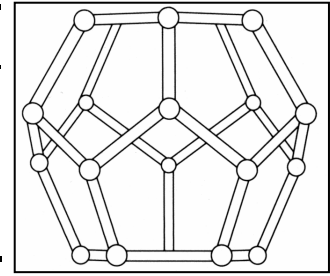

Zotefoams plc

Technical Information Sheet – TIS 08

(previously T2)

Thermal Stability of Azote Foams



INTRODUCTION

In common with other foam materials, Plastazote low density, closed cell, cross-linked polyethylene foams and Evazote closed cell, cross-linked EVA copolymer foams shrink at elevated temperatures. This data sheet summarises the shrinkage effects that may occur. Further information can be obtained from the Technical Services department.

SUMMARY OF SHRINKAGE BEHAVIOUR

The degree of shrinkage depends on the type of material, temperature, time, density, dimensions (thickness) and cell size. Total shrinkage usually comprises a rapid shrinkage phase followed by a slower shrinkage phase.

THICKNESS

The results described in this document were obtained on 5mm thick sheet without skin surfaces. Thicker sheets shrink more slowly. Doubling the thickness approximately halves the percentage shrinkage in a given time.

CELL SIZE

Coarse-cell foams shrink faster than fine-cell foams. This cell size effect is such that sheets having the same number of cells in their structure shrink in similar ways, e.g. material 10mm thick with a 1mm cell diameter shrinks to the same degree as material 5mm thick with a cell diameter of 0.5mm, since both have a thickness of 10 cell diameters.

DENSITY

Heavier density materials shrink slower and less than lower density materials. The effect of the difference between densities is only substantial at low densities (less than 40 kg/m³). No clear-cut mathematical relationship between density and shrinkage has been established.

POLYMER

Evazote copolymer foams shrink more than Plastazote foams of similar density, both initially and over extended time.

MINIMUM SHRINKAGE

In general, therefore, least shrinkage will occur with polyethylene, heavier density, fine-cell materials.

PREDICTION OF SHRINKAGE BEHAVIOUR

The accompanying graphs summarise the results of tests on Plastazote foam of various different grades and on Evazote foam. The relationship between percent shrinkage and log time is approximately linear.

- Below 70°C, shrinkage of all grades of Plastazote foam and Evazote foam is negligible.
- Between 70°C and 90°C shrinkage is predictable.
- Between 90°C and 100°C the shrinkage results showed large and erratic variations, while above 110°C shrinkage was considerable and rapid.

Other grades and types of Plastazote foam may show shrinkage behaviour substantially different from those shown in the graphs.

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Zotefoams plc
675 Mitcham Road
Croydon
CR9 3AL
United Kingdom
Telephone: +44 (0) 20 8664 1600
Telefax: +44 (0) 20 8664 1616

Zotefoams Inc.
55 Precision Drive
Walton, Kentucky,
41094
USA
Telephone: +1 859 371 4046
Freephone: (800) 362-8358 (US Only)
Telefax: +1 859 371 4734



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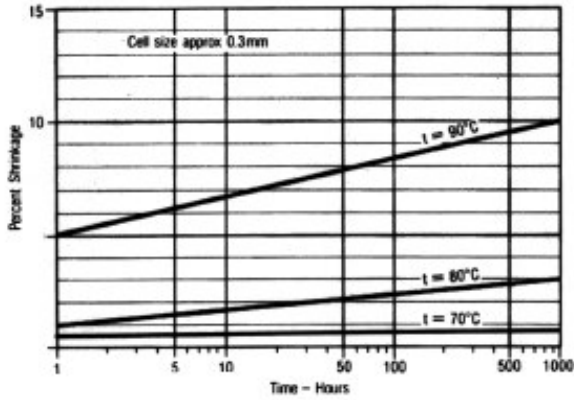


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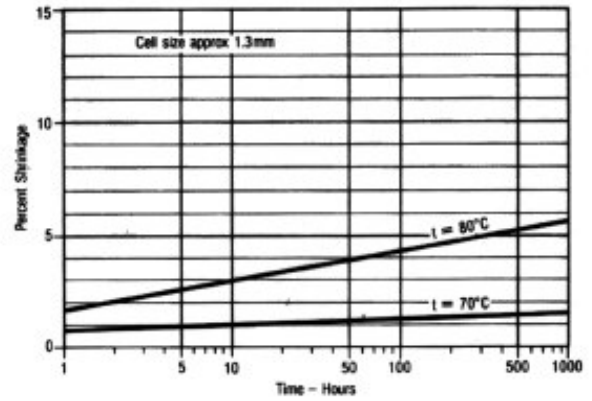
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Shrinkage Behaviour of Plastazote foam and Evazote foam at Elevated Temperatures

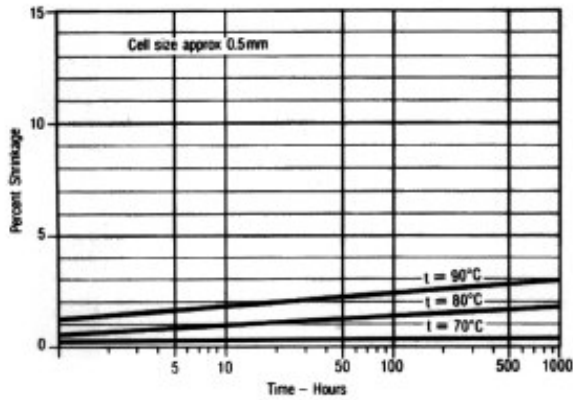
A. Plastazote foam LD24 white, 24kg/m³



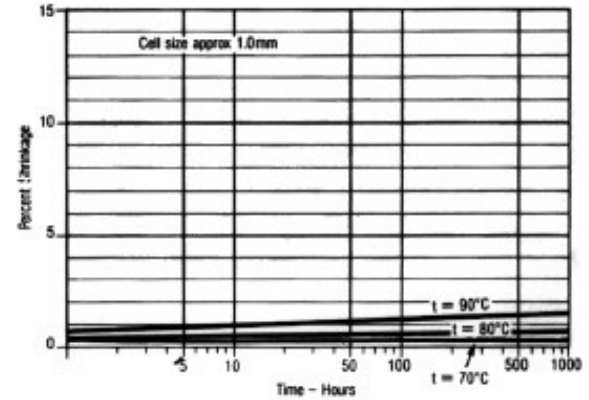
B. Plastazote foam LD24 LC white, 24kg/m³



C. Plastazote foam LD45 white, 45kg/m³



D. Plastazote foam LD70 white, 70kg/m³



E. Evazote foam EV50 white, 50kg/m³

