


PRO-SET®
Technical Data

Version 19/02/16

EPOXY GELCOAT**CUSTOM**

M1046 Black Gelcoat Resin with M2015, M2048 & M2049 Hardeners

In a male mould, PRO-SET epoxy gelcoats will bond to an epoxy laminate from the time the laminate is in a “green” stage to a maximum of 24 hours at room temperature (20°C) and the gelcoat can be applied with the minimum of surface preparation.

In a female mould, the composite can be laminated to the gelcoat (whilst the gelcoat is still “green”) without the need for any preparation or the use of adhesion promoters. A high strength adhesive bond between the composite laminate and the epoxy gelcoat will always be achieved and the gelcoat itself has a hard tough surface giving excellent abrasion resistance.

There are three PRO-SET hardeners that can be used with PRO-SET M1046 Black Gelcoat Resin these are M2015 Fast, M2048 Medium and M2049 Long.

Because the PRO-SET M2048 and M2049 Hardeners are free of phenol related products, the colour stability of the gelcoat systems is greatly improved and colour durability is good. However, the PRO-SET gelcoat systems will discolour from the effects of UV exposure.

MIXING

Combine the PRO-SET M1046 Black Gelcoat Resin with the chosen Hardener following the ratios by weight or by volume shown in the table. Stir the mixture thoroughly for a period not less than two minutes. Care should be taken to avoid included air in the mixed epoxy and it is advisable to allow the epoxy to stand for two to three minutes after mixing to enable any trapped air to escape. The mixed epoxy can then be applied using a brush or roller.

CURING

It is probable that, as part of a composite structure, the gelcoat systems will be subjected to a post cure cycle and thus the ultimate physical properties of the gelcoats will be achieved. This post cure cycle is essential when PRO-SET M2049 Hardener is the selected curing agent.

When using the PRO-SET M2015 or PRO-SET M2048 Hardeners the systems will cure at room temperature. However these systems also benefit from a post cure which will then give the gelcoats higher physical properties.

Recommended Cure Schedule	16 hours @ 50°C
improved Cure Schedule	16 hours @ 50°C + 2 hours at 80°C

COVERAGE RATE

These gelcoat systems should be applied at a spread rate of between 2m²/kg and 3m²/kg giving coating thicknesses from 0.45mm to 0.27mm respectively. Normally, in composite builds, two gelcoats are applied to give a final thickness well in excess of 0.5mm. The second application is made as soon as the first coat is touch dry and able to support the weight of the second coat.

HANDLING CHARACTERISTICS

	M1046 / M2015	M1046 / M2048	M1046 / M2049
Mix Ratio by weight	100:30	100:30	100:30
Mix Ratio by volume	100:32	100:34	100:36
Gel time 100g at 25°C, in air (min)	16	43	140
Thin Film Gel Time at 20°C (min)	155	361	833
Resin Viscosity at 25°C (mPas) {Brookfield}	41500	41500	41500
Hardener Viscosity at 25°C (mPas) {Brookfield}	1300	115	25
Mixed Viscosity at 25°C (mPas) {Brookfield}	27400	26400	21800
Resin Density at 25°C (g/cm ³) {BS EN ISO 5350-Part B1:1978}	1.15	1.15	1.15
Hardener Density at 25°C (g/cm ³) {BS EN ISO 5350-Part B1:1978}	1.07	1.01	0.96
Mixed Density at 25°C (g/cm ³) {BS EN ISO 5350-Part B1:1978}	1.13	1.13	1.12
Shore 'D' Hardness 1 day @ Room Temperature	85	86	76
Shore 'D' Hardness 7 days @ Room Temperature	86	86	86
Shore 'D' Hardness 14 days @ Room Temperature	86	86	86



PHYSICAL CHARACTERISTICS

	Physical Properties	Units	Test Method	Cure Schedule		
				1 week @ Room Temp.	24hrs @ RT + 16hrs @ 50°C	24hrs @ RT + 16hrs @ 50°C + 2 hrs @ 80°C
M1046 / M2015	Shore D Hardness		{BS EN ISO 868:1998}	86	85	85
	Tg	°C	DSC	50.1	73.7	85.6
	Ultimate Tg	°C	DSC	97.7	93.6	94.6
	Tg	°C	DMTA	68.2	87.8	94.6
M1046 / M2048	Shore D Hardness		{BS EN ISO 868:1998}	86	86	85
	Tg	°C	DSC	49.3	72.6	82.3
	Ultimate Tg	°C	DSC	90.7	85.8	84.4
	Tg	°C	DMTA	65.4	85.6	93.3
M1046 / M2049	Shore D Hardness		{BS EN ISO 868:1998}	86	84	85
	Tg	°C	DSC	47.9	72.5	77.2
	Ultimate Tg	°C	DSC	87.4	88.1	88.5
	Tg	°C	DMTA	61.0	83.4	92.3

These are typical properties and cannot be construed as a specification. The end users should test the products to ensure the products are suitable for the intended application. Any information, data, advice or recommendation published by Wessex Resins or obtained from Wessex Resins by other means and whether relating to Wessex Resins' materials or other materials, is given in good faith and believed to be reliable.