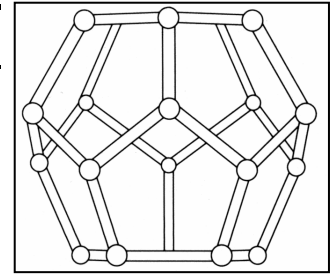


Technical Information Sheet – TIS 07 (previously T9) Flexural Properties of Plastazote Foam



INTRODUCTION

The degree of flexibility of foam products is one of the properties which give the materials their characteristic 'feel'. Foams may be described as 'stiff' if they are difficult to bend or 'soft and flexible' if they can be easily flexed in the hand. This characteristic is only partially indicated by the compression stress-strain data published for Zotefoams' products, as such data is measured after several compressions to significant strains. Foam products which may be regarded as very stiff are likely to undergo permanent deformation under these conditions, and stresses measured at low compression strains (relative to original foam thickness) can bear little relation to the original stiffness of the foam.

A definitive measure of flexural properties is flexural modulus, which indicates the force necessary to bend a sheet of foam to a particular degree. In the method described in BS4370, part 4, method 14, a rectangular piece of foam supported at two points (one near each end) is depressed at a 3rd central point and the force measured over a range of deformations. The modulus of elasticity in flexure E (in MPa) is given by:

$$E = \frac{L^3 F_{\gamma} \times 10^3}{4bd^3 y_{\gamma}}$$

where

L is the span (in mm)

F_{γ} is the force (in kN)

y_{γ} is the corresponding deformation (in mms)

b is the specimen width (in mm)

d is the specimen thickness (in mm)

This method, with some modifications to sample dimensions and testing speed compared with BS4370, has been used to determine the flexural modulus of a range of Plastazote foam. Skins were removed before testing. Results are shown in the table.

Grade	Nominal Density [kg/m ³]	Flexural Modulus [MPa]
Plastazote [®] LD24	24	0.4
Plastazote [®] LD33	33	0.7
Plastazote [®] LD45	45	1.0
Plastazote [®] LD60	60	1.7
Plastazote [®] LD70	70	2.7
Plastazote [®] HL34	34	2.2
Plastazote [®] HL47	47	5.2
Plastazote [®] HL79	79	11.9
Plastazote [®] HD30	30	3.6
Plastazote [®] HD60	60	11.0
Plastazote [®] HD80	80	15.0
Plastazote [®] HD115	115	23.0
Propozote [®] PPA30	30	6.0

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