ZOTEFOAMS

Technical Information Sheet TIS26

RECYCLING AND REUSE OF ZOTEFOAMS MATERIALS

Introduction

The waste hierarchy lays out the possible options for disposal of waste, from most to least preferable. The best option is to prevent waste, reducing the amount that is generated and disposed of. Zotefoams products are able to help reduce waste as they can offer superior properties at lower densities when compared to other foams and alternative materials, meaning less weight of material is disposed of at the end of life.

Where prevention of waste is not possible, the next best option is re-use of products and failing that materials should be recycled wherever possible. Recycling and re-use is an important means of relieving the environmental burden of a material, reducing the dependence on landfill and energy recovery waste disposal. They can also reduce the consumption of finite resources and can aid in reducing carbon footprint by lowering the demand for extraction and processing of virgin materials. European Directive 2008/98/EC provides the following definitions for re-use and recycling:

- 're-use' means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived
- 'recycling' means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. This does not include energy recovery.

Zotefoams product range includes foams made from a variety of different base polymers, which includes ranges of both crosslinked and non-crosslinked foams. This can impact on the recyclability and reusability of the materials.

Crosslinked Foams

Zotefoams crosslinked foam product ranges include, but are not limited to, the following:

AZOTE®	ZOTEK®	ECOZOTE®
Plastazote® LD, HD, MP, PK, LA	ZOTEK F	Ecozote LDR
Evazote® EV and VA	ZOTEK N	Ecozote PE/R
Supazote®	ZOTEK T	

Zotefoams crosslinked foams have high durability, allowing for a long service life without the need to be replaced, therefore reducing overall waste production, which is the most preferable option on the waste hierarchy. Our foams also offer superior performance at a lower density compared to solid parts and competitor foams, meaning that they are lighter weight in nature. This means that less polymer is used and, when it comes to disposal, there is less mass to dispose of, again reducing waste.

This durability also allows for the foam to be reused multiple times, for example in re-usable and returnable packaging or by removal from one installation and repurposing in a similar application. This reduces the environmental impact by reducing the demand for new production and processing of materials.

Crosslinking greatly increases strength and durability, making these foams suitable for long term use and re-use. However, crosslinking also means that materials typically can't be recycled by simply melting and reprocessing. Strongly crosslinked materials are likely to suffer thermal degradation and decomposition before melting sufficiently to be reprocessed.

Zotefoams uses low degrees of crosslinking in our materials, meaning that in certain situations our crosslinked polymer waste can be melted enough to be incorporated into some waste streams. For example, we are able to reprocess the solid crosslinked polymer waste generated during the extrusion phase of our production and reincorporate this waste into some products in our Ecozote range.

There are also some alternative options that can be considered where recycling of crosslinked materials is not feasible. Mechanical recycling of our crosslinked foams can produce material that is suitable for certain applications. For example, the foams can be shredded into small pieces which can be used as aggregate or for reforming into agglomerate blocks. There are companies that specialise in recycling of crosslinked foams by shredding the material for use in a variety of applications, including:

- Playground fall protection
- Synthetic sport pitches
- Construction projects (e.g. insulation applications)
- Horticulture
- General impact protection

Crosslinked foam waste can also be densified into pellets, which can produce an approximately 10-fold increase in the density of the material. These pellets may then be useful in certain applications as aggregate or filler. Densified granules made from Zotefoams crosslinked foam waste have also been used in some specialised applications, for example as a substrate in water treatment and filtration.

It is also feasible to chemically recycle crosslinked polymers, but this process requires significant amounts of energy and is not currently done on a wide industrial scale. The high energy requirements for chemical recycling may make this option less sustainable than mechanical processing, and as such chemical recycling is often the least desirable form of recycling.

Please Note

When recycling or reusing any of our foams the composition of the material should always be considered, as certain foams may not be suitable for certain waste streams based on the base polymer and any additives present. For example, our flame-retardant AZOTE® grades should be treated with care and recycled specially to ensure that the flame-retardant additives present do not enter waste streams that may go towards food contact applications.

For information about the composition, please refer to the foam Safety Information Sheets or contact Technical Support for more details using the following email address: techsupport@zotefoams.com.

Non-Crosslinked Foams

Zotefoams non-crosslinked foam product ranges include, but are not limited to, the following:

ECOZOTE
Ecozote PP
Ecozote TPU

Just as with our crosslinked foams, Zotefoams non-crosslinked products are able to offer enhanced performance at lower densities, meaning that less polymer is used overall, and there is a lower mass of waste generated when it comes to disposing of the material.

Our non-crosslinked foams also show excellent resilience, meaning that in some cases they may be suitable for reuse and repurposing, similar to our crosslinked foams.

As these products are not crosslinked, they are straightforward to melt and reprocess, making them fully recyclable.

Please Note

Just as with our crosslinked foams, it is important to be aware of the composition of the material, including the base polymer and any additives present. For example, our flame-retardant, non—crosslinked Ecozote® PP products are fully recyclable, but should be treated with care and recycled specially to ensure that the flame-retardant additives present do not enter waste streams that may go towards food contact applications.

For information about the composition, please refer to the foam Safety Information Sheets or contact Technical Support for more details using the following email address: techsupport@zotefoams.com.

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