Industrial Coatings

Technical Data Sheet

Joncryl® 804 Polyol

BASF
We create chemistry

Product Description

Joncryl® 804 is a high equivalent weight, hydroxyl functional solid flake acrylic polyol for liquid polyurethane and industrial powder coating applications.

Key Features & Benefits

- Wide solvent selection latitude
- Exceptional appearance for powder coatings
- Excellent exterior durability and chemical resistance
- Excellent gloss and gloss retention
- High equivalent weight for economical urethane formulations

Chemical Composition

Hydroxyl functional acrylic polyol

Properties

Typical Properties

Appearance	clear flake
Hydroxyl number	~ 50
Non-volatile	≥ 98.5%
Acid number (4g, 50/50 3A alcohol/acetone, 01N NaOH)	~ 20
Density as supplied, on solids	1.15 g/cm^3 (9.6 lbs/gal)
Equivalent weight as supplied, of solids	1,250
Tg (measured)	70°C
Freeze-thaw stable	Yes

These typical values should not be interpreted as specifications.

Applications

Joncryl® 804 is a high equivalent weight, hydroxyl functional acrylic polyol for economical liquid polyurethane and powder coating applications.

Joncryl® 804 is recommended for applications such as:

- Interior/exterior general metal powder coating applications
- Interior/exterior plastic component coating applications
- Exterior wood coatings for furniture applications
- Automotive refinish applications

Formulation Guidelines

Solvent Selection – Because the hydroxyl functionality of alcohols and glycol ethers can react with the isocyanates, their use should be avoided. Urethane-grade solvents should be used when available. Ketones will give the best viscosity/VOC due to a combination of good solvency and low density. Esters are the next best choice although they do not provide as low a viscosity/VOC as ketones due to their higher density. Generally, the lower the molecular weight of the solvent within the family, the lower the obtainable viscosity/VOC. 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 low viscosity/VOC. PM-acetate should be avoided due to film retention characteristics.

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. However, a ratio of 1:1 of isocyanate to hydroxyl is more economical and does not sacrifice performance properties.

Catalysis – Catalysis with 0.005% dibutyltin dilaurate on total binder solids is normally recommended. Higher catalyst levels will result in shorter pot lives and faster cure rates. Other catalysts such as zinc octoate and other metallic soaps can also be used.

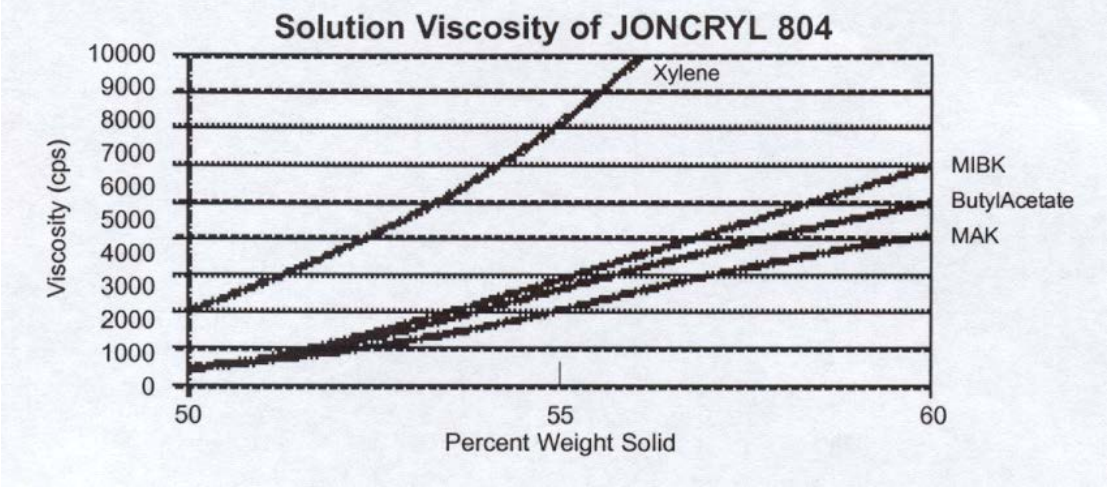
Additives – BYK[1]-320 is recommended at 2 pounds per 100 gallons of combined formulation. BYK[1]-320 results in excellent flow and leveling as well as providing air release during manufacture and application. If a dispersant is necessary, Lecithin or Disparlon[2] KS-273N is recommended. For higher film build, thixatropes such as bentonite clays, fumed silicas, or organic additives such as Thixatol[3] can be used.

ECONOMICAL LIQUID POLYURETHANE COATINGS

Joncryl® 804 is a solid flake, acrylic polyol resin with a high equivalent weight that can be used to manufacture economical liquid urethane coatings at conventional solids. Joncryl® 804 has a high equivalent weight of 1,250 that results in a low isocyanate demand and low coating cost. Joncryl® 804's polyol acrylic backbone provides gloss retention and performance characteristics suitable for urethane applications. Joncryl® 804 should especially be considered where cost of the supplied coating is a priority. Joncryl® 804 is also used in powder coating applications.

Viscosity Reduction Curves

The following curves show representative viscosity curves for Joncryl® 804 in various solvents.



Flake Cutting Procedures

Joncryl® 804 can be cut in-situ during the coating manufacture or pre-cut and stored for later use. The in-situ method is generally preferred for maximum cost saving and is illustrated in Formula 435-A (page 3). A pre-cut may be prepared by the following method. A high-speed disperser or equivalent is suitable for preparing the solution cut.

- Charge solvent to mixing vessel and begin mixing at high speed.
- Add Joncryl® 804 flakes while mixing. Increase speed of mixing to compensate for increasing viscosity. Maintain vortex during cutting phase.
- After all flake has been added, cover tank and mix at high speed until resin dissolves.
- Filtration during filling is recommended to remove any un-dissolved material.

[1]Registered trademark of BYK-Chemie GmbH.
[2]Registered trademark of King Industries, Inc.
[3]Registered trademark of Elementis Specialties, Inc.

Starting Point Formulation

The following starting point formulation is recommended for an initial evaluation of Joncryl® 804. Additional optimization of the formulation may be required to achieve desired results for specific applications.

Joncryl® 804 WHITE TOPCOAT, Formula 435-A

Part A	**Pounds**	**Gallons**
Add flakes while mixing:		
n-Butyl acetate	50.00	6.80
Joncryl® 804	100.00	10.42
BYK[1]-320	2.0	0.28
Mix at high speed until resin flakes are mostly dissolved, then add:		
Ti-Pure[4] R-960	193.90	6.02
Disperse at high speed to 6 – 7 Hegman, then add:		
n-Butyl acetate	86.7	11.80
Joncryl® 804	150.3	15.66
Mix until resin completely dissolves, then add:		
n-Butyl acetate	309.90	42.16
n-Butyl propionate	17.23	2.36
2-Ethylhexyl acetate	4.65	0.64
10% DBTDL in n-Butyl acetate	0.10	0.02
Subtotal	914.78	96.16
Part B		
Basonat® HI 100	37.40	3.84
Total	**952.18**	**100.00**

Formulation Attributes

Solids	51% by wt, 36% by volume
Viscosity	42 seconds (Zahn #2), 190 cps
PVC	17%
VOC (calculated)	562 g/l, 4.7 lbs/gal

HYDROXY FUNCTIONAL ACRYLIC POLYOL FOR POWDER COATINGS

Joncryl® 804 is a hydroxyl functional acrylic polyol designed for UV-resistant, urethane acrylic powder coatings. These coatings typically utilize blocked polyisocyanate crosslinkers and result in very hard, durable films. Joncryl® 804 provides an excellent alternative to UV-sensitive polyester powder coatings. This polyol offers excellent storage stability, flow, and appearance. The softening point is 105°C and the acid number of solids is 15.

Joncryl® 804 reacts readily with any crosslinker designed for use with hydroxyl functional resins in powder coatings. The rate of reaction can be accelerated with the use of catalysts such as dibutyltin dilaurate.

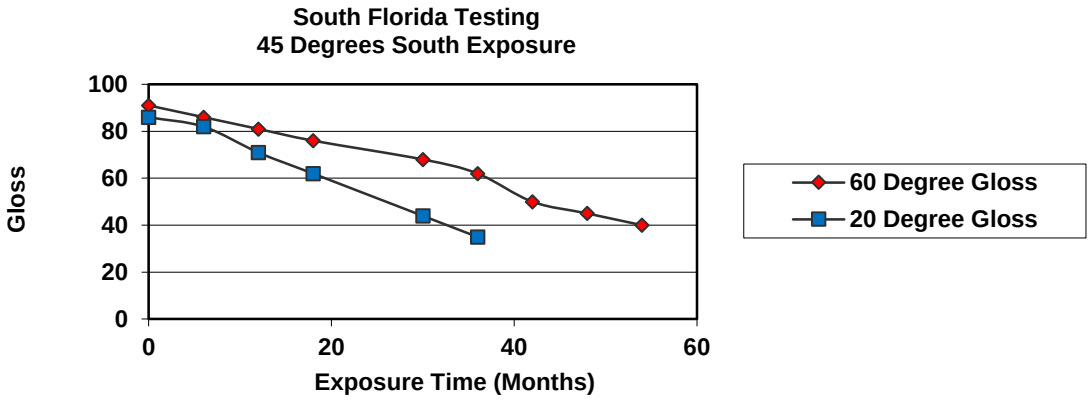
Starting Point Formulation

The following starting point formulation is recommended for an initial evaluation of Joncryl® 804. Additional optimization of the formulation may be required to achieve desired results for specific applications. The combining ratio with Vestigon[5] BF-1530 is 82:18.

	HIGH GLOSS WHITE	**HIGH GLOSS BLACK**	**HIGH GLOSS CLEAR**
Materials	**Formula 414-A**	**Formula 414-B**	**Formula 414-C**
Joncryl® 804	50.40	79.14	80.30
Vestagon[5] BF-1530	11.00	17.36	17.70
Modaflow[6] Powder III	1.20	1.20	1.20
Uraflow[7] B	0.60	0.80	0.80
Ti-Pure[4] R-960	36.80	-	-
Special Black[5] 4A	-	1.50	-
Total	**100.00**	**100.00**	**100.00**

[4]Registered trademark of E.I. du Pont de Nemours and Company.
[5]Registered trademark of Evonik Degussa Corporation.
[6]Registered trademark of Cytec Technology Corp.

[7]*Registered trademark of GCA Chemical.*



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® 804.

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.

Basonat and Joncryl are registered trademarks of BASF Group.

Responsible Care®
Good Chemistry at Work

BASF Corporation is fully committed to the Responsible Care® initiative in the USA, Canada, and Mexico.
For more information on Responsible Care® go to:
U.S.: www.basf.us/responsiblecare_usa
Canada: www.basf.us/responsiblecare_canada
México: www.basf.us/responsiblecare_mexico

U.S & Canada
BASF Corporation
24710 W Eleven Mile Road
Southfield, MI 48033
ph: 1(800) 231-7868
fax:1(800) 392-7429
Email: Custserv_charlotte@basf.com
Email: edtech_info@basf.com
www.basf.us/dpsolutions

Mexico
BASF Mexicana, S.A. de C.V.
Av. Insurgentes Sur # 975
Col. Ciudad de los Deportes
C.P. 03710
Mexico, D.F.
Phone: (52-55) 5325-2756
Fax: (52-55) 5723-3011