

# SOLBIN® AL

## TECHNICAL DATA SHEET

### Product description

SOLBIN AL is a thermoplastic resin consisting of polyvinyl chloride (VC), polyvinyl alcohol (VA) and polyvinyl acetate (VAc). Due to its lower molecular weight than SOLBIN A, it provides lower solution viscosity.

### Product characteristics

- Soluble in ketones, esters and chlorinated hydrocarbons. Use aromatic hydrocarbons as diluent solvents. Insoluble in alcohol, oil and aliphatic hydrocarbons
- Films made from SOLBIN AL are tasteless, odorless, and unaffected at room temperature by alkalis, mineral acids, alcohol, oil and aliphatic hydrocarbons.
- It combines high water resistance with low moisture permeability and low water absorption.
- Offers superior mechanical properties such as anti-abrasion, flexibility and non-tackiness.
- Imparts good, stable dispersibility to pigments and magnetic powder in paints and in dried layers even at high packing density.
- Provides a wide choice for coating formulations due to its compatibility with various resins including polyurethane, epoxy resins, NBR, isocyanate, etc.
- Reacts with organic groups such as isocyanate to form cross linking.

### Solubility

SOLBIN AL is highly soluble in organic solvents such as ketones, esters and chlorinated hydrocarbons.

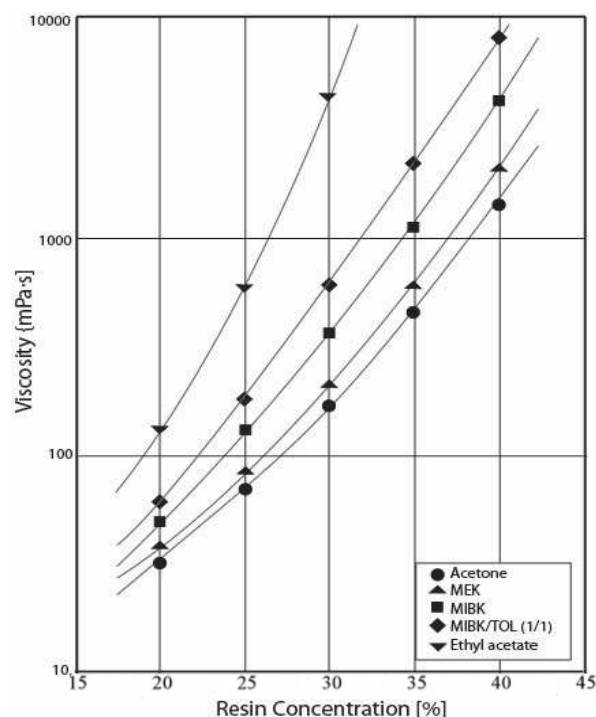
Solvent	25°C	50°C	Solvent	25°C	50°C
Tetrahydrofuran	S	S	Methanol	I	I
Acetone	S	S	Isopropanol	I	I
MEK	S	S	n-Butanol	I	I
MIBK	S	S	Ethylene glycol	I	I
Cyclohexanone	S	S	Methyl acetate	I	S
Ethylene dichloride	S	S	Ethyl acetate	PS	S
Aromatic hydrocarbon	SW	SW	Butyl acetate	PS	S
Toluene	SW	SW	DBP	S	S
Xylene	SW	SW	Dioxane	S	S
Aliphatic hydrocarbon	I	I	Isophorone	S	S

Notes: S... Soluble, PS...Partially soluble, SW...Swells, I...Insoluble

### General properties

Attributes	Test Results
Appearance	Light yellow powder
Grain Size	Passes wholly through 28 mesh sieve
Bulk Density (g/cc)	~ 0.7
Composition (weight %)	
VC	92.5 ± 1.5
VAc	2.5 ± 1.5
VA	5.0 ± 0.5
Degree of Polymerization	300 ± 30
Molecular Weight Mn	2.2 × 10 <sup>4</sup>
Glass Transition Temp. (°C)	76
Solution Viscosity (mPa·s) (MIBK/TOL. 20% @25°C)	70 ± 20

Viscosity of SOLBIN AL solutions with various solvents (@25°C)



# SOLBIN AL

Compatibility with Modifying resins			SOLBIN AL/ Other			
			9/1	4/1	1/1	1/4
Alkyd	Beckosol <sup>*1</sup>	1307-60-EL	O	O	O	O
		1334-EL	O	O	O	X
		1323-60-EL	O	O	O	O
Styrene -Alkyd	Styresol <sup>*1</sup>	4250	Δ	Δ	X	X
		4400	O	O	X	X
Melamine	Beckamine <sup>*1</sup> Superbeckamine <sup>*1</sup>	J-138	O	O	O	O
		TD-126	O	O	O	X
		J-820	O	O	O	O
		G-821	O	O	O	O
Epoxy	Epikote <sup>*2</sup>	828	O	O	O	O
		1001	O	O	Δ	X
Urethane	Nippolan <sup>*3</sup>	2300 series	O	O	O	O
		3000 series	O	O	O	O
	Coronate <sup>*3</sup>	L	O	O	O	

**Coating/film Notes:** O-Transparent ; Δ - Slightly clouded;  
X- Whitish or knurled. \*1—DIC Crop.; \*2—Japan Epoxy  
Resins Co. Ltd.; \*3 Nippon Polyurethane Industry Co., Ltd.

## Applications

- **Printing Ink** - SOLBIN AL is used for coating and gravure printing ink, adding gloss to create a better decorative effect.
- **Metal Container Paints** - SOLBIN AL is used for lining food and beverage containers. Its anti-corrosiveness makes it an excellent choice for use in container lining, including applications for medicines and cosmetics. It produces a tough film that makes it ideal for coating steel and galvanized tin plates that will be fabricated later.
- **Paper and Textile Coating** - SOLBIN AL provides a water-proof protection, adding gloss for a better decorative effect.
- **Magnetic Paint** - Due to SOLBIN AL's excellent dispersing ability for inorganic pigments such as magnetic powder, it is used as a binder and dispersing agent for magnetic paint used to produce video tapes, audio tapes, magnetized cards and floppy disks.

## How to Use

- To ensure SOLBIN AL quickly goes into solution it is recommended to disperse it into a weaker solvent such as toluene and xylene then blend with the stronger solvent.
- SOLBIN AL is usually dissolved in a combination of both ketone (e.g. MEK and MIBK) and aromatic hydrocarbon (e.g. toluene and xylene) solvents in equal proportions, to produce a solution of 15% - 20% concentration by weight. For coatings on a porous substance, (paper or cloth), faster drying solvents such as MEK and acetone are recommended.
- For spray coating, MIBK is used. For baking on metals, ketone with a high boiling point such cyclohexanone is used. For roll coatings, cyclohexanone or isophorone are sometimes used. Heating to around 50°C and

sufficient agitation are required to speed up dissolving.

- In order to provide proper flexibility, resilience and adhesiveness to film, 5-20 PHR of plasticizer are added. The kind and amount of plasticizer to be added can be determined in the same manner as in the method of blending polyvinyl chloride resins.
- Most common pigments can be employed.
- Stabilizers against heat and light are used, as with conventional polyvinyl chloride resins. The addition of about 0.2% propylene oxide, in this case, can prevent the corrosion of containers and change in paints in storage.
- Any method of coating, including spraying, roll coating and others, may be used. For roll coating, a solution of 200-400 seconds in Ford Cup No.4 viscosity should be used. For Spray applications a solution of 60-80 seconds Ford Cup No.4 viscosity should be used at an air pressure of 98-100psi and a liquid pressure of 20-30psi.
- SOLBIN AL does not usually provide satisfactory adhesion through air drying alone. The following chart provides the degree of adhesion to various surfaces by air drying:

Excellent	Polyvinyl chloride resin, Acryl resin
Good	Concrete, Plaster
Fair	Chlorinated rubber
Inferior	Metal, Wood, Paper, Cloth, Phenol resin, Alkyd resin, Butyral resin, Celluloid, Shellac, Dried waterborne or oil paints

- Short-time baking at 170-190°C will significantly improve adhesion and surface gloss. When primers are used, sufficient adhesion may be obtained without baking.

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## Caution

- ◆ Follow the precautions in the material safety data sheet and technical references.
- ◆ SOLBIN is for industrial use only.
- ◆ The data in this document does not include all specifications. Purchasers must conduct tests of their own before putting the product to practical use to verify its compliance, with their intentions for its employment.  
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