



Processing Reference Guide: Heat and processing techniques (p. 1)

Thermoforming

Foamalite can be thermoformed using vacuum forming, pressure forming or a combination of the two. Standard tools used in thermoforming of sheet plastics may be used on Foamalite sheet products. Larger Foamalite sheets require air support to avoid excessive sagging. For shallow forms almost any type of equipment for conventional thermoforming should produce satisfactory results. For more complex deep draw forms, double-sided (sandwich-type-Top & Bottom) heaters are necessary. Foamalite PVC foamed products reaction to working is markedly different from solid plastics. The working cycle is usually shorter, and the radius and depth of draw are limited to the extent that the surface of the material will stretch.

Forming Temperature

A. THERMO-ELASTIC RANGE $115 \infty C - 130 \infty C$.

Good extensibility of material, contour definitions is somewhat limited.

The smooth FOAMALITE surface is retained.

Recommended maximum draw ratio h:d approx. 1:1.25

B. THERMO-ELASTIC RANGE $160 \infty C - 170 \infty C$.

Medium extensibility, contour definition excellent, surface gets a grainy look due to slight after-expansion in the skin.

Larger sheets need air support to prevent sagging. At thermoforming temperatures of $160 \infty C - 170 \infty C$, slight changes in color of the sheet may be observed.

Heating Cycle

With radiation heat sources, the heating cycles are much shorter than for solid plastics, and depend on the type of forming machine.

Ceramic type infrared heaters are most suitable. Double sided (top & bottom) heating is strongly recommended, especially for thicker sheets.

Approximate Heating Cycle for Single-Sided Heating (With Ceramic Heaters):

Heater Element Temperature: $450 \infty C$

Power Density: 20 kW/sq.m.

Sheet Thickness Heating Cycle (Sec)	
3.0mm	60
4.0mm	4580
5.0mm	60110
6.0mm	140-150



Processing Reference Guide: Heat and processing techniques (p. 2)

Approximate Heating Cycle for Double-Sided Heating (with Ceramic Heaters):

Heater Temperature: Top - 380 °C, Bottom - 150 °C
Power Density: 40 kW/sq. m.

Sheet Thickness Heating Cycle (Sec)	
3.0mm	25 - 30
4.0mm	45
5.0mm	60
6.0mm	80

Heating Cycle

With radiation heat sources, the heating cycles are much shorter than for solid plastics, and depend on the type of forming machine.

Welding

Foamalite sheets can be welded to each other or to other rigid PVC sheets with standard hot-air welding equipment, or using the Hot-Blade method. Foamalite require the same treatment as other thermoplastic materials, as follows:

- Proper preparation of the surfaces to be joined
- Selecting the appropriate welding temperature
- Correct joining pressure or force

For Hot - Air Welding:

It is essential that there be even heat distribution on the welded surfaces. Localized overheating (hot spots) must be avoided. Excellent results are obtained with normal PVC welding rods.

Recommended Working Conditions:

Angle starting groove of 60 °C Welding temperature approx. 280 °C - 290 °C Welding speed approximately 30cm/min.

The above information is given in good faith and customers are expected to test all products for suitability on their own specific equipment prior to formal processing. Foamalite will not be held responsible for any failure in processing or for miss-use of the above reference data. Always check and test before processing.