

Bulk density and hardness tolerances of PUR Flexible Foams

Technical Specialist Group PUR Flexible Foam

RHT20170208 · As at 08.02.2017

Introductory remarks

The tolerances or specification limits of PUR flexible foams are often the subject of discussion between foam manufacturers and processors or customers.

Extensive studies on the distribution of physical properties over the entire slabstock crosssections of PUR flexible foams from various manufacturers, which were carried out in cooperation with renowned raw material suppliers, as well as long-term measurements by the foam manufacturers themselves, provide a clear picture of the tolerances and specification limits.

The studies show in particular that there can be significant variances in the hardness distribution of the different foam families over the entire block cross-section.

Chemical-physical characterisation

The causes are chemical /physical processes due to the strong heating (exothermic) in the block centre and the possibility of air exchange, especially in the edge areas of the block during the maturing of the foams.

The evaluation of all available data requires the following tolerances to ensure the process capability of PUR flexible foam production.

Polyether Flexible Foams

Bulk density: +/- 8%

Hardness: +/- 18% (minimum tolerance +/- 0,25 kPa)

Polyester Flexible Foams

Bulk density: +/- 10%

Hardness: +/- 20% (minimum tolerance +/- 0,25 kPa)

The tolerances mentioned above refer to the respective agreed bulk density or the agreed hardness.

The bulk density or hardness is determined as the arithmetic mean of at least three individual values. The individual values are determined on test samples taken from the middle area of the block cross-section of a PUR flexible foam block at the top, middle and bottom.

The measured values are determined according to the following standards:

Bulk density according to DIN EN ISO 845 (kg/m³)
 Hardness according to DIN EN ISO 3386-1 (kPa) (compressive stress)
 or DIN EN ISO 2439 Procedure B (N) (indentation hardness)

All members of the association have been consistently applying all quality assurance measures for years.

This DOCUMENT was developed in the Specialist Association Foamed Plastics and Polyurethanes by the Technical Specialist Group PUR Flexible Foam.



Brussels • Frankfurt • Stuttgart
 Postal adress: Stammheimer Straße 35 • D-70435 Stuttgart
 Tel. +49 711 993 751-0 • www.fsk-vsv.de • fsk@fsk-vsv.de

In co-operation with:



Disclaimer of liability

This document is for information purposes only. All data and information in this document comes from sources which the FSK considers reliable. In addition, the authors have taken the greatest possible care to ensure that the facts and opinions used are appropriate and accurate. Nevertheless, no guarantee or liability can be assumed for the correctness thereof – neither expressly nor tacitly. In addition, all information may be incomplete or summarized. Neither the FSK nor the participating companies accept liability for damages arising from the use of this document or its contents or in any other way in this context.