Technical Data Sheet

Olefin Varnish XP04A for Dry Lamination

February 2016

Product Description

Olefin Varnish XP04A provides the following product characteristics:

Chemical type	Non-chlorinated modified olefin varnish
Solvent	Cyclohexane / Ethylacetate = 7 / 3 (w/w)
Solids content	Approx. 20wt%
Appearance	Slightly suspended pale yellow liquid
Viscosity@25℃	Approx. 120mPa·s (cP)
Density@20℃	0.81g/cm^3
Flash point	Less than -20℃ (Tag closed cup)
Main application	Adhesives (hot melt, dry laminating)

Olefin Varnish XP04A is a highly specified polyolefin adhesive applicable to not only non-polar plastics such as polypropylene but also polar materials such as metals, glass, polyethyleneterephthalate (PET), polymethylmethacrylate (PMMA), and Acrylonitrilebutadienestyrene (ABS). Olefin Varnish XP04A is useful even when high resistance to humidity or aggressive chemicals are required.

Food Regulation Status Information

Olefin Varnish XP04A complies with the safety requirements of the following food contact regulations;

Regulation	Description
Regulation(EU) No10 / 2011	Plastic materials and articles intended to come into contact with food
US/FDA 21CFR §175.105	Adhesives

It is suggested that the producers of the finished packaging should confirm compliance with specification under standard condition we recommended. Besides, please confirm the food regulation status of a hardener if necessary.

Storage

For maximum shelf life, XP04A should be stored between 20℃ and 40℃. It is not recommended to store XP04A at lower than 10℃ over long period since it may result in solidification of XP04A. Please warm XP04A to around 40℃ for re-dissolution when it is partially or completely solidified.

Solubility / Dilution

Olefin Varnish XP04A can be diluted with the following solvents:

- Cyclohexane / Ethylacetate = 7 / 3 (w/w)
- Cyclohexane
- Toluene
- Methylcyclohexane

Large quantity of polar solvents, such as esters, ketones, and alcohol, should not be added to XP04A since it becomes solidified or precipitated.

Hardenability

Olefin Varnish XP04A can be cured with isocyanate polymers. The cured XP04A has improved thermal and chemical resistances. The following is recommended hardeners for XP04A.

- STABiO™ D-370N
  (Pentamethylene dIisocyanate (PDI) trimer)
- TAKENATE™ D-120N
  (Hydrogenated xylene dIisocyanate adduct)
- Hexamethylene dIisocyanate (HDI) trimer

Aromatic isocyanates are not effective due to their poor miscibility with XP04A.

Typical Way to Use for Dry Lamination

The following is a typical formulation and a process condition for the dry lamination:

Mixing ratio by weight	XP04A	: 45
	Solvent	: 27
	HDI trimer (solventless)	: 1
Drying temperature	More than 80 ℃	
Lamination temperature	40 - 120 ℃	
Cure	2 days at 60℃ or 7 days at 23℃	

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Typical Performance

[Adhesive properties]

Coated on an aluminum foil (Dry film thickness; 10μm) then thermocompressed (laminated) at 100℃

180° Peeled at the rate of 100mm/min

	Peel strength (N/cm)	
	XP04A Alone	XP04A Cured with HDI trimer
Corona treated polyethylene	0	> 10
Polypropylene	> 10	> 10
ABS (Natural)	> 10	> 10
Nylon	> 10	> 10
Polystyrene	> 10	> 10
Polycarbonate	> 10	> 10
Polyvinyl chloride (Hard type)	> 6	> 6
Polycarbonate / ABS Alloy	> 10	> 10
Polymethylmethacrylate	> 10	> 10
Polyethyleneterephthalate	> 10	> 10
Polyphenylenesulfide	> 10	> 10
Fiber Reinforced Plastics	> 10	> 10
Glass	> 10	> 10
Magnesium alloy	> 10	> 10
Aluminum (A5052)	> 10	> 10
SUS (304)	> 10	> 10

Directions for Use

1. Confirm the fluidity and transparency of XP04A before use. For the best performance, XP04A should be homogeneous fluid such that the bottom of a can is visible. Please warm XP04A up for re-dissolution if it is partially or completely solidified. XP04A is readily redissolved around 40℃.
2. For viscosity control, please use recommended solvents listed on the above Solubility / Dilution section.
3. Drying temperature of XP04A should be more than 80℃.
4. Lamination temperature should be more than 40℃. Higher thermocompression temperature, e.g. more than 100℃, is required when the lamination is conducted offline since the dried XP04A gradually lose its tackiness along the time after it is removed from the oven.
5. Appropriate curing, e.g. 2 days at 60℃ or 7days at 40℃, is required for the best performance of XP04A cured with isocyanate polymers. No curing is needed when XP04A is used alone.

Label Precaution

[Prevention]

Contain Cyclohexane and Ethylacetate. Do not use near sparks, open flames or sources of static discharge. Use in well ventilated area. Use personal protective equipment; protective eye protection/ protective gloves/protective clothing/safety shoes/protective boots as required.

[Response]

In case of fire: Use Water mist, Foam, Dry chemical, Carbon dioxide (CO2), Dry sand, etc. for extinction. If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention. If on skin or hair: Immediately remove all contaminated clothing. Wash skin with soap and water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If exposed or concerned, or if you feel unwell: Get medical advice/ attention.

Refer to the Safety Data Sheet for further information.

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