4.0 Foamalite Production Process

What is PVC?

Polyvinyl Chloride or abbreviated to PVC is a high volume commodity thermoplastic material which has a very wide application base from medical pouches to window frames. The chemical structure can be represented as follows:

$$[-CH_2-CHCl-]_n$$

PVC is produced by the polymerisation of vinyl chloride monomer (VCM). VCM is obtained by the oxychlorination of ethene or the addition of hydrogen chloride to acetylene.

PVC Formulation

PVC in the form of a powder is the main raw material for the manufacturing process at Foamalite. PVC is generally not processed in its virgin form and requires compounding with a number of additives to enable easy processing on a wide range of plastics processing equipment. The control of the various properties (by compounding with additives) gives a unique versatile advantage for PVC as a material and allows an unlimited array of application uses. Typically PVC additives are used for enhancing properties such as flexibility, weatherability, cost reduction, surface hardness, colour, density, impact performance, service temperature, etc. Foamalite has optimised their range of PVC formulations to obtain the best combination of physical properties and cost effectiveness. The foaming process preferred by Foamalite is a chemical blowing agent activated during heat processing (Foamalite F & C products).

6.0 Properties

6.1 PHYSICAL PROPERTIES

6.11 FOAMALITE F

Typical Test Results: Foamalite "F" Free Foam Sheet			
Test	**Test Method**	**Units**	**Average Result**
Specific Gravity	In-House	Value	various
Determination of water absorption	ISO 62: Method 1	%	0.19
Tensile Strength at Yield	ISO R527	MPa	19.37
Elongation at Break	ISO R527	%	17.89
Flexural Modulus	ISO 176	GPa	0.903
Charpy Impact Strength	ISO 179	kJm^{-2}	1.43
Shore D Hardness	ISO 868	Value	63
Heat Distortion Temperature	ISO 75: Method A	°C	57.75
	ISO 75: Method B	°C	68.4
Coefficient of Linear Expansion	In-House	$°C^{-1}$	0.498×10^{-6}
Flame Spread Test	BS 476: Part 7: 1987 (as amended)	Class	1

6.12 FOAMALITE C

Typical Test Results: Foamalite "C" Co-extruded Gloss Free Foam Sheet			
Test	**Test Method**	**Units**	**Average Result**
Specific Gravity (Nominal)	In-House	Value	Various
Determination of water absorption	ISO 62: Method 1	%	0.16
Tensile Strength at Yield	ISO R527	MPa	25.61
Elongation at Break	ISO R527	%	10.61
Flexural Modulus	ISO 176	GPa	2.02
Charpy Impact Strength	ISO 179	kJm^{-2}	3.85
Shore D Hardness	ISO 868	Value	71
Heat Distortion Temperature	ISO 75: Method A	°C	62
	ISO 75: Method B	°C	67
Coefficient of Linear Expansion	In-House	$°C^{-1}$	0.52×10^{-5}
Flame Spread Test	BS 476: Part 7: 1987 (as amended)	Class	1