Industrial Coatings

Technical Data Sheet

Joncryl® RPD 980-B Polyol

Preliminary Data Sheet

BASF
The Chemical Company

Product Description

Joncryl® RPD 980-B is a Rapid Property Development (RPD) acrylic polyol for high solids polyurethane coating applications.

Key Features & Benefits

- Rapid dry through and cure time
- Practical pot life
- Utility as a modifier
- Excellent gloss development
- Suitable for low VOC systems

Chemical Composition

RPD acrylic polyol

Properties

Product Specifications

Appearance	clear liquid
Non-volatile at 110°C (0.5g, 60 minutes)	79.0 – 81.5%
Hydroxyl number	135 – 150
Viscosity at 25.0 ± 0.5°C (Brookfield #4LV, 60 rpm, 30 seconds)	3,600 – 8,000 cps

Typical Characteristics

Density at 68°F	8.6 lbs/gal
Equivalent weight as supplied, of solids	500, 400
Tg	- 7°C (19.4°F)
Flash point	116.6°F
Solvent	n-butyl acetate
Freeze-thaw stable	Yes

These typical values should not be interpreted as specifications.

Applications

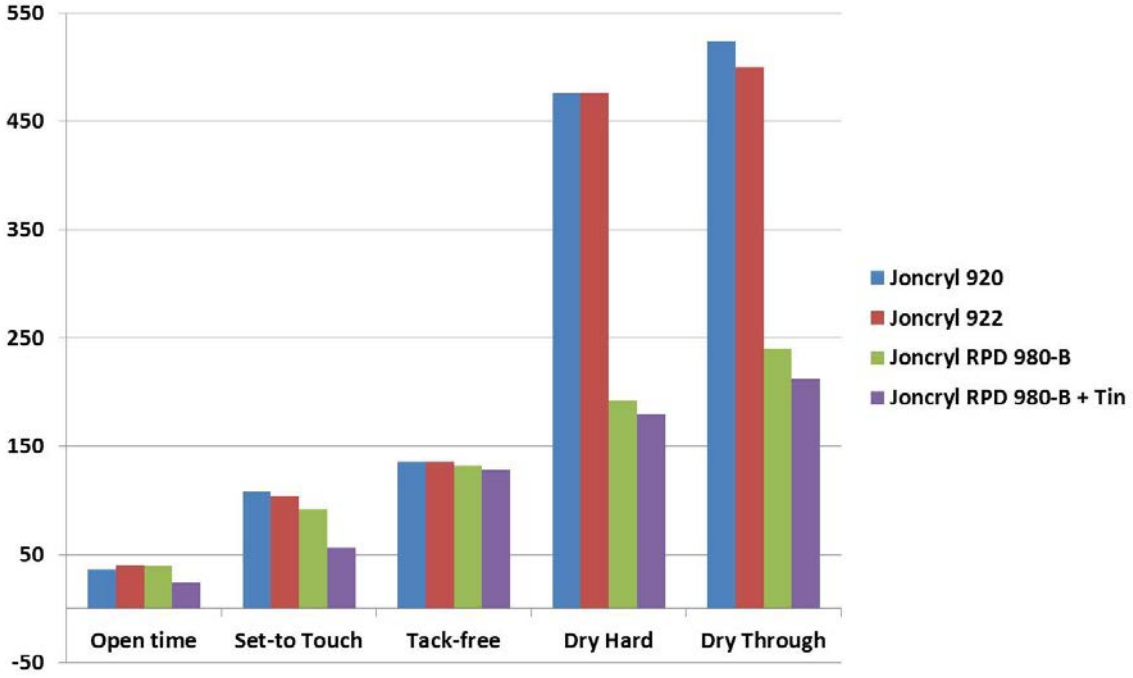
Joncryl® RPD 980-B is an innovative acrylic oligomer for high solids polyurethane coatings, which combines Rapid Property Development with a practical pot life. High solids coatings that are as low as 2.1 lbs/gal (250 g/l) of VOC without exempt solvents, can be formulated to spray by conventional or airless equipment. It displays outstanding viscosity characteristics without the addition of low molecular weight reactive diluents. Joncryl® RPD 980-B should be considered as a candidate for high performance maintenance and transportation coatings as a replacement for conventional solids polyol resins in urethane finishes.

Joncryl® RPD 980-B is recommended for applications such as:

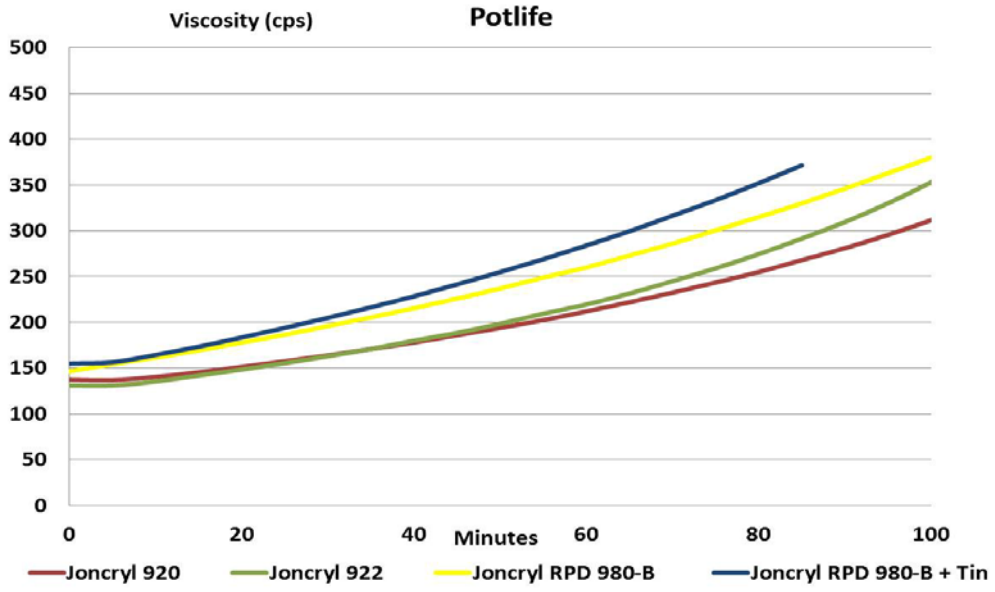
- Interior/exterior automotive refinish applications
- Interior/exterior general industrial coating applications
- Modifier to improve flow and leveling

Cure/Dry Characteristics

The following graph illustrates the dry times/cure rates of a clear formulation based on Joncryl® RPD 980-B. Due to the increased reactivity of Joncryl® RPD 980-B, catalysts are not normally used. If increased reactivity is desired, typical urethane catalysts such as dibutyltin dilaurate can be used. If a catalyst is used, the dry time and the pot life will both be reduced. The pot life of this system will normally be between 1 – 2 hours when pot life is defined as the time to double an initial viscosity of 150 cps.

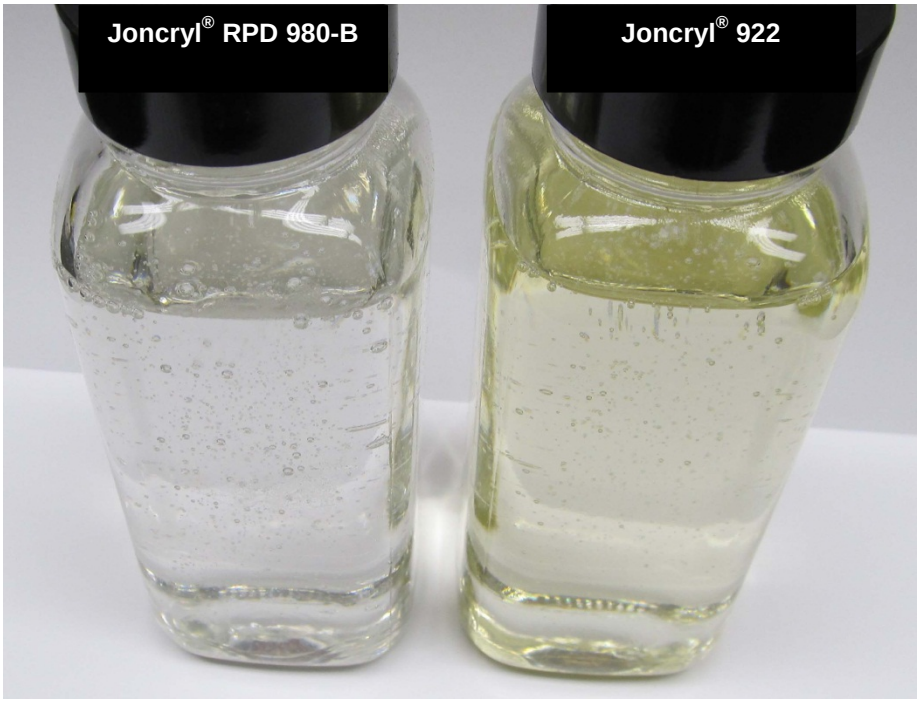


Evaluations of Gardner dry times are very subjective. The dry times will normally lie somewhere within the area plotted on the chart above.



Color / Clarity

Joncryl® RPD 980-B is very low in color and has excellent clarity. It will provide clear high gloss films.



Formulation Guidelines

Crosslinker Selection – For maximum gloss retention properties, aliphatic isocyanates are recommended. The Trimer or Biuret versions of hexamethylene diisocyanate can be used. The Trimer version may give better gloss retention and reactivity. A ratio of 1.05:1 of isocyanate to hydroxyl is normally recommended in the industry.

Solvent Selection – Because the hydroxyl functionality of alcohols and glycol ethers can react with isocyanates, their use should be avoided. Urethane-grade solvents should be used when available. Ketone solvents will give the best viscosity/VOC due to a combination of good solvency and low density. Esters 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 can be readily used in combination with the more polar solvents. Glycol ether acetates can be used but normally do not provide as low viscosity/VOC. PM-Acetate exhibits film retention characteristics.

Catalysis – Due to the increased reactivity of Joncryl® RPD 980-B, a catalyst is not normally required. If additional speed of cure is desired, typical urethane catalysts such as dibutyltin dilaurate can be utilized. Catalysis with 0.005% dibutyltin dilaurate on total binder solids is normally recommended. Higher catalyst level will result in shorter pot lives and faster cure rates. Other catalysts such as zinc octoate and other metallic soaps can also be used.

Use as a Modifier - Joncryl® 980-B can be used as a modifier to upgrade the performance of low molecular weight polyester and acrylic polyols. It can be used to lower the viscosity/VOC of higher VOC systems including acrylics and polyesters.

Starting Point Formulation

The following starting point formulation is recommended for an initial evaluation of Joncryl® RPD 980-B. Additional optimization of the formulation may be required to achieve desired results for specific applications.

Joncryl® RPD 980-B GLOSS MAINTENANCE COATING, Formula 192-A

Part A	**Percentage**
Joncryl® 980-B	16.3
Efka® 3288	0.16
MAK	6.11
Add while mixing:	
Ti-Pure[1] R-960	38.71
Disperse to 6 – 7 Hegman, then add:	
Joncryl® 980-B	14.53
PCBTF	8.96
MAK	2.85
Subtotal	87.64
Part B	
Basonat® HI 100	12.36
Total	**100.00**

Formulation Attributes

Solids	76% by wt, 65% by volume
PVC	22%
Pigment:Binder ratio	1.05
NCO:OH ratio	1.05:1
VOC (calculated)	2.07 lbs/gal, 248 g/l

Joncryl® RPD 980-B GLOSS CLEAR COATING, Formula 192-C

Part A	**Percentage**
Joncryl® 980-B	53.15
Efka® 3288	0.28
MAK	9.83
PCBTF	15.44
Subtotal	78.7
Part B	
Basonat® HI 100	21.3
Total	**100.00**

Formulation Attributes

Solids	64% by wt, 64% by volume
NCO:OH ratio	1.05:1
VOC (calculated)	2.08 lbs/gal, 249 g/l

[1]Registered trademark of E.I. du Pont de Nemours and Company.

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.

Material Safety Data Sheet

All safety information is provided in the Material Safety Data Sheet for Joncryl® RPD 980-B.

Important

While the descriptions, designs, data and information contained herein are presented in good faith and believed to be accurate, they are provided for guidance only. Because many factors may affect processing or application/use, BASF recommends that the reader make tests to determine the suitability of a product for a particular purpose prior to use. **NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESCRIPTIONS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS.** In no case shall the descriptions, information, data or designs provided be considered a part of BASF's terms and conditions of sale. Further, the descriptions, designs, data, and information furnished by BASF hereunder are given gratis and BASF assumes no obligation or liability for the descriptions, designs, data or information given or results obtained all such being given and accepted at the reader's risk.

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