installed mesh can create problems). For flexible structures, double the mesh or use one mesh if fibrous formulation.

6/ Fibres

Fibres can be added to POLITERM® BLU FEIN formulations, be sure to follow the fibres/cement proportions recommended by the manufacturer.

7/ Floor heating

Do not cover underfloor heating with POLITERM® BLU FEIN lightweight concrete. Such application would prevent optimal heat distribution. When placed underneath, POLITERM® BLU FEIN lightweight concrete permits creation of a high-performing underfloor system by providing both the underfloor form and insulation in just one step (contact us).

Any porous element (e.g. concrete dabs for guide rails) should be dampened prior to pouring the light concrete for perfect bonding.

APPLICATION

Application of POLITERM® BLU FEIN lightweight concrete

As indicated in the "Preparation" paragraph, after mixing, concrete must be homogeneous and grey in colour.

- Apply lightweight concrete using appropriate tools (rake, shovel, ruler, etc.).
- Check that the concrete is well spread on the PE film or acoustic underlay, do not leave hollow spaces under the PE or underlay.
- Pull a ruler across the surface and check thickness of application.
- Use a cement finishing trowel for a flat, smooth surface.
- Do not use a float.

Usage warning for application of POLITERM® BLU FEIN concrete

- Lightweight concrete must be laid within 30 minutes of mixing.
- Spread the concrete in each room in only one time, or end at a separation joint.
- To finish the lightweight concrete, use a plaster edger (with clipped-off corner) or a ruler at an angle so only the angle touches the concrete. This technique prevents the product from adhering to the ruler, allowing for a smooth finish without using a float.

Installation of flooring

Surface finishing depends on the final covering used. Any kind of flooring is possible according to the best industry practices and the recommendations made in the following table. Tile bonding is to be done with C2, C2-S1 or C2-S2 certified adhesive grout, and joints must be flexible. Depending on the final use of the spaces and type of covering, we advise you to consult the corresponding standards as well as manufacturers' requirements.

Flooring	**Standards / NF D.T.U.** Class P_2 (a) and P_3* (b) spaces	
Glued tiles	Glued tile flooring	NF D.T.U. 52-2 - NF P 61-204
Sealed tiles	Sealed flooring	NF D.T.U. 52-1 - NF P 61-202
Floating parquet floors	Floating parquet installation	NF D.T.U. 51-11 - NF P 63-204
Laminate flooring	-	-
Glued parquet flooring	Glued parquet	NF D.T.U. 51-2 - NF P 63-202
Wall-to-wall carpet	Glued fabric flooring	NF D.T.U. 53-1 - NF P 62-202
Elastic flooring	Glued plastic flooring	NF D.T.U. 53-2 - NF P 62-203

Flooring	POLITERM® BLU FEIN					
	200 kg/m³ (a) *(12.49 lb/pi³)*	**300 kg/m³ (a)** *(18.73 lb/pi³)*	**500 kg/m³ (a)** *(31.21 lb/pi³)*	**800/900 kg/m³ (a) (b)** *(49.94/56.19 lb/pi³)*	**1200 kg/m³ (a) (b)** *(74.21 lb/pi³)*	**1500 kg/m³ (a) (b)** *(93.64 lb/pi³)*
Glued tiles	Covered by a flow screed or traditional screed		Direct installation after 48 hours			
Sealed tiles			Direct installation after 48 hours			
Floating parquet floors			Direct installation after 5 days			
Laminate flooring			Direct installation after 5 days			
Glued parquet flooring			5 mm *(1/4 in)* smoothing			
Wall-to-wall carpet			6 mm *(1/4 in)* smoothing			
Elastic flooring			6 mm *(1/4 in)* smoothing			

- Times and smoothing thickness stated above are valid only for applications with traditional dressing using a ruler. Drying times are for 5 cm *(2 in)* thickness, add 24 hr per cm *(3/8 in)* of additional thickness.
* According to Cahier CSTB 3509 of November 2004 "Notice sur le classement UPEC et classement UPEC des locaux".

Instructions

1. Allow to dry protected from drafts, if needed protect temporarily with PE film for 48 hours. Also protect from sunlight and high temperatures and/or rain during setting.
2. Work must be planned so that flooring is installed within no more than 8 weeks following pouring of lightweight concrete.
3. Lightweight concrete is not to be left uncovered and must always be covered with flooring.
4. If several trades are required to work on top of the lightweight concrete on the jobsite, it is essential that it is protected by creating a circulation corridor with planks or by applying grouting to the concrete surface.
5. In the case of infrequent passage, manual sweeping will remove all surface defects.
6. Surface sweeping of lightweight concrete is mandatory prior to application of coatings (smoothing) to prepare flooring and installation of final floor covering.

Installation and attachment of partition walls

- POLITERM® BLU FEIN lightweight concrete can be used with partitions weighing no more than 150 kg/linear metre. A minimum of 7 days drying time of lightweight concrete is required.
- For heavy partitions (>150 kg/linear metre), lightweight concrete must be reinforced or partitions must be integrated into it.
- In order to attach tracks or any other type of guide, use drive dowels, carefully following drilling diameters.
- Starting with the 800 kg/m³ *(49.94 lb/ft³)* formulation, you can use the same type of attachment as with traditional screeds.

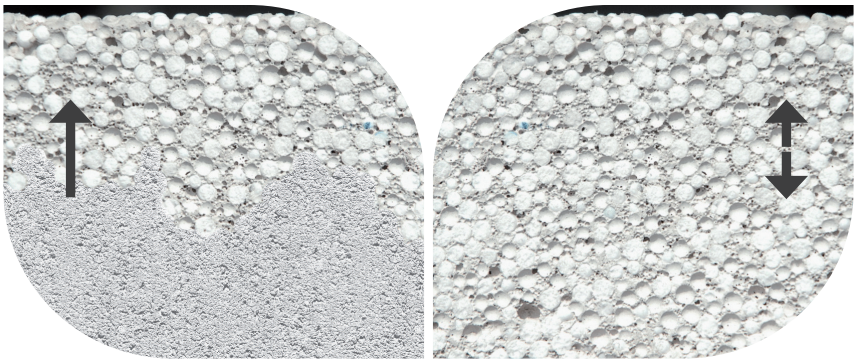
WHY USE POLYSTYRENE BEADS?

BECAUSE THEY ARE THE BEST COMPROMISE BETWEEN COST AND PERFORMANCE. PROVIDING THE LOWEST WEIGHT AND MOST INSULATION AT THE LOWEST PRICE!

Advantages of EPS-bead-based lightweight concrete:

- Lightweight and easy to transport and apply.
- pH-controlled and non corrosive. Does not react with other substances.
- EPS has no nutritional value, therefore does not encourage development of moulds and bacteria.
- EPS is non-toxic and inert.
- EPS does not contaminate the ground or cause air pollution.
- Water resistant: coated beads are impermeable (do not absorb water).
- Excellent insulating characteristics, complying with current regulations and helping save the planet.

... WHY POLITERM® BLU FEIN?



MIXTURE WITH STANDARD EPS AND CEMENT

Non-homogeneous distribution of EPS beads in concrete (floatation phenomenon).

MIXTURE WITH POLITERM® BLU (EPS + E.I.A.) AND CEMENT

Homogeneous distribution of EPS beads in lightweight concrete.

E.I.A. is a special additive developed by Edilteco, which coats each EPS beads during manufacture. This process creates a perfectly homogeneous mixture of the beads and cement, without the problem of bead flotation. Generally, when cement, EPS and water are mixed together, they tend to separate. Due to the E.I.A. additive, this problem does not arise. The result is a lightweight cement with high thermal insulation characteristics.

OUR COMPLEMENTARY PRODUCT

POLITERM® BLOW READY MIX

POLITERM® BLOW READY MIX allows direct loading of POLITERM® BLU into a cement truck mixer, providing a safe working environment for operators. This solution provides other advantages such as rapid preparation on-site, and the use of more economical packaging.

360° INSULATION

SOL

I.T.E. / PSE

DBRED

PROTHERM light

MACHINES

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MONTRÉAL