Joncryl® 504

Product Description **Joncryl® 504 is a hydroxyl functional acrylic polyol for industrial baking coatings.**

Key Features & Benefits

- Narrow molecular weight distribution
- Xylene version of Joncryl® 500
- Electrostatic application ability

Chemical Composition **Hydroxyl functional acrylic polyol**

Properties

Product Specifications

Appearance	clear liquid
Hydroxyl number	135 – 150
Non-volatile at 150°C (0.5g, 60 minutes)	79.5 – 81.5%
Viscosity at 25.0 ± 0.5°C (Brookfield #4LV, 60 rpm, 30 seconds)	5,500 – 10,000 cps
Density at 20°C	1.04 (8.66 lbs/gal)
Freeze-thaw stable	Yes

Typical Characteristics

Equivalent weight as supplied, of solids	500, 400
Tg (measured)	- 7°C, 19.4°F
Solvent	Xylene

These typical values should not be interpreted as specifications.

Applications

Joncryl® 504 is an innovative hydroxyl functional acrylic oligomer for high solids melamine baking systems. Coatings formulated with Joncryl® 504 feature a low viscosity at high solids and excellent flow and leveling with acrylic durability. In addition, Joncryl® 504 is supplied in xylene. The use of xylene as the carrier solvent allows the formulation of coatings with high resistivity for electrostatic application. Because it is supplied in xylene, Joncryl® 504 is also the most economical product from the Joncryl® 504 family of resins. Joncryl® 504 has also shown significant utility in urethane coating applications.

Joncryl® 504 is recommended for applications such as:

- Interior/exterior automotive refinish applications
- Interior/exterior general metal industrial coating application

Formulation Guidelines

The following formulating guidelines represent basic direction, which has proven useful to most formulators. Specific applications and special situations can be discussed with your Account Manager or with Technical Service personnel.

Crosslinker Selection - For most applications, a standard Hexamethoxy methyl melamine resin is satisfactory. A variety of melamines, urea-formaldehydes, benzo-guanamines, and other specialty resins are available for special requirements and applications.

Acrylic-to-Melamine Ratio - Because of steric hindrance associated with the bulky melamine molecule, it is necessary to determine the optimum acrylic-to-melamine ratio experimentally. A ratio

of 70:30 acrylic to melamine by solid weight has been found to provide good overall performance in most applications and should be considered a starting point. Ladder studies generally run in the 55:45 to 85:15 acrylic-to-melamine range.

Solvent Selection - Ketone solvents will give the best viscosity/VOC due to a combination of good solvency and low density. Ester and glycol ethers generally provide the next best viscosity/VOC, but do not provide as low of a viscosity/VOC as the ketones due to their higher density. Generally, the lower the molecular weight of the solvent within the family, the lower the viscosity/VOC that is obtainable. Aromatics, such as Xylene and Toluene, provide good solvency and are favored for electrostatic applications. Because the melamine molecule tends to self-condense, primary alcohols should be included to stabilize the formulation. Butanol levels of 25% to 50% of the total available solvent are normally recommended for greatest stability.

Catalysis - The addition of 0.5% of a pTSA catalyst on total resin solids is normally recommended. Higher catalyst levels can be employed to speed the cure response, but it is also advisable to evaluate amino resins with higher imino content. In addition, a variety of acid catalysts designed to address specific problems such as package stability, moisture resistance, etc. are available from various suppliers.

Additives – Efka SL 3236 is recommended for improving flow and leveling and may also aid in release of air entrapment and defoaming. If a dispersant is necessary, a mixture of Efka FA 4663 AN and Efka FL 3740 EH is recommended (ladder study to determine ideal ratio is recommended). For higher film build or control of sagging, thixatropes such as bentonite clays, fumed silicas, or organic additives such as Efka RM 1900 can be used.

Starting Point Formulation

The following starting point formulation is recommended for an initial evaluation of Joncryl® 504. Additional optimization of the formulation will be required to achieve desired results for specific applications.

Joncryl® 504 GLOSS CLEAR TOPCOAT, Formula 32002-4A

Part A	**Pounds**	**Gallons**
Joncryl® 504	468.50	54.50
Efka® FL 3750	0.56	0.07
MAK	171.10	25.16
DBTDL (1% in MAK)	5.00	5.00
Subtotal	**645.16**	**84.73**
Part B		
Basonat® HI 100 NG	194.60	19.94
Total	**839.76**	**104.67**

Formulation Attributes for Formula 32002-4A

Solids	67.2% by wt.	60.1% by Vol.
Viscosity (Brookfield)	115 to 130 cPs	
NCO:OH ratio	1.05 : 1.0	
Catalyst level, DBTDL on TRS	0.005%	
VOC (calculated)	325 g/L	2.8 lbs./gal

Safety

General The usual safety precautions when handling chemicals must be observed. These include the measures described in Federal, State, and Local health and safety regulations, thorough ventilation of the workplace, good skin care, and wearing of protective goggles.

Safety Data Sheet All safety information is provided in the Material Safety Data Sheet for Joncryl® 504.

Storage

Please refer to the “Handling and Storage of polymer dispersions” brochure.

Important

Responsible Care®
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