

# SOLBIN M5

## TECHNICAL DATA SHEET

### Product description

Solbin M5 is a copolymer of vinyl chloride (VC), vinyl acetate (VAc) and dicarboxylic acid.

#### Product characteristics

- Exhibits superior adhesion to various materials, particularly metal surfaces.
- Soluble in ketones, esters and chlorinated hydrocarbons. Use aromatic hydrocarbons as diluent solvents. Insoluble in alcohol, oil and aliphatic hydrocarbons.
- Chemically stable and unaffected by acids and alkalis at normal temperatures.
- Combines high water resistance with low moisture permeability and low water absorption.
- Tough, resilient and non-flammable.
- Solbin M5 is colorless and transparent with a high refraction index, it can be changed into any bright color and produces a highly glossy film.
- It possesses an excellent ability to resist the effects of weather and aging.
- As is a thermoplastic, films made from it can be easily heat sealed.

#### General properties

| Attributes                                          | Test Results                        |
|-----------------------------------------------------|-------------------------------------|
| Appearance                                          | White powder                        |
| Grain Size                                          | Passes wholly through 28 mesh sieve |
| Bulk Density (g/cc)                                 | ~ 0.7                               |
| Composition (% weight)                              |                                     |
| VC                                                  | 85.0 ± 1.5                          |
| VAc                                                 | 14.0 ± 1.0                          |
| Dicarboxylic acid                                   | 1.0 ± 0.5                           |
| Degree of Polymerization                            | 430 ± 40                            |
| Molecular Weight Mn                                 | 3.2 × 10 <sup>4</sup>               |
| Glass Transition Temp. (°C)                         | 70° C                               |
| Solution Viscosity (mPa·s)<br>(MIBK/TOL. 20% @25°C) | 140 ± 40                            |

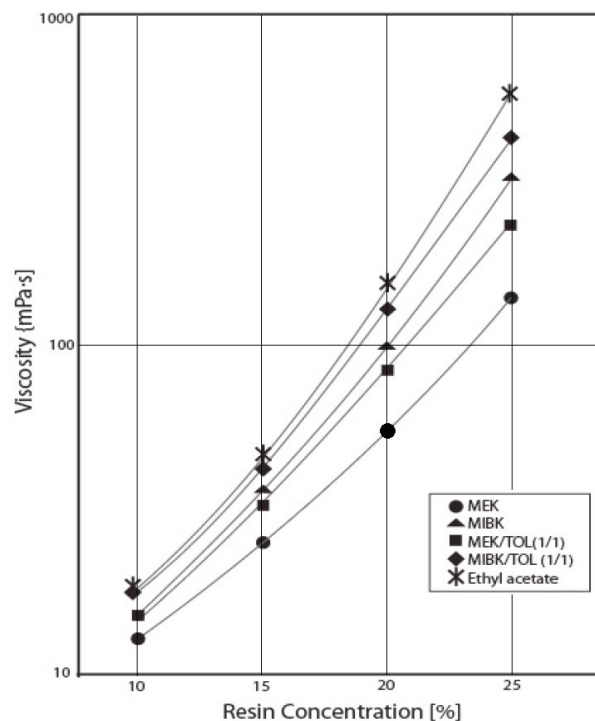
#### Solubility

Solbin M5 is highly soluble in organic solvents such as ketones, esters and chlorinated hydrocarbons.

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

Notes: S... Soluble; PS...Partially soluble; SC...Soluble but turns cloudy; SW...Swells; I...Insoluble

Viscosity of Solbin M5 solutions with various solvents (@25°C)



# SOLBIN M5

| Compatibility with<br>Modifying resins |                                                         |             | SOLBIN M5/ Other |     |     |     |
|----------------------------------------|---------------------------------------------------------|-------------|------------------|-----|-----|-----|
|                                        |                                                         |             | 9/1              | 4/1 | 1/1 | 1/4 |
| Alkyd                                  | Beckosol <sup>*1</sup>                                  | 1307-60-EL  | O                | O   | O   | X   |
|                                        |                                                         | 1334-EL     | O                | O   | X   | X   |
|                                        |                                                         | 1323-60-EL  | O                | O   | X   | X   |
| Styrene<br>-Alkyd                      | Styresol <sup>*1</sup>                                  | 4250        | Δ                | Δ   | X   | X   |
|                                        |                                                         | 4400        | Δ                | X   | X   | X   |
| Melamine                               | Beckamine <sup>*1</sup><br>Superbeckamine <sup>*1</sup> | J-138       | Δ                | X   | X   | X   |
|                                        |                                                         | TD-126      | O                | O   | Δ   | X   |
|                                        |                                                         | J-820       | Δ                | Δ   | X   | X   |
|                                        |                                                         | G-821       | O                | O   | Δ   | X   |
| Epoxy                                  | Epikote <sup>*2</sup>                                   | 828         | O                | O   | O   | O   |
|                                        |                                                         | 1001        | O                | O   | X   | 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

- Metal Protective Paints—Excellent non-corrosive properties.
- Metal Container Paints—Its anti-corrosive properties makes it an excellent choice for lining food and beverage containers, 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.
- Foil Coating—Heat-seal coatings
- Ship Paints—Exceptionally high anticorrosive properties make it ideal for topcoat as well as wash primer and second coat applications.
- Cellophane coating—SOLBIN M5 is damp-proof, its film is readily heat sealed, ideal for coating cellophane.
- Concrete and Plaster Paints—Coating the walls of quays.
- Adhesives—PVC and blister packages.
- Plastic coatings—Adds gloss to both coating and gravure printing ink on plastic.

## How to Use

- To ensure Solbin M5 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 M5 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 M5 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, Cloth, Phenol resin, Alkyd resin, Butyral resin, celluloid, Shellac, Dried water-borne 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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