Industrial Coatings

Technical Data Sheet

Joncryl® 915 Polyol

BASF
We create chemistry

Product Description **Joncryl® 915 is a fast curing acrylic polyol for high solids polyurethane coating applications.**

Key Features & Benefits ***- Low VOC***
- Good durability

Chemical Composition **Acrylic polyol**

Properties

Typical Properties

Appearance	clear liquid
Non-volatile at 150°C (0.5g, 60 minutes)	77%
Hydroxyl number of solids	95
Viscosity at 25.0 ± 0.5°C (Brookfield #4LV, 30 rpm, 30 seconds)	5,000 – 10,000 cps
Density at 20°C	1.06 g/cm^3 (8.80 lbs/gal)
Equivalent weight as supplied, of solids	767, 590
Tg	13°C
Solvent	n-Butyl acetate

These typical values should not be interpreted as specifications.

Applications

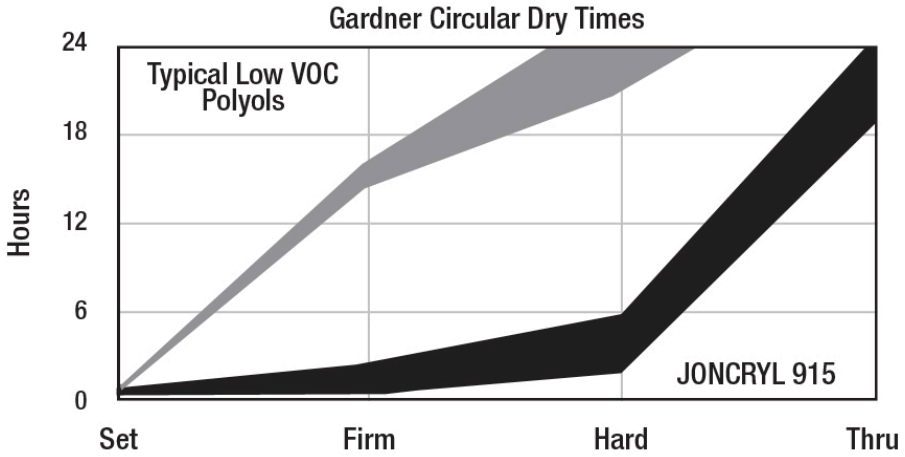
Joncryl® 915 is an innovative acrylic oligomer for high solids polyurethane coatings featuring fast cure times. The equivalent weight of Joncryl® 915 has been maximized to provide the lowest isocyanate demand possible while maintaining good crosslink density. High solids coatings that are as low as 2.8 pounds per gallon of VOC can be formulated to spray by conventional or airless equipment. Joncryl® 915 displays outstanding viscosity characteristics without the addition of low molecular weight reactive diluents. Joncryl® 915 should be considered as a candidate for high performance maintenance and transportation coatings as a replacement for conventional solids polyurethane finishes.

Joncryl® 915 is recommended for applications such as:

- Interior/exterior general metal coating applications
- Automotive refinish coating applications
- Interior/exterior concrete coating applications

Cure/Dry Characteristics

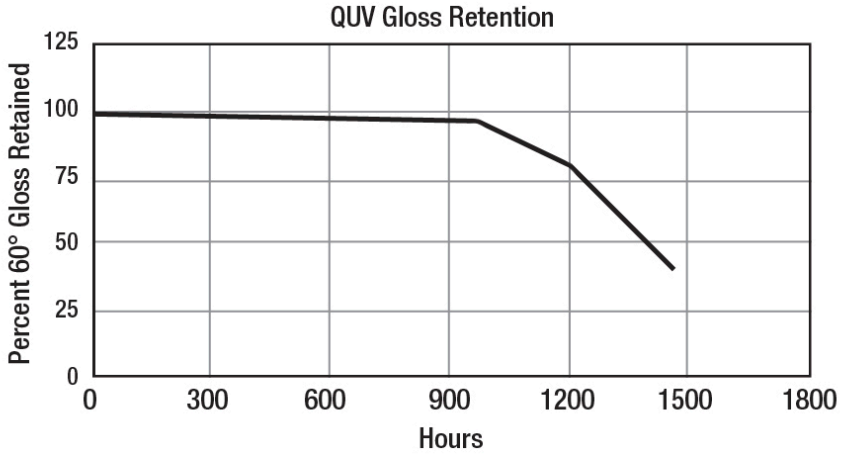
The following graph illustrates the dry times/cure rates of a typical white topcoat formula based on Joncryl® 915. Due to the increased reactivity of Joncryl® 915, catalysts are not normally used. If increased reactivity is desired, typical urethane catalysts such as dibutyltin dilaurate can be used. 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 2 – 3 hours when pot life is defined as the time to double an initial viscosity of 250 cps.



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

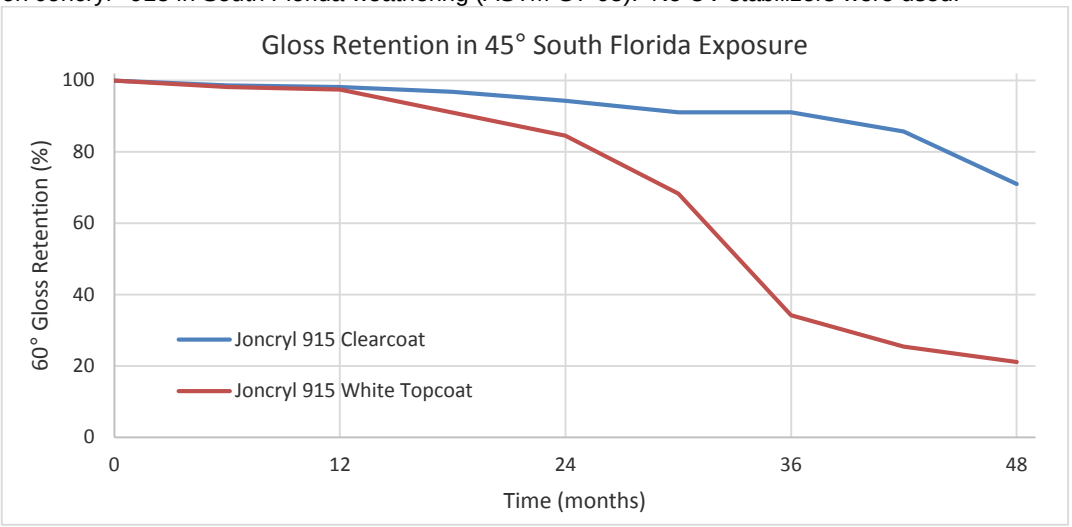
QUV Gloss Retention

The following graph shows the QUV gloss retention of Joncryl® 915 in a white topcoat formula. QUV gloss retention results were obtained using UVB-313 bulbs with 4 hours of light at 60°C followed by 4 hours of condensation at 40°C. The formulation uses a 17% PVC, Basonat® HI 100 as the crosslinker and n-Butyl Acetate as the solvent. Due to the increased reactivity of Joncryl® 915, a catalyst was not added to this formulation. UV stabilizers were not used.



South Florida Weathering

The following graph demonstrates the 60° gloss retention of polyurethane coating formulations based on Joncryl® 915 in South Florida weathering (ASTM G7-05). No UV stabilizers were used.



Formulation Guidelines

Crosslinker Selection – For maximum gloss retention properties, aliphatic isocyanates are recommended. The isocyanurate (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.

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.

Catalysis – Due to the increased reactivity of Joncryl® 915, a catalyst is not normally required. If additional speed of cure is desired, typical urethane catalysts such as dibutyltin dilaurate can be utilized. If required, 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 – Efka® FL 3670 results in excellent flow and leveling. If a dispersant is necessary, Lecithin or Disparlon[1] KS-273N is recommended. For higher film build, thixatropes such as bentonite clays, fumed silicas, or organic additives such as Thixatrol[2] can be used.

Use as a Modifier – Joncryl® 915 can be used as a modifier to upgrade the performance of low molecular weight polyesters and acrylic polyols. It can also 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® 915. Additional optimization of the formulation may be required to achieve desired results for specific applications.

Joncryl® 915 URETHANE HIGH GLOSS ENAMEL, Formula 171-U

Part A	**Pounds**	**Gallons**
Joncryl® 915	200.00	23.00
Efka® FL 3670	2.45	0.30
n-Butyl acetate	25.00	3.40
Add while mixing:		
Ti-Pure[3] R-960	340.50	10.60
Disperse to 7 Hegman, then add:		
Joncryl® 915	267.00	30.69
n-Butyl acetate	144.80	19.69
Subtotal	979.75	87.68
Part B		
Basonat® HI 100	119.90	12.32
Total	**1,099.65**	**100.00**

Formulation Attributes

Solids	75% by wt, 62% by volume
Viscosity	400 cps
PVC	17%
Pigment:Binder ratio	0.7
NCO:OH ratio	1.03:1
VOC (calculated)	2.8 lbs/gal, 333 g/l

[1]Registered trademark of King Industries, Inc.
[2]Registered trademark of Elementis Specialties, Inc.
[3]Registered trademark of The Chemours Company.

Coating Physical Properties and Chemical Resistance

The following table shows the physical properties and chemical resistance of a Joncryl® 915-based white topcoat formula:

Gloss, 60° / 20°	97 / 90
Pencil hardness	H – 2H
König hardness	100
Direct impact	52 in/lbs
Reverse impact	36 in/lbs
Acid resistance	9
Caustic resistance	9
Solvent resistance	8

Acid, caustic, and solvent resistances are rated on a scale of 10 - 1, with 10 equal to no effect after a 24-hour spot test.

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 personal protective equipment.

Safety Data Sheet

All safety information is provided in the Safety Data Sheet for Joncryl® 915.

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.

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 48034
ph: 1(800) 231-7868
fax:1(800) 392-7429
Email: DispersionsPigmentsCC@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