

Description/Image

IP2 is a low viscosity, clear polyester infusion resin. It is suitable for the resin infusion of most composite reinforcements including glass fibre, carbon fibre and aramids (such as Kevlar).

Key Features

- Ideal For Resin Infusion
- Ultra Low Viscosity Resin
- Outstanding Wetting Abilities
- Good Mechanical Properties
- Variable Catalyst Ratio & Pot Life

Recommended Uses

IP2 is a high performance, low viscosity polyester resin formulated specifically for use in resin infusion composites production. The resin cures to a clear finish.

As a Polyester based product, this resin is compatible for use with existing polyester moulds (it is not recommended to use epoxy resin in a polyester mould). The resin exhibits very good clarity making it also suitable for use when laminating unpainted carbon fibre composites.

Properties

The table below shows the typical uncured resin properties:

Property	Unit	Value
Appearance	-	Mauve Liquid
Viscosity @ 25°C	Poise	1.6
Specific Gravity @ 25°C	-	1.08
Volatile Content	%	50
Acid Value	Mg KOH/g	22
Stability @ 20°C	Months	3
Gel time -2% MEKP @25°C	Minutes	85

How to Use

IP2 is a chemical product for professional use. It is essential to read and understand the safety and technical information before use. Follow the guidelines for safe use outlined in the SDS which include the use of appropriate hand and eye protection during mixing and use.

Catalyst Ratio

Catalyst Ratio 1 - 2% MEKP by Weight

IP2 Polyester Infusion Resin should be mixed with MEKP Catalyst at a ratio of 1-2%, by weight. Resin to catalyst ratios above are listed as parts by weight although parts by volume will effectively yield the same results.

IP2 Polyester Infusion Resin can be mixed with varying amounts of MEKP catalyst to achieve different pot life and cure times at different temperatures.

Be aware that the higher the ambient temperature, the quicker the resin will cure and thus adding high levels of MEKP should be avoided to ensure you get a reasonable pot life and reduce the chance of an exothermic reaction.

Mixing Instructions

Precisely weigh or measure the correct ratio of resin and catalyst into a straight sided container. Using a suitable mixing stick begin to mix the resin and catalyst together to combine them completely.

Spend at least one minute mixing the resin and catalyst together, paying particular attention to the sides and base of the container. Remember, any resin that has not been thoroughly combined with catalyst will not cure.

Once you have finished mixing in one container, it is good practice to transfer the mixed resin into a second container and undertake further mixing of the resin using a new mixing stick. Doing so will eliminate the risk of accidentally using unmixed resin from the bottom or sides of the container.

Pot-Life / Working Time / Cure Time

IP2 is a highly reactive (fast curing) resin system, only weigh out and mix as much resin as you can use within the pot life.

The curing reaction is exothermic and will commence as soon as the catalyst is added, this will accelerate the cure of the resin, especially when the resin is in large concentrated volume in the mixing pot. Transfer the resin from the mixing pot onto the part as soon as possible to extend the working time and avoid the risk of uncontrollable rapid cure, this is known as an exotherm.



As with all Polyester resins, the pot-life/working time will vary significantly depending on the ambient temperature, the starting temperature of the resin, catalyst ratio and the amount of resin mixed.

IP2 can be used in ambient temperatures between 15°C (59°F) and 30°C (86°F). For best results, an ambient temperature of 18 - 20°C (68°F) is recommended. Ensure that both resin and catalyst containers are within this temperature range before use.

During an infusion, you can reduce the chance of the resin 'gelling' in the pot by mixing small quantities at a time and topping up the resin pot as the resin is drawn into the laminate.

Once spread over a larger area, the heat can be more easily dispersed and the risk of thermal runaway is reduced.

Approximate pot life at 20°C is as follows:

1% MEKP - 85 minutes

2% MEKP - 48 Minutes

Initial cure time will vary on temperature and ratio of catalyst but will take around 24 hours in ambient conditions.

Full Cure / Post-Cure

As with most resin systems, where parts cure in normal ambient temperatures, full cure is not reached for several days, full mechanical properties will take at least 7 days to develop in. Where possible, avoid exposing the cured resin to full service rigours for at least this time.

As with many post-cure cycles for resins, the post-cure cycle for our IP2 Polyester Infusion Resin is not too sensitive and a range of different post-cure cycles will produce good results.

The recommended cycle is as follows. The laminate should be allowed to cure for 24 hours at 20° C, and then be oven cured for 16 hours at 40° C or 3 hours at 80° C.

Mechanical Properties

Cured Resin Properties

Property	Unit	Value
Barcol Hardness (Model GYZJ 934-1)		35
Deflection Temperature under load (1.8 MPa)	°C	75
Water Absorption 24 Hours at 23°C	mg	10
Tensile Strength	MPa	66
Tensile Modulus	MPa	3580
Elongation at Break	%	2.5
Specific Gravity at 25°C		1.19

Transport and Storage

Resin and Catalyst should be kept in tightly seal containers during transport and storage. Both the resin and catalyst should be stored in ambient conditions of between $10^{\circ}C$ ($50^{\circ}F$) and $25^{\circ}C$ ($77^{\circ}F$).

When stored correctly, the resin will have a shelf-life of 3 months. Although it may be possible to use the resin after a longer period, a deterioration in the performance of the resin will occur, especially in relation to clarity and cure profile.

Pay particular attention to ensuring that containers are kept tightly sealed.

Disclaimer

This data is not to be used for specifications. Values listed are for typical properties and should not be considered minimum or maximum. Our technical advice, whether verbal or in writing, is given in good faith but Easy Composites Ltd gives no warranty; express or implied, and all products are sold upon condition that purchasers will make their own tests to determine the quality and suitability of the product for their particular application and circumstances.

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