ZOTEFOAMS

Technical Information Sheet TIS 14

Compliance of AZOTE® Foams with Automotive Standards

INTRODUCTION

Materials and components used during manufacturing of cars have to comply with a set of standards set either by the car manufacturer (Manufacturer specific guidelines and test requirements), a national governing body (e.g. FMVSS in the USA or VDA in Germany) or more general EN or ISO norms. These standards can cover the mechanical performance, chemicals used in the manufacturing process as well as emissions produced under typical conditions of use. Frequently part specifications set by automotive manufacturers are derived from legislation in the countries they operate in (e.g in Europe the REACH Regulation (EC 1907/2008) or ELV directive (2000/53/EC))

Tests and requirements for the same characteristic can vary from one manufacturer to the next however to support our customers in the automotive sector, Zotefoams has developed an annual product testing programme which covers the tests covered below for the following typically used products of the Plastazote® range:

- HD30 Black
- LD15 FM Black
- LD24 Black
- LD30 Black
- LD45 Black
- LD60 Black

The annual testing is carried during the first quarter of each year with reports expected to be available around March/ April.

The results presented related to the foam sheets as sold by Zotefoams and performance of parts may vary, particularly if moulding processes are used in their production.

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MECHANICAL PROPERTIES

Mechanical test results are often method dependent and the stipulated methods will vary between different suppliers. Often the methods called out refer to test methods for rubbers or plastics, due to the origin of the specifications for parts made from these materials. Zotefoams are therefore providing test results appropriate to flexible cellular materials in line with our property information sheets. The following tests are included in the annual tests:

- Cellsize Zotefoams Internal Method
- Compression Set ISO 7214
- Compression Stress ISO 7214
- Density cell/ cell ISO 845
- Density skin/ skin ISO 845
- Tensile Strength and Elongation at break ISO 7214
- Voids Zotefoams Internal Method

FLAMMABILITY

The measurement of the horizontal burn rate is required for many applications within the automotive industry. The test is often referenced by it's US regulation designation, FMVSS 302. This method requires a material to display a burn rate of less than 100 mm/min. Zotefoams quotes the minimum thickness at which we can confirm a material meets this requirement and testing at this thickness is included in the annual tests. The maximum test thickness for this test is 12.7mm

Some OEM standards quote additional requirements regarding the number of samples, sample configuration and analysis to be performed. The data generated in the annual tests covers the following standards:

- FMVSS 302
- DIN 75200
- DBL 5307
- TL 1010
- GMW 3232

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THERMAL PROPERTIES

Depending on the application performance of the material either in cold conditions or when heated can be of importance.

Dimensional and mechanical changes from exposure to temperatures below ambient, or more specifically below freezing, are generally reversible once the material is returned to ambient temperatures. Therefore, the main assessment of low temperature performance is a cold bend test. For the annual testing this is conducted as per DBL 5306.7.2

Exposure to elevated temperature can cause shrinkage and densification of the foams due to material softening and increased diffusion of gas out of the cells. Above the softening point such shrinkage tends to be permanent. The extend of shrinkage observed is dependent on the sample thickness, temperature and length of exposure. Shrinkage tests are performed on samples of 400mm x 400mm x 10mm for a period of 24h. Results are reported for two temperatures, the lower one at which a maximum of 2% linear shrinkage can be guaranteed and a higher one with up 5% linear shrinkage.

EMISSIONS AND FOGGING TESTS

For interior applications analysis any volatiles that could be produced by a material are analysed to ensure no harmful substances are given off under expected conditions of use in the car. The tests used to assess this fall into two categories, emissions tests and fogging tests.

Emissions tests are generally carried out by gas chromatography and mass spectrometry (GC-MC) and report the chemical identify of substances found as well as their concentrations. The overall results can be summarised as VOC (volatile organic content) or TOC (total organic content) depending on the test method.

To assess fogging, the extent to which emissions from the material could fog up windows, various methods can be employed. These can include GC-MS measurements to quantify substances or measuring condensate from the material.

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Zotefoams outsources these tests to a third party test house and includes results to the following standards in the annual tests:

- VDA 278 (VOC and FOG)
- GMW 15634 (emissions)
- PV 3341 (emissions)
- PV 3015 (fogging)
- DIN 75201 Method B (fogging)

ODOUR

Volatile chemical additives that are responsible for fogging of the windscreen also cause a distinct odour. This is often referred to as “new car smell”. While for some people this smell is part of the experience of driving a new car others may find this smell obnoxious. To limit the negative effects of odours caused by new materials car manufacturers have created test methods to rate the odour of materials. For this test samples are usually heated in a sealed vessel for a certain time, then cooled to room temperature before having test persons smell and rate the odour on a scale from 1 (imperceptible) to 6 (intolerable).

Annual testing is performed to the following methods:

- VDA 270 C3
- PV 3900 C3

CHEMICAL MONITORING

Some specific chemicals are called out for monitoring. While formaldehyde is not part of our formulations or knowingly added to our products we have set up monitoring to PV3925 for a limited number of materials to confirm compliance with the requirements of VW 50180.

Zotefoams is registered to the IMDS database. Where required we make entries for our products available to the automotive supply chain. To receive such data please contact our technical support team, quoting your IMDS company ID so the information can be provided to the right business unit within an organisation.

We monitor the requirements of chemicals on the GADSL list and where applicable disclose monitored substances through the IMDS data.

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TEST REPORTS

Test reports for the annual testing can be made available upon request. Please contact techsupport@zotefoams.com .

Where batch release testing is required this should be discussed via our commercial team. Materials needing such batch test reports need to be highlighted at the point of order. The standard report we offer for automotive applications includes the following properties:

- Cellsize Zotefoams Internal Method
- Compression Stress ISO 7214
- Density cell/ cell ISO 845
- FMVSS 302
- Tensile Strength and Elongation at break ISO 7214
- Thermal shrinkage

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Zotefoams plc Management systems are covered by the following:

Quality
FM 01870
ISO 9001 2015

Safety
OHS 52538
OHSAS 18001 2007

Environment
EMS 36270
ISO 14001 2015

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