

Joncryl® 924

Product Description	Joncryl 924 is a fast-curing acrylic polyol for coating applications.
Key Features & Benefits	<ul style="list-style-type: none">- Accelerated cure rate- Excellent flow and leveling- Good chemical resistance
Chemical Composition	Acrylic polyol

Properties

Typical Properties	Appearance	clear liquid
	Non-volatile at 150°C (0.5g, 60 minutes)	~ 70%
	Hydroxyl number of solids	~ 140
	Viscosity at 25.0 ± 0.5°C (Brookfield #4 LV, 30 rpm, 30 seconds)	3,500 – 7,500 cP
	Density at 20°C	~ 1.16 g/cm ³ (9.68 lbs/gal)
	Equivalent weight as supplied, of solids	~ 571, 400
	Tg	~ -7°C
	Solvent	p-Chlorobenzotrifluoride (PCBTF)

* These typical values should not be interpreted as specifications.

Applications

Joncryl 924 is an innovative acrylic oligomer for high solids urethane coatings, which features fast cure with a practical pot life. Joncryl 924 is supplied in PCBTF. It possesses outstanding exterior durability and outstanding gloss, flow, leveling, and application properties.

Joncryl 924 is recommended for applications such as:

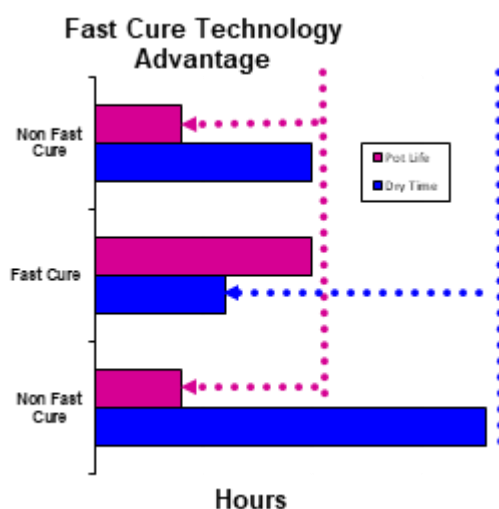
- Interior/exterior general metal coating applications
- Automotive refinish coating applications

Since Joncryl 924 is produced by specialized polymerization that provides the following attributes:

- Batch-to-batch reproducibility - The process is extremely robust for ensuring high quality.
- Improved clarity and color – Joncryl 924 possess excellent clarity and is inherently lower in color than competitive products.
- Low monomer odor – Joncryl 924 exhibits significantly less objectionable residual monomer odor due to the manufacturing process.
- Excellent gloss and appearance – Joncryl 924 has excellent initial gloss and outstanding flow properties to combine for coatings with superior appearance properties.
- Outstanding flow, leveling, and application properties – Joncryl 924 possess outstanding flow, leveling, and applications properties due to a reduction in high and low molecular weight tails from the SGO process.
- Alternate solvent availability – Joncryl 924 is available in Methyl n-amyl ketone as Joncryl 920 and in n-butyl acetate as Joncryl 922. For more details on performance information please refer to the Joncryl 920 Technical Data Sheet.

Fast Cure Technology

Joncryl 924 is produced using BASF's "Fast Cure Technology." Fast cure technology, a proprietary technology, allows fast cure polyols to develop shorter cure cycles with long pot lives. The following chart compares a fast cure technology polyol to two conventional polyols of similar molecular weight, functionality, and Tg. These polyols all produce coatings of the same VOC capabilities.



The fast cure polyol has faster dry times and longer pot life than either of the materials it is compared to, even though all three are at the same VOC level. The pot life advantage diminishes at higher solids. However, if the conventional polyols are catalyzed at a level to provide similar dry time to products such as Joncryl 924, they will typically have no useable pot life.

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 – PCBTf and Acetone have been found to be fully compatible with Joncryl 924. Good film formation and spray application properties typically require a ratio in the area of 2:1 of PCBTf to Acetone in the overall formulation. 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. n-Pentyl propionate solvent provides excellent flow and leveling and should be considered as a tail solvent.

Catalysis – Due to its increased reactivity profile, initial evaluations with Joncryl 924 are recommended without catalysis. Joncryl 924 does respond to typical catalysts and levels of 0.005% to 0.015% with dibutyltin dilaurate are typical. Catalysis with 0.005% dibutyltin dilaurate on total binder solids is normally recommended for first evaluation when a catalyst is desired. Catalyst addition will result in short pot lives and faster cure rates. 2,4-Pentanedione can be used to extend the pot life of systems when a tin catalyst has been utilized. Other catalysts such as zinc octoate and other metallic soaps can also be used.

Additives – Options for excellent flow and leveling including acrylates like Efka® FL 3778. If a dispersant is necessary, Lecithin is recommended. For higher film build, thixotropes such as bentonite clays, fumed silicas, or organic additives such as Thixatrol³ can be used. CAB¹-551-0.02 is recommended to modify flow properties when desired.

UV Stabilizers – For premium UV durability, a UV package will be required. A typical UV package includes 1% Tinuvin® 292 and 2% Tinuvin® 1130, based on resin solids. Irganox® 1010 which is an antioxidant can be useful in preventing yellowing in the QUV cabinet from the higher heat generated. This yellowing does not normally occur in outdoor exposures

Starting Point Formulations

The following starting point formulations are recommended for initial evaluation of Joncryl 924. Additional optimization of the formulations may be required to achieve desired results for specific applications.

Joncryl 924 “ZERO” VOC ACRYLIC URETHANE CLEAR TOPCOAT, Formula 0508a55-1

Part A	Pounds	Gallons
Joncryl 924	293.04	30.21
p-Chlorobenzotrifluoride (PCBTF)	299.29	26.72
Acetone	124.77	18.79
Flow and leveling aid (e.g. Efka FL 3778)	0.25	0.03
25% CAB ¹ -551-0.02 in Acetone	98.30	13.64
1% DBTDL in PCBTF	1.55	0.14
Subtotal	817.20	89.53
Part B		
Basonat® HI 100 NG	101.51	10.47
Total	918.71	100.00

Formulation Attributes, Formula 0508a55-1

Solids	35.4% by wt, 35.4% by volume
Viscosity (Zahn #2)	16 seconds
NCO:OH ratio	1.04:1
VOC (calculated)	0 lbs/gal – based on PCBTF exemption assumption

Joncryl 924 “2.1 lbs/gal” VOC ACRYLIC URETHANE CLEAR TOPCOAT, Formula 0508A55-3

Part A	Pounds	Gallons
Joncryl 924	293.59	30.26
Methyl n-amyl ketone	46.00	6.77
Methyl iso-butyl ketone	45.00	6.75
PCBTF	195.27	17.44
Acetone	109.08	16.43
n-Pentyl propionate	36.00	4.76
Flow and leveling aid (e.g. Efka FL 3778)	0.25	0.03
25% CAB ¹ -551-0.02 in Acetone	50.00	6.94
1% DBTDL in PCBTF	1.56	0.13
Subtotal	776.75	89.51
Part B		
Basonat® HI 100 NG	101.71	10.49
Total	878.46	100.00

Formulation Attributes, Formula 0508A55-3

Solids	35.8% by wt, 34.2% by volume
Viscosity (Zahn #2)	16 seconds
NCO:OH ratio	1.04:1
VOC (calculated)	2.1 lbs/gal, 252 g/l based on PCBTF exemption assumption

¹Registered 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 924.

Important

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