Joncryl® 538-A

Product Description **Joncryl 538-A is an acrylic emulsion for solvent-resistant industrial coating applications.**

Key Features & Benefits
- Solution-like rheology
- Gasoline resistance
- UV resistance
- Formulation ease

Chemical Composition **Acrylic emulsion**

Properties

Typical Properties

Appearance	translucent emulsion
Non-volatile at 145°C (2g, 30 minutes)	45%
pH at 25°C	9.3
Viscosity at 25°C (Brookfield #2LV, 60 rpm, 30 seconds)	200 cps
Density at 20°C	1.07 g/cm^3 (8.87 lbs/gal)
MFFT	65°C
Tg	64°C
Freeze-thaw stable	Yes

These typical values should not be interpreted as specifications.

Applications

Joncryl 538-A is an extremely fine-particle size acrylic emulsion for general and special purpose industrial finishing. It provides a unique balance of expected acrylic benefits along with many “alkyd-like” features not found in conventional emulsion polymers.

Joncryl 538-A is recommended for applications such as:
- Interior/exterior general metal industrial coating applications

Formulation Guidelines

Coalescing Solvents – A wide range of coalescing solvents can be utilized with Joncryl 538-A. The key to good film formation is to utilize a solvent or solvent blend such that, for the given drying conditions, sufficient solvent is present to allow for effective polymer chain entanglement after most of the water has evaporated from the coating.

Due to the hardness of Joncryl 538-A, a level between 5 - 10% of plasticizer (e.g. Santicizer[1] 160 or TXIB[2]) is recommended to ensure good film formation.

In force-dry situations, faster coalescing solvents such as ethylene glycol mono propyl ether, ethylene glycol mono butyl ether or propylene glycol mono butyl ether can be successfully utilized at levels from 15 – 25% on resin.

[1]Registered trademark of Valtris Specialty Chemicals.
[2]Trademark of Eastman Chemical Company.

For air-dry situations, slower solvents should be utilized at levels between 20 – 30% on resin solids. Solvents such as ethylene glycol mono propyl ether, dipropylene glycol mono butyl ether, dipropylene glycol mono propyl ether or diethylene glycol mono butyl ether are recommended.

Defoamers – These are very formula dependent, thus no single defoamer works well in all applications. Good success has been found with BYK[3]-022; Nalco[4] 2305 and 2303; and Drew[5] L-405. Improved incorporation can be achieved by pre-blending six parts of Surfynol[6] 104H with two parts of a given defoamer prior to addition.

Thickeners – Urethane associative thickener efficiency is greatly affected by the selection of coalescing solvents. The water-soluble glycol ethers can greatly reduce this efficiency. Coalescing agents such as dipropylene glycol mono butyl ether, dipropylene glycol mono propyl ether and Texanol[7] will give good thickening efficiency. Rheovis® PU 1214 NC and Rheovis® PU 1250 NC are recommended associative thickeners. Alternatively, cellulosic thickeners such as Natrosol[8] 330 Plus can be utilized effectively at low levels without significantly affecting gloss or performance. Cellulosic thickeners can be utilized with any choice of coalescing solvents.

Mar Resistance – This can be increased by incorporation of a good slip agent. Polyethylene waxes such as Joncryl Wax 26 or polypropylene waxes are recommended at levels between 1 – 3% on total formula.

Early Properties – Dry speed, block, and water resistance can be improved with the addition of Zinc Oxide solution #1. Levels of 1.0 – 1.5% (solids on solids) are recommended.

Amine Use – The use of certain slow evaporating amines has been found to reduce the exterior metal performance of Joncryl 538-A. Ammonia is recommended for pH control.

Starting Point Formulation

The following starting point formulation is recommended for an initial evaluation of Joncryl 538-A. Additional optimization of the formulation may be required to achieve desired results for specific applications.

Joncryl 538-A - GLOSS WHITE, Formula 283-A, For Industrial Spray Applications

Materials	**Pounds**	**Gallons**
Joncryl 538-A	168.00	19.00
Nalco[4] 2305	1.90	0.23
Ti-Pure[9] R-900	168.00	4.0
Letdown:		
Joncryl 538-A	448.00	50.50
Nalco[4] 2303	2.80	0.40
10% Ammonium Benzoate	26.00	3.10
Ethylene glycol mono butyl ether	75.00	10.00
Plasticizer	19.00	2.20
Water	81.00	9.80
Total	989.70	100.13

Formulation Attributes

Solids	44.6% by wt, 37.2% by volume
Viscosity (Zahn #2)	40.0 seconds
PVC	13.8%
VOC (calculated)	1.6 lbs/gal, 190 g/l

Coating Performance

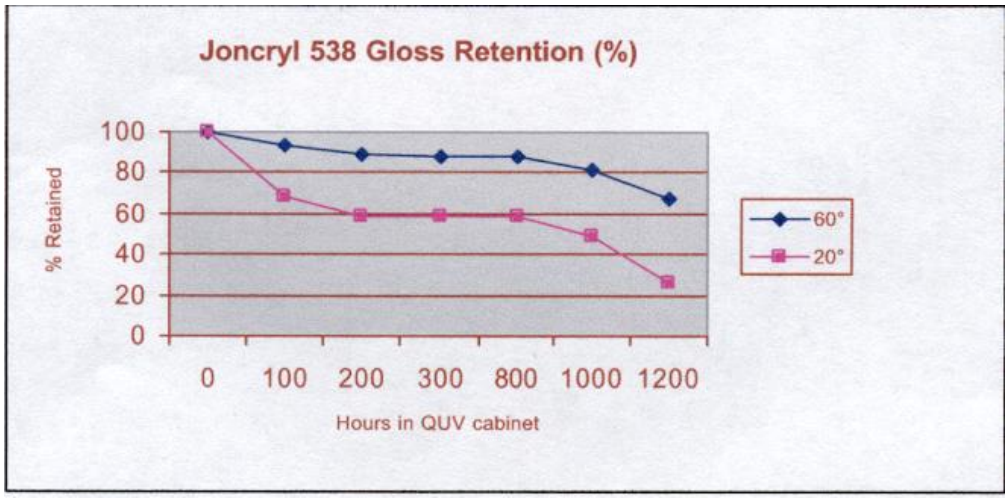
The following data is based on starting point formula 283-A for gloss white industrial spray applications. Coatings were evaluated over untreated cold rolled steel at 1 mil DFT unless otherwise indicated. Testing was performed at 75°F and 50% relative humidity unless otherwise noted. Coatings were aged a minimum of 7 days before dry film testing.

Dry time: 10 minutes to touch dry
15 minutes to thoroughly dry

[3]Registered trademark of BYK Chemie.
[4]Registered trademark of Nalco Company.
[5]Registered trademark of Ashland, Inc. Please contact manufacturer to determine availability.
[6]Registered trademark of Air Products and Chemicals, Inc.
[7]Trademark of Eastman Chemical Company.
[8]Registered trademark of Ashland, Inc. Please contact manufacturer to determine availability.
[9]Trademark of The Chemours Company.

Solvent Resistance:

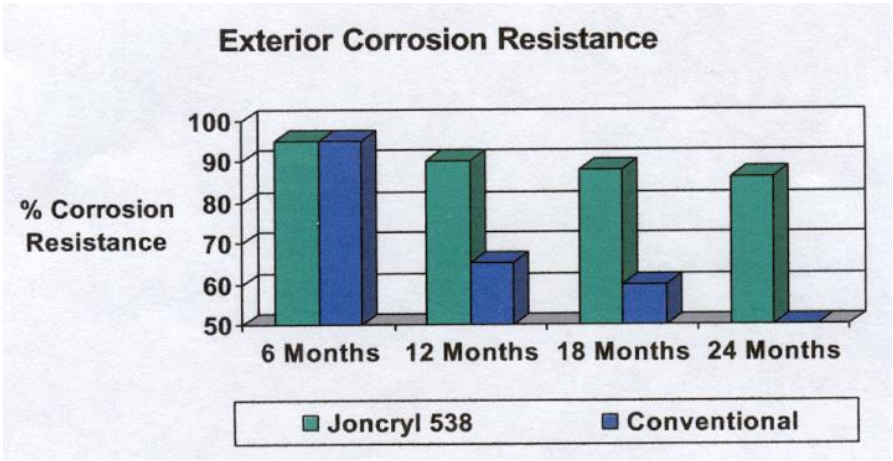
Material	Number of Double Rubs	Result
Unleaded gas	200	Film Still Intact
MEK	30	Failure
Butyl acetate	200	Film Still Intact

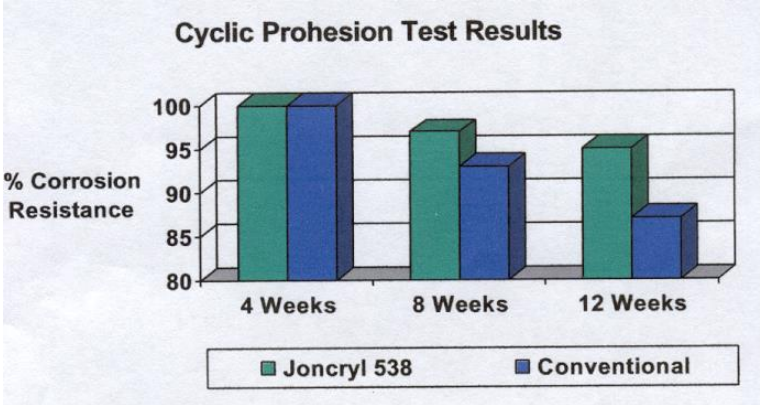


Corrosion Resistance

Accelerated Corrosion Resistance: Cyclic Prohesion testing demonstrates good correlation to exterior field results while salt spray often results in negative correlation and inferior formula development. This test method utilizes 0.35% ammonium sulfate and 0.05% sodium chloride solution with a one hour fog cycle at 27°C followed by a one hour “dry off” cycle at 35°C. The Prohesion cycle consists of one week of exposure in the Prohesion cabinet previously described followed by a week in the QUV cabinet, etc.

Exterior Corrosion Resistance: South Florida 45° exposure – 2 year duration. One coat, high gloss directly to cold rolled steel.





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.

Safety Data Sheet All safety information is provided in the Safety Data Sheet for Joncryl 538-A.

Important

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