

## Technical Data Sheet

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### Polycraft Variable Polyurethane Target Foam – VTF1 (Soft, Medium or Hard)

Two Part Hand Casting Polyurethane Foam System. Polycraft Variable Polyurethane Target Foam is a two-component polyurethane foam system, that when mixed gives a medium density soft, elastomeric foam. The foam is self-skinning, durable and has excellent physical properties. Typical free rise density is between 140 - 180 kgm, however the foam can be over packed in the mould to give higher densities of up to 500 kgm. The final hardness of the foam can be adjusted by small adjustments to the mixing ratio. The product is ideal for applications requiring a tough, durable foam, such as the manufacture of archery targets.

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#### Mix Ratio

	<b>VTF1 Part A : VTF1 Part B</b>	<b>Relative Hardness</b>
<b>By Weight</b>	100 : 30	Soft
	100 : 33	Medium
	100 : 36	Hard

#### Product Data

<b>Property</b>	<b>Units</b>	<b>VTF 1 Part A</b>	<b>VTF1 Part B</b>	<b>Mix</b>
<b>Material</b>	-	Formulated polyol blend.	Isocyanate	polyurethane
<b>Appearance</b>	-	Yellow, Amber liquid	Brown liquid	Flexible yellow foam
<b>Viscosity (25°C)</b>	mPa.s	1100 – 1400	150 – 250	-
<b>Density (25°C)</b>	g/cm <sup>3</sup>	1.00 – 1.05	1.15 – 1.20	-
<b>Cream Time (130g, 25°C)</b>	seconds	-	-	25 – 35
<b>Tack Free Time (130g, 25°C)</b>	seconds	-	-	120 – 140
<b>Rise Time (130g, 25°C)</b>	seconds	-	-	140 – 170
<b>Free Rise Density</b>	kgm <sup>-3</sup>	-	-	140 – 180
<b>Moulded Density Range</b>	kgm <sup>-3</sup>	-	-	250 – 500

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### **Cured Properties**

<b>Properties</b>	<b>Units</b>	<b>Soft</b>	<b>Medium</b>	<b>Hard</b>
<b>Tensile Strength</b>	MPa	0.4 – 0.5	TBC	0.75 – 0.85
<b>Tear Strength</b>	kN/m	3 – 4	TBC	4 – 5
<b>Elongation at break</b>	%	375 – 425	TBC	275 – 325

### **Method of Use**

#### ***Calculating Shot Size***

To calculate how much VTF1 is required to fill the mould, known as the “shot size”, first calculate the volume of the mould (in m<sup>3</sup>). The amount of foam required is then calculated as follows:

$$\text{Amount of VTF1 (kg)} = \text{Desired Density (kgm}^{-3}\text{)} \times \text{Mould Volume (m}^3\text{)}$$

VTF1 has a free rise density of approximately 160 kgm<sup>-3</sup>, but minimum moulded density is approximately 250 kgm<sup>-3</sup>. Increasing the density will give a harder, less flexible foam.

#### ***Mould Preparation***

VTF1 should be cast into a strong, rigid mould with a silicone rubber coating. Alternatively, a mould release agent such as Macsil should be used. Ensure that the entire mould surface has been coated. The mould should be warmed to 25°C. It is important to allow some small bleed holes to allow any gas generated to escape.

#### ***Mixing and Pouring***

Once the mould has been prepared, accurately weigh out the required quantity of VTF1 Part A into a clean mixing vessel. Weigh the required amount of VTF1 Part B into the mix vessel and immediately mix the two components until they are homogenized. The mixed material should be cream/ brown in colour and should be streak free. Poor mixing will result in poor quality foam. Immediately pour the mixed material into the mould. It is important that the mixing/ pouring operation is completed before the cream time of the foam (30 seconds).

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### ***Demould***

VTF1 is a fast curing system. Depending on mould volume and shape, the product can be demoulded after as little as 10 minutes. Full cure can take up to 72 hours.

### ***Trials***

When using VTF1 for the first time, or when using new mould shapes or volumes, trials must be carried out to determine the appropriate shot size. VTF1 can be pigmented, however some pigments may increase the reaction speed so small scale trial should be carried out when using for the first time. We recommend a pigment loading of 1 – 3%

### **Storage**

VTF1 Part A and B should be stored in original, unopened containers between 20 and 25°C. VTF1 Part B may crystallise partially or completely if not stored at above 20°C. Like all polyurethanes, both components are moisture sensitive. Moisture absorption will cause excessive aeration in cast parts. KEEP THE PACKING TIGHTLY SEALED WHEN NOT IN USE.

If stored under the above conditions, VTF1 Part A and B will have a shelf life of 6 months, from the date of production.