

POLYCOR® VINYLESTER TOOLING GEL COAT 945XJ142UP NEUTRAL AND UNPROMOTED

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DESCRIPTION

CCP Composites Korea Vinyl Ester Tooling Gel Coats are specifically formulated with selected vinyl ester resins that exhibit high Heat Distortion Temperature to withstand the repeated molding of FRP laminates. They provide a high gloss and hard durable surface. These tooling gel coats are ready to be sprayed after the addition of the proper amount of the appropriate of promoters, then the right amount of methyl ethyl ketone peroxide. Read application instructions carefully, because even though manufacturing precautions are used to make tooling gel coat, a misapplication of these products can produce unacceptable results.

TYPICAL LIQUID PROPERTIES

<u>Test</u>	<u>Value</u>
Color:	Neutral
Viscosity at 25°C: (Brookfield RVT, Spindle No.5 @ 20 rpm)	4,000 – 5,000 cps
Thixotropic Index at 25°C: (Brookfield RVT, Spindle No.5, Speeds 10 and 100 rpm)	5.0 – 7.0
Flash Point:	31°C
Volatile Organic Compound:	44.0 – 44.0%
Suggested Promoters:	0.2% Cobalt 12% + 0.15% of Dimethylacetamide
Reactivity at 25°C, using 2.0% of MEKP-925	
Gel Time:	14 – 23 minutes
Lay-up Time:	60 – 90 minutes

APPLICATION RECOMMENDATIONS:

Tooling gel coats are applied to the plug to be duplicated. Care must be taken when preparing these plugs with wax to permit positive release.

Best results are obtained by applying 2 gel coat layers of 18 (±2) mils wet each and allowing the material to gel and cure between these two applications. Allow the gel coat to attain lay-up time between each coat. Apply each gel coat layer with a minimum of two passes (three passes are preferred). For best results, ensure that the tooling gel coat is allowed to “breathe” for 2 minutes between each pass. Do not allow over-spray and thin passes to go over 5 minutes without covering with a fresh pass. Do not apply more than 20 mils per coat, as this can result in cracking of the gel coat film after use. Do not apply less than 12 mils per coat, as poor cure can result in dulling of the mold in use. Thinner films will also exhibit more print-through and distortion. It is essential that no more than 40 mils (wet) total be applied with any of the tooling gel coat.

CCP Composites Korea Tooling Gel Coats are formulated for Spray Application. Brushing is not recommended.

Best results are obtained using pressure pot spray equipment and batch mixing. The following equipments are recommended (on the other hand, Airless Equipments are not recommended).

Binks Equipment

Fluid Nozzle:	66 or 67
Air Nozzle:	63 PB or 67 PB

More than 13 C.F.M. required.

DeVilbiss Equipment

Gun: P-JGA-502
Nozzle Combination: 704-E
More than 17 C.F.M. required.

Do not spray more than 2.5 pounds per minute of Tooling Gel Coat. A minimum of 60 psi atomizing pressure (measured at the gun with fan full open) should be used to properly atomize the material.

CURE:

It is recommended to recheck the gel time in the customer plant because age, temperature, humidity, promoters and catalyst will produce varied gel times.

Alternative catalysts may be used including:

Butanox LA, Andonox LCR-S, Peroximon K12, Luperox DHD, Butanox M50, etc...

Normally, tooling gel coats are ready to lay-up on (or spray with a second coat of gel coat) in 60 – 90 minutes, but this time element being dependent on room temperature, air movement, humidity, promoter, catalyst grade and concentration, spray atomization, etc...

For best results, it is recommended that the temperature be above 21°C.

When using conventional tooling resin, the gel coat should not be left overnight before being laminated onto, as the gel coat may pre-release and/or lose its tack and not provide a good bond between the gel coat and laminate.

If using a low shrink laminate system (such as

OPTIMOLD® or OptiPLUS™), follow lay-up time recommendations for these specific systems.

PRECAUTIONS:

The primary reason for using tooling gel coats to manufacture fiberglass molds is to produce a high quality, durable and glossy surface. Most of the frequent defects result from poor applications. You may avoid them following the suggestions below:

1. Do not use varnish as a sealer or finish coat when preparing a plug (styrene in the gel coat will soften the varnish).
2. Proper spray technique is very important to eliminate porosity in the gel coat film. Poor atomization, dirty spray up equipment, bad catalyst / tooling gel coat mixing can cause porosities in the gel coat film. Knowing tooling gel coats will not be as too tolerant of inaccuracies in poor applications as are production gel coat.
3. Tooling gel coats appear thick in the container. After mixing the gel coat, it becomes sprayable. Do not over-mix, however. Over-mixing breaks down viscosity, increasing tendencies to sag and causes styrene loss, which might create porosities. Tooling gel coat needs mixing when opened (and daily thereafter). The gel coat should be mixing to the sides and bottom of the container with the least amount of turbulence possible. Air bubbling should not be used. It is not effective and only serves as a potential for water or oil contamination.

4. Always keep the container covered (except, of course, when transferring material). An open container is easily contaminated and allows for more styrene evaporation.

5. Each coat must cure as a total film, rather than several thin films which might cure independently of each other. It is essential to cover over-spray and thin passes as soon as possible – within 5 minutes. Thin, independently curing films can create a textured effect when the surface is sanded and buffed.

6. Never reduce tooling gel coat with a conventional paint or lacquer thinner, or acetone.

7. Disperse catalyst thoroughly in tooling gel coat. Poor distribution causes uneven cure, print-through, and premature release from plug before lay-up.

8. Print-through (fiber pattern) and distortion are directly proportional to film thickness. Thicker films resist print-through and distortion better than thinner films.

9. In spray application of tooling gel coats, use slow, even strokes, triggering the spray gun at the end of each stroke to prevent excess buildup at overlaps.

10. Do not apply tooling gel coat over wet Polyvinyl Alcohol (PVA) parting film.

11. Install an oil and moisture trap on the compressed air line leading to the spray gun to remove lint, rust, oil and moisture.

12. Use the catalyzed tooling gel coat within its working life, with proper allowance of time to clean equipment.

13. Do not add anything, other than the right amount pigment paste, appropriate amounts of recommended promoters and the exact level of catalyst.

14. Vinyl Ester Tooling Gel Coats are not compatible in the liquid state with Isophthalic or Isophthalic/Neo-Pentyl Glycol materials. So, equipments must be completely clean of them before using Vinyl Ester Gel Coats.

15. Do not use more than 3.0% catalyst in Tooling Gel Coats, as this may cause excessive shrinkage of the gel coat & pull it away from the plug. For adequate cure, do not use less than 1.2% catalyst.

16. Vinyl ester base polymers have limited UV Resistances. So, it is recommended that molds stored outside are protected from UV exposure. This may be accomplished by covering these molds, or inverting the molds so the top surface is not exposed to sunlight.

STORAGE:

Uncatalyzed tooling gel coats have a usage life of 90 days from date of manufacture when stored at 23°C or below in a closed, factory-sealed opaque container and out of direct sunlight. The usage life is cut in half for every 15°C over 23°C.

POLYESTER SAFETY INFORMATION

All sales of products manufactured by CCP Composites Korea and described herein are made solely on condition that our customers comply with applicable health and safety laws, regulations and orders relating to the safe handling of our products in the workplace. Before using, read the following information and both the product label and Material Safety Data Sheet pertaining to each product.

Most polyester products contain styrene. Styrene can cause eye, skin and respiratory tract irritation. Avoid contact with eyes, skin and clothing. Impermeable gloves, safety eyewear and protective clothing should be worn during use to avoid skin and eye contact. Wash personal protective equipment thoroughly after use.

Styrene is a solvent and may be harmful if inhaled. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Extended exposure to styrene at concentrations above the recommended exposure limits may cause central nervous system depression causing dizziness, headaches or nausea and if overexposure is continued indefinitely, loss of consciousness, liver and kidney damage.

Do not breathe or ingest vapour, spray mists and dusts caused by applying, sanding, grinding and sawing polyester products. Wear an appropriate OSHA approved, properly fitted respirator during application and use of these products until vapours, mists and dusts are exhausted, unless air monitoring demonstrates vapours, mists and dusts are below applicable exposure limits. Follow respirator manufacturer's directions for respirator use.

The International Agency for Research on Cancer (IARC) has reclassified styrene as Group 2B "possibly carcinogenic to humans". This new classification is not based on new health data relating to either humans or animals, but on a change in the IARC classification system. The Styrene Information and Research Center does not agree with the reclassification and has published the following statement: Recently published studies tracing 50 000 workers exposed to high occupational levels of styrene over a period of 45 years showed no association between styrene and cancer, no increase in cancer among styrene workers (as opposed to the average among all workers), and no increase in mortality related to styrene.

Styrene is classified by OSHA and the Department of Transport as a flammable liquid. Flammable polyester products should be kept away from heat, sparks and flame. Lighting and other electrical systems in the workplace should be vapour-proof and protected from breakage.

Vapours from styrene may cause flash fire. Styrene vapours are heavier than air and may concentrate in the lower levels of moulds and the work area. General clean air dilution or local exhaust ventilation should be provided in volume and pattern to keep vapours well below the lower explosion limit and all air contaminants (vapour, mists, dusts) below the current permissible exposure limits in the mixing, application, curing and repair areas.

Some polyester products may contain additional hazardous ingredients. To determine the hazardous ingredients present, their applicable exposure limits

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The information given herein must be read in conjunction with the relevant health and safety data. Starting point formulation and suggestions for use are given for guidance only and made without warranty. This document should not be constructed as permission or inducement to practise any invention by patent without the authority of the owner

and other safety information, read the Material Safety Data Sheet for each product (identified by product code) before using.

FIRST AID: In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If affected by inhalation of vapours or spray mist, remove to fresh air. If swallowed, get medical attention.

Polyester products have at least two components that must be mixed before use. Any mixture of components will have hazards of all components. Before opening the packages, read all warning labels. Observe all precautions.

Keep polyester containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations. Emptied containers may retain hazardous residue. Do not cut, puncture or weld on or near these containers. Follow container label warnings until containers are thoroughly cleaned or destroyed.

FOR INDUSTRIAL USE AND PROFESSIONAL APPLICATION ONLY.

KEEP OUT OF REACH OF CHILDREN.

DISCLAIMER AND LIMITATION OF LIABILITY

The products sold hereunder shall meet Seller's applicable specifications at the time of shipment. Seller's specifications may be subject to change at any time without notice to Buyer. Buyer must give Seller notice in writing of any alleged defect covered by this warranty (together with all identifying details, including the product code(s), description and date of purchase) within thirty (30) days of the date of shipment of the product or prior to the expiration of the shipment's quality life, whichever occurs first. The warranty described herein shall be in lieu of any other warranty, express or implied, including but not limited to, any implied warranty or merchantability or fitness for a particular purpose. There are no warranties that extend beyond the description on the face hereof.

The Buyer's sole and exclusive remedy against Seller shall be for the replacement of the product or refund of the purchase price in the event that a defective condition of the product should be found to exist by Seller. No other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available to the Buyer.

The sole purpose of this exclusive remedy shall be to provide Buyer with replacement of the product or refund of the purchase price of the product if any defect in material or workmanship is found to exist. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Seller is willing and able to replace the defective products or refund the purchase price.

Final determination of the suitability of the material for the use contemplated, the manner of use and whether the suggested use infringes any patents is the sole responsibility of the Buyer.