

# Eco Spacer for precast concrete products

In the concrete industry, very considerable amounts of plastic pellets are used in the transport of the different products (e.g., when stacking concrete floor slabs or paving stones). The granules (usually LDPE) are used to protect packaged ceramic or concrete products from scratches and efflorescence. According to the instructions on the packaging, the LDPE granules must be disposed of properly after unpacking to ensure the granules are not blown away by the wind or swept into tile joints. Unfortunately, proper care is not always taken to prevent this happening, which means a significant amount of LDPE ends up in the environment, remaining there for hundreds of years, gradually fragmenting into microplastics. The market for granulate used for this purpose is about 500 tonnes per year in Germany alone.

Such concerns about the environment prompted Biofibre (Straubing, Germany) to look for a suitable material, offering the required properties in terms of pressure, shape, elasticity, etc., but that was capable of fully degrading within a reasonable period in soil to ensure that even if it were to end up in the environment – as seems unavoidable – the impact will be negligible. In addition, the material was required to be largely Biobased.

## Factory applied scratch and layer protection with a biogenic content exceeding 95 %

The newly developed “eco scattering granulate” (BPB®ECO SPACER®VP 5.0) is sprinkled between the stone or plate layers by an automated process directly before the flat shelf packaging.

The scattering granulate is a natural-fiber filled biopolyester product with a renewable content of more than 95 %, produced in a special compounding process. Due to its composition, it will biodegrade within a reasonable span of time in the environment. Moreover, it will leave no residue if industrially composted.

When left to biodegrade in soil, the eco spacer granulate VP 5.0 will completely decompose to CO<sub>2</sub>, water and biomass within 2 -5 years.

The high proportion of biogenic material in the first product, Biofibre® Silva, was certified by DIN Certco according to ASTM D 6866 and the European standard EN 16785.

The advantages of complete biodegradability are accompanied by a few minor limitations compared to LDPE granules. Product life between the concrete layers is not unlimited, but Biofibre says that, based on their experience so far, at least 10 months can be expected. The packages must be protected from moisture, ideally stored in a covered area with a cover sheet (REBA cover).

The BPB eco spacer VP 5.0 is suitable for use under very high pressure loads. The homogeneous granule dimension with low height variation leads to homogeneous pressure absorption. Deformation of the granules was observed only after undergoing extremely high pressure loads (> 10 t) on

rough ground. The granules can be easily removed mechanically with a broom and collected for reuse or composting. In no case was brittle fracture behavior observed. The BPB eco spacer VP 5.0 shows a more homogeneous pressure pickup compared to the LDPE reference, due to the homogeneous dimensioning (low variation in height).





The product is now available to customers in Germany and UK via BPB Beton- und Prüftechnik Blomberg. In 2019, almost 500 tonnes of this eco spacer granulate are expected to be used, replacing non-degradable LDPE and diverting this from leaking into the environment. [MT !\[\]\(95b425611cbd2b8716a140cf67c81822\_img.jpg\) http://www.biofibre.de](http://www.biofibre.de)



Without EcoSpacer



With EcoSpacer

			
	MAXI	DELUXE	BPB ECO SPACER
raw material	recycled LDPE	recycled LDPE	bio-polyester natural fibres
colour	grey	black	beige
size	-	-	approx 5.5 x 5.0 mm
diameter	ca. 5,7 mm	ca. 4,9 mm	-
height	ca. 2,7 mm	ca. 1,6 mm	ca. 2,1 mm
shape of granules	round	round	round / oval
bulk density	0,494 kg/l	0,552 kg/l	0,536 kg/l
water absorption	0 %	0 %	16,0 %
intrinsic moisture	0 %	0 %	3,4 %
durability between the stone layers	unlimited	unlimited	10 month (Covered area and cover film as protection against moisture)
biodegradability	None (fragmentation after 150 years expected)	None (fragmentation after 150 years expected)	2-5 years