

Industrial Coatings

Technical Data Sheet

Joncryl[®] 909 Polyol



Product Description	Joncryl [®] 909 is a fast curing, acrylic polyol for medium solids polyurethane coating applications.
Key Features & Benefits	<ul style="list-style-type: none">- <i>Excellent early hardness development and fast dry time</i>- <i>Excellent gloss and color retention</i>- <i>Good chemical resistance</i>- <i>Outstanding durability</i>
Chemical Composition	Acrylic polyol

Properties

Typical Properties

Appearance	clear liquid
Hydroxyl number of solids	~ 117
Non-volatile at 150°C (0.5g, 60 minutes)	~ 68%
Viscosity at 25.0 ± 0.5°C (Brookfield #4LV, 30 rpm, 30 seconds)	4,000 – 9,000 cps
Density at 20°C	~ 1.03 g/cm ³ (8.6 lbs/gal)
Equivalent weight as supplied, of solids	~ 706, 480
Tg	~ 25°C
Solvent	n-Butyl acetate

These typical values should not be interpreted as specifications.

Applications

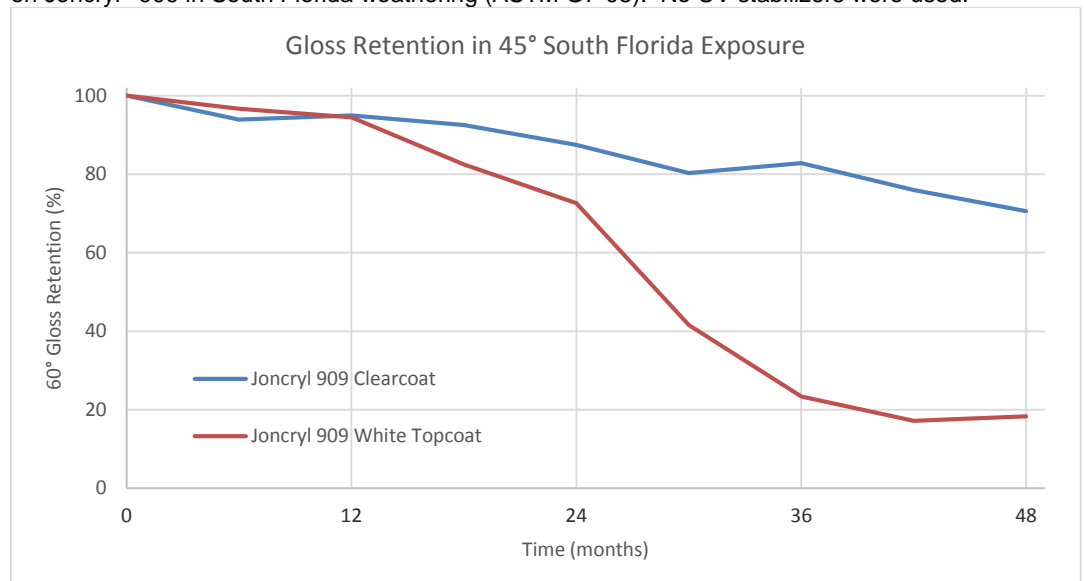
Joncryl[®] 909 is an acrylic oligomer for medium solids urethane coatings. It is supplied in n-butyl acetate for use where odor is a concern and should be considered as a candidate for high performance, maintenance, automotive refinish, and transportation coatings as a replacement for conventional solids urethane finishes.

Joncryl[®] 909 is more reactive with isocyanate crosslinking agents, which results in the ability to formulate fast drying urethane coatings with quick dry times, hardness development, and practical pot life.

Joncryl[®] 909 is recommended for applications such as:

- Interior/exterior general metal coating applications
- Interior/exterior plastic component coating applications

The following graph demonstrates the 60° gloss retention of polyurethane coating formulations based on Joncryl® 909 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. 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 the 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. Toluene especially provides low viscosity/VOC. Glycol ether acetates can be used, but normally do not provide low viscosity/VOC. PM acetate should be avoided due to its film retention characteristics. VOC-exempt solvents have been found to work well and should be considered when lower VOC capability is desired.

Catalysis – Due to the increased reactivity of Joncryl® 909, 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 levels will result in shorter pot lives and faster cure rates. Other catalysts such as zinc octoate, bismuth carboxylate, zinconium chelate, and aluminum chelate can also be used.

Additives – Efka® FL 3670 results in excellent flow and leveling. If a dispersant is necessary, Lecithin or Disparlon² KS-273N are recommended. For higher film build, thixotropes such as bentonite clays, fumed silicas, or organic additives such as Thixatrol⁴ can be used.

Processing

Accelerated testing indicates that Joncryl® 909 will exhibit good exterior durability. Coatings with as little as 3.3 lbs/gal of VOC can be formulated with Joncryl® 909, depending on the formulation type and viscosity.

High solids coatings for maintenance, transportation, automotive refinish, and other applications can be formulated from 3.2 to 4.5 pounds per gallon of VOC.

¹Registered trademark of King Industries, Inc.

²Registered trademark of Elementis Specialties, Inc.

Starting Point Formulation

The following starting point formulation is recommended for an initial evaluation of Joncryl® 909. Additional optimization of the formulation may be required to achieve desired results for specific applications.

Joncryl® 909 URETHANE GLOSS WHITE

Part A	Pounds	Gallons
Joncryl® 909	199.24	23.17
Methyl n-amyl ketone	17.77	2.61
M-P-A ² 4020 BA	10.17	1.32
Efka® FL 3670	2.54	0.31
Ti-Pure ³ R-960	283.22	8.78
Disperse at high speed to 6 Hegman, then add:		
Joncryl® 909	222.48	25.87
Methyl n-amyl ketone	122.14	17.94
Subtotal	857.56	80.00
Part B		
Basonat® HI 100	122.18	12.56
Methyl n-amyl ketone	50.65	7.44
Total	1030.39	100.00

Formulation Attributes

Solids	67.5% by wt
Mix ratio by volume	4:1
PVC	16%
Pigment:Binder ratio	0.69
NCO:OH ratio	1.05:1
VOC (calculated)	3.34 lbs/gal, 400.79 g/L

Joncryl® 909 AUTOMOTIVE REFINISH CLEAR, Formula 1053111-02-09

Part A	Pounds	Gallons
Joncryl® 909	381.10	44.31
Efka® FL 3670	2.45	0.30
n-Butyl acetate	15.12	2.06
MIBK	50.91	7.63
MEK	65.39	9.67
n-Butyl propionate	79.82	10.92
2-Ethylhexyl acetate	20.69	2.85
Tinuvin® 1130	2.26	0.23
Tinuvin® 292	1.33	0.16
25% CAB ⁴ -550-0.02 in MEK	40.55	5.54
Subtotal	659.62	83.67
Part B		
Basonat® HI 275 B	144.51	16.33
Total	804.13	100.00

Formulation Attributes, Formula 1053111-02-09

Non-volatile	47.6% by wt, 40.4% by volume
Viscosity (A + B)	30 cps
Weight per gallon	8.04 lbs/gal
Mix ratio by volume	5.12:1
NCO:OH ratio	1.05:1
VOC (calculated)	4.21 lbs/gal, 505 g/l

³Registered trademark of The Chemours Company.

⁴Registered trademark of Eastman Chemical 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 personal protective equipment.

Safety Data Sheet

All safety information is provided in the Safety Data Sheet for Joncryl® 909.

Important

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