Printing & Packaging

Technical Data Sheet

Joncryl® 651

We create chemistry

Product Description	**Joncryl® 651 is an emulsion of a specialty resin developed for waterborne inks.**
Key Features & Benefits	***- Good pigment wetting properties*** ***- Rapid resolubility*** ***- Hydrophilic nature of the polymer*** ***- Excellent viscosity/pH stability*** ***- Near linear viscosity/dilution curve***
Chemical Composition	**Carboxylated acrylic copolymer in water**

Properties

Typical Properties	
Appearance at 25°C	white liquid
Weight, dry	~ 61.0%
Viscosity at 25°C (DIN4 flow cup)	~ 109 seconds
pH	3 – 4.0
Acid value (as 100%)	77
Density at 20°C	1.1 g/cm³
Tg	35°C
MFFT	12°C
Softening point (initial)	approx. 100°C

Applications

Joncryl® 651 is an emulsion of a specialty resin designed for use in water-based inks. This product is recommended as an effective modifying binder in water-based flexographic inks for corrugated boxes and kraft paper.

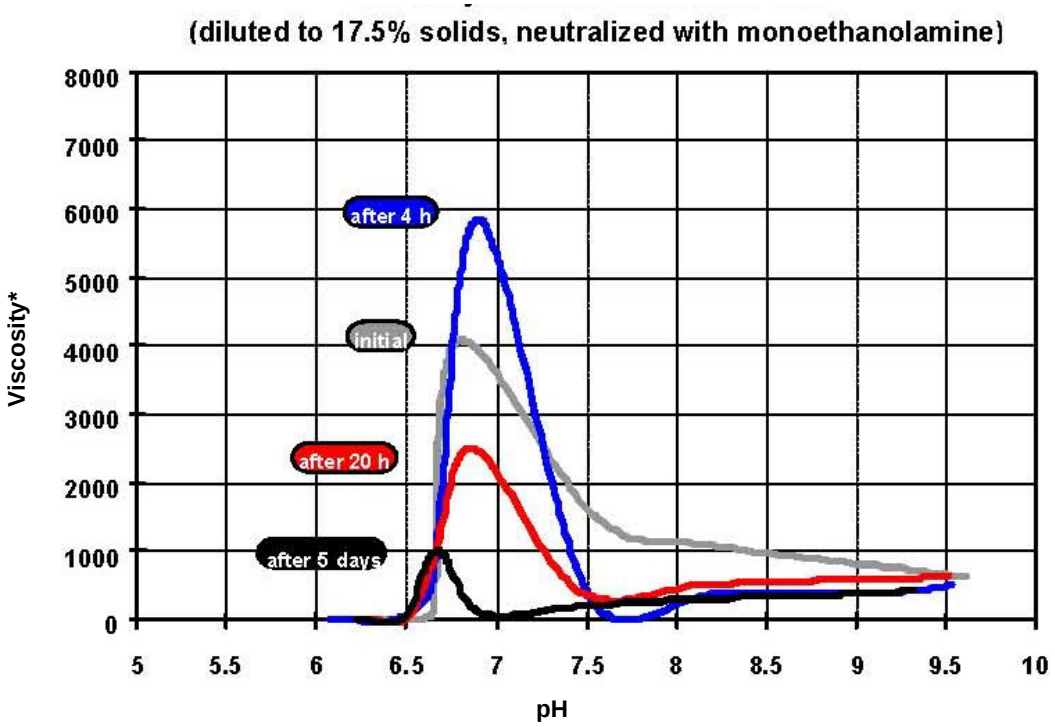
Joncryl® 651 is recommended for applications such as:

- Modifying binder in water-based flexographic inks for corrugated boxes and kraft paper
- Binder in poster paints or drawing inks
- Paper/paperboard coatings

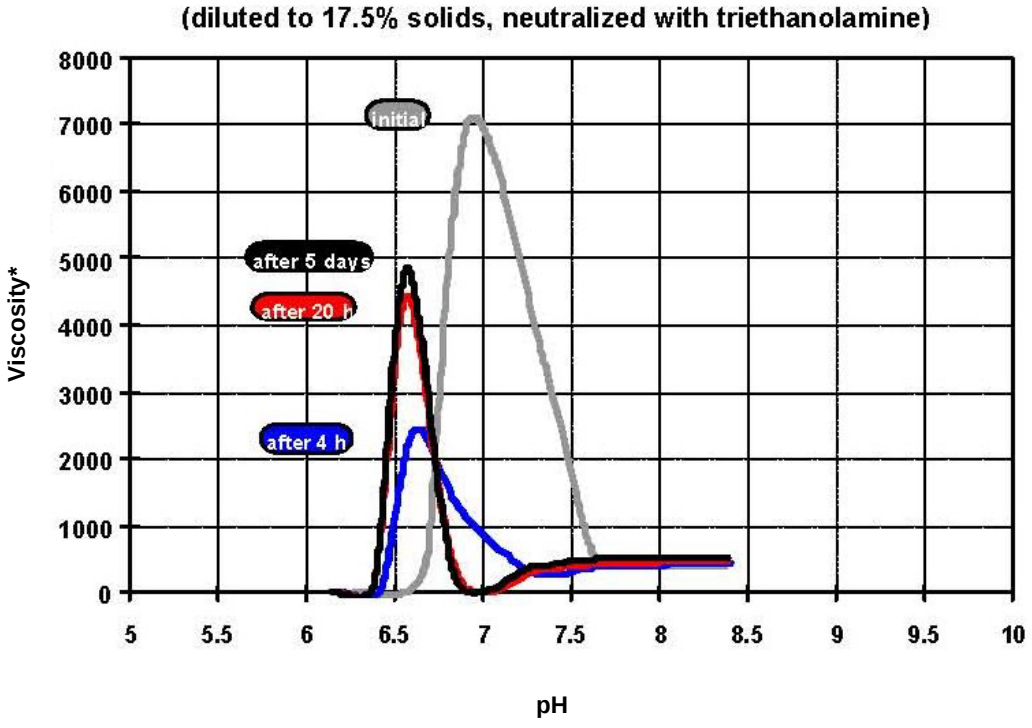
Due to ease-of-use on standard printing equipment (i.e. rapid resolubility), Joncryl® 651 is also recommended as a modifier to more expensive resin systems for high quality ink applications. Other uses include paperboard coatings (emulsion or neutralized solution), paper coatings, or as a binder in poster paints or drawing inks.

Joncryl® 651 demonstrates excellent machine stability due to the hydrophilic nature of the polymer and its excellent viscosity/pH stability in the pH range of 7.8 – 9.0, as shown in the tables below.

Viscosity Curve of Joncryl® 651



Viscosity Curve of Joncryl® 651



**Brookfield at 20 rpm, cps*

Processing

For water-based inks formulated at pH 8.5, Joncryl® 651 must be pre-neutralized.

Neutralization

Joncryl® 651 can easily be converted to a neutralized solution with various alkali. However, since the polymer swells considerably when first neutralized, it is highly recommended that Joncryl® 651 be diluted to approximately 20% solids with water prior to neutralization. The relevant alkali can then be added with stirring to form the required solution. If the above recommendation is not taken, it is highly likely that some localized thickening and precipitation of particles may occur. It is suggested practice to allow the neutralized solution to stabilize before re-checking the pH and viscosity.

Although Joncryl® 651 will very quickly reach its final viscosity, it is suggested that the pH and viscosity of the neutralized solution be periodically checked to allow it to stabilize. The neutralized solution of Joncryl® 651 offers the advantage of building a clear solution.

Below are typical alkali used as neutralizing agents:

Alkali	**Weight %**
Ammonia (34%)	5.5
Monoethanolamine (MEA)	5.4
Dimethylaminoethanol (DMAE)	9.1
Aminomethylpropanol (AMP)	7.2
Morpholine	9.4
Triethanolamine (TEA)	19.1

Note: Weight % of alkali to 100 grams of Joncryl® 651 for a pH 8.5

Additional Formulation Recommendations

Compatibility with organic solvents

Joncryl® 651 will tolerate water miscible solvents such as alcohols, glycol ethers, and low boiling esters or ketones. However, the tolerance is limited to about 20 – 30% of the resin solid weight. Neutralized Joncryl® 651 has a high tolerance to pH changes but becomes rapidly insoluble when the pH drops below 7.0.

Compatibility with other resins

Joncryl® 651 in its neutralized solution, has a wide compatibility with a variety of other water-based resins. Specifically, it is compatible with most acrylics, styrene acrylics, polyesters, and rosin-modified maleic resins.

Compatibility with pigments

Neutralized Joncryl® 651 has good pigment wetting properties and color development and is compatible with most alkali-stable pigments. Care must be taken with certain pigments due to adverse interactions with trace elements present in them. Specific care must be taken when using calcium and barium lithols since trace metal ions can crosslink the polymer giving rise to gelation. High pH (above 9.0) or additions of EDTA before grinding can overcome this problem.

In order to obtain good compatibility with basic dyes, it is necessary to add up to 10% of alcohol or glycol ether to the neutralized Joncryl® 651 and to dissolve the dyestuff in a similar solvent plus water.

In most cases, a significant increase in color development can be achieved by the use of the neutralized Joncryl® 651 as a let-down resin for pigment grinding bases. For suitable grinding resins, please contact our Technical Service Department.

Crosslinking

Since Joncryl® 651 is a carboxylated polymer, it will crosslink with a number of reagents, principally with urea or melamine formaldehydes, azridines, or zinc or zirconium compounds.

Recommended Concentrations

Since any component present in a formulation can have significant impact on the overall ink properties, testing compatibility and dosage level prior to use is highly recommended.

Flexographic inks

May be used as a sole binder in conjunction with a grinding resin at about 7 – 20% of the total formulation.

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® 651.

Important

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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