PRODUCT INFORMATION SHEET

PRODUCT NUMBER:	PC 6043 BASE / PC 5686 ACTIVATOR
DESCRIPTION:	**POLYURETHANE RESIN SYSTEM**

PC 6043 BASE / 5686 ACTIVATOR is a range of low cost UL94V0 and RoHS approved two component semi flexible polyurethane potting and encapsulation compound. The flame retardant technology complies with all current legislation regarding RoHS directives.

PC 6043 Polyurethane has been approved for use in any colour, any gelation time and still retain full UL94VO approval. This allows the client to specify the requirement of the colour should they wish to match an existing or brand under corporate identity and specify a gelation time to suit application and process parameters.

PC 6043 Polyurethane has been specifically formulated to ensure very low sedimentation and excellent resistance to cold temperature during storage. In addition the product has extremely low viscosity and density compared to other UL94VO Polyurethanes currently available.

BULLET POINTS

- **LOW VISCOSITY**
- **LOW DENSITY**
- **UL APPROVED TO 94VO**
- **RoHS APPROVED**
- **EXCELLENT FOR LONG TERM STORAGE**
- **NON – TOXIC**
- **AVAILABLE ANY COLOUR**
- **AVAILABLE ANY GELATION / CURE TIME**
- **VERY LOW SHRINKAGE VERY LOW EXOTHERMIC RISE**
- **EXCELLLENT CHEMICAL AND WATER RESISTANCE**
- **EXCELLENT ADHESION TO A WIDE VARIETY OF SUBSTRATES**
- **GLOSS FINISH WITH SMOOTH SURFACE FINISH**
- **UTILISES THE LATEST IN POLYURETHANE TECHNOLOGY**
- **EXCELLENT THERMAL CONDUCTIVITY**
- **EXCELLENT ELECTRICAL PROPERTIES**
- **SEMI FLEXIBLE AND PROTECTS SENSITVE ELECTRICAL COMPONENTS**
- **WORKING TEMPERATURE RANGE OF -40^{o}c TO 140^{o}c**

TYPICAL APPLICATIONS

Due to its wide range of excellent features PC 6043 Polyurethane can be used for all types of general potting, encapsulation and coating applications. These include but by no means exhaustive applications such as Capacitors both large and small, surface mount transformers, Sensors, Torroids, PCB potting and encapsulation. PC 6043 is also used in a wide variety of specialist potting, casting and encapsulation applications where the requirement for a semi flexible UL94V0, RoHS, and impenetrable insulation barrier with good thermal conductivity is a must.

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PHYSICAL PROPERTIES

Base Components

Current colours

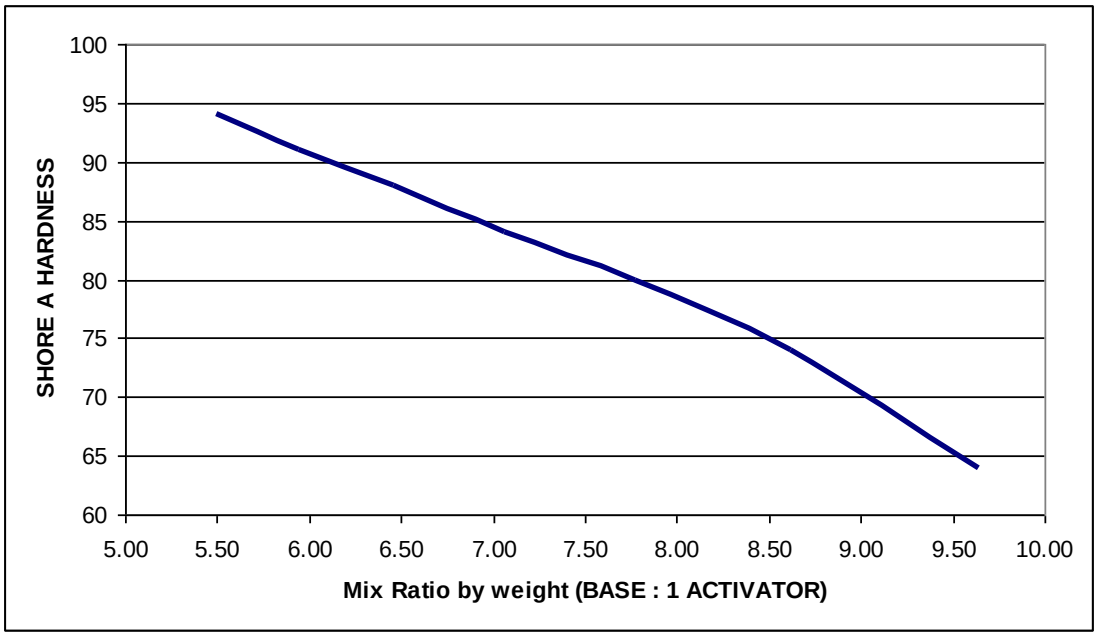
PC 6043 Base	Black
PC 6043 C Base	Red
PC 6043 D Base	White
PC 6043 E Base	Off White
PC 6043 (LETTER) Base	Any colour / Any gel to clients requirement
Viscosity:	35- 55 poise / 3500 – 5500 mPa s
Specific Gravity:	1.43 – 1.45 g/cm^3

Activator Component

Appearance:	Brown Liquid
Viscosity:	2 - 3 poise / 200 – 300 mPa s
Specific Gravity:	1.22 - 1.23 g/cm^3

Mixture

Mix ratio Base : Activator:	5.5: 1 parts by weight
Mixed viscosity @ 25 deg c	29 – 47 / 2900 - 4700 poise
Mixed specific Gravity	1.39 – 1.44 g/cm^3



Cure Schedules

Gelation Time 100g @ 25^{o}C:	30 seconds – 140 minutes client can specify
Usable life	Gel dependent
Full cure	Gel dependent (max 24 hours)

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Curing guidelines
The product is self catalysed and there is no need to use heat unless users require a lower pouring viscosity.
25°C – As denoted
30 °C – Reduction by 10% on viscosity figures
40 °C – Reduction by 15% on viscosity figures
It is not recommended to heat above 40°C as the viscosity curve against heat levels off.

Processing guidelines
This product has been developed for both Hand and machine mixing. It is recommended that any gel time below 7 minutes is best suited to machine process in applications where penetration and air release is a requisite. See machine guidelines and mixing procedure.

Cured Properties

Shrinkage (based on room temperature cure cycle)	< 0.25 %
Max temperature range (application and geometry dependent)	140°C
Min temperature range (application and geometry dependent)	- 40°C
Shore Hardness	95 A / 50 D @ 5.5: 1 pbw 85 A / 35 D @ 6: 1 pbw
Elongation at Break	35%
Tensile strength	8.5 MPa
Tear Strength	17 kN/m
Water Absorption 30 days @ 25 °C	0.2%

Electrical properties	**5.5: 1**
Thermal conductivity	0.6 W/Mk
Dielectric Strength	>20 kV/mm
Volume resistivity	10^{14} ohm-cm
Flame retardancy	UL94V0 Approved E238034
RoHS	Compliant
Deflection temperature	- 7 °C
Coefficient of Thermal Expansion	38 ppm/ °C
Loss Tangent at 50 Hz	0.03
Permittivity at 50 Hz	3.69
Comparative tracking Index	> 850 volts

Mixing procedure
Always ensure that the material is warmed slightly to above 15°C to assist in pouring and the Resin component is stirred well in the delivery container before every use. In cases of filled systems it is imperative that any settlement of the fillers is reintegrated prior to any mixing. Deficit of the filler will cause cure issues.

Hand mix: See publication 'Mix instructions for standard systems' available from supplier or at http://www.greenfieldpolymers.co.uk/services.asp?parent=&id=132

Greenfield Polymers have no monetary involvement with any machine supplier and purely choose the best company based on feed back from the client list.

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Storage
All materials should be stored in sealed containers in well ventilated areas, ideally maintained at 20-25°C and care must be taken to avoid leakage, spillage and contamination. The minimum shelf life of the unopened container is 12 months. This product should be protected from frost and low temperatures.

Safety in Handling – see relevant data sheet.

Glossary of terms
UL94VO – a measure of the self extinguishing characteristic of the resin system. VO is the best grade achievable implying that when set alight under specific conditions the material will only burn for a 5 second period before self extinguishing. When reapplied to the flame source the material will then still be able to self extinguish in 10 seconds. No flaming or dripping material is allowed.

Low viscosity – viscosity is the measurement of a fluids internal resistance to flow.

Approximate Viscosities of Common Materials based on 20°C

Material	Viscosity in Poise / Centipoise (mPas)
Water	0.01 / 1
Milk	0.03 / 3
SAE 10 Motor oil	0.85 – 1.4 / 85 – 140
SAE 20 Motor oil	1.4 – 4.2 / 140 – 420
SAE 30 Motor oil	4.2 – 6.5 / 420 – 650
SAE 40 Motor oil	6.5 – 9 / 650 – 900
Castor Oil	10 / 1000
Karo Syrup	50 / 5000
Honey	100 / 10,000
Chocolate Syrup	250 / 25,000
Ketchup	500 / 50.000
Mustard	700 / 70,000
Sour Cream	1000 / 100,000
Peanut Butter	2500 / 250,000

Density – water generally has a density of 1.00 gm /cm. When viewing resin systems density indicates the amounts of filler loading and consideration should be given as to weight. Higher density adds weight and also reduces the volume. Therefore pricing of any Resin system should be costed on a volume / Litre price rather than by weight / Kilogram price. This gives a fair assessment of the true value.

Material mixed density / specific gravity X the materials mixed kilogram cost = Litre cost

Mix ratio – the quantities that should be mixed together to gain the exact reaction. These are expressed in a Resin / Base to Hardener / Activator by weight or volume.

To work out mix ratios is simple process of taking the total mass required per mix for example 100 grams and working out the two parts or taking the mass of one component

weighed out a working out what should be added of the other part below are listed both methods.
100 grams total mix
100 grams divided by total ratio (Base + Activator) = amount of Activator to use
100 grams – amount of Activator to use = amount of Base to use
To check the figures: Base divided by the Activator = ratio you should be using on the technical data sheet by weight.

100 grams of Base product
100 grams divided by the Base ratio = amount of Activator to use
To check the figures: Base divided by the Activator = ratio you should be using on the technical data sheet by weight

100 grams of Activator
100 grams multiplied by the Base ratio = amount of Base to use
To check the figures: Base divided by the Activator = ratio you should be using on the technical date sheet by weight

Cure Schedules – all figures are representative guidelines. Figures will vary dependent on Mass mixed, temperature of storage, temperature of components at mixing, temperature of curing. Clients are advised to satisfy themselves with processing masses and temperatures to ensure repeatability.

Hardness comparisons – www.greenfieldpolymers.co.uk/hardness_chart.html

For any further clarification of terms please enquire with your sales representative.

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