

Joncryl® LMV 7000 Series

User's Guide

High quality printing made easy

The image shows a close-up of a printing machine's rollers. A yellow roller is at the top, followed by a green roller with a pattern, and a red roller with a pattern. A blue roller is at the bottom. The machine is made of metal and has various adjustment knobs and sensors. The background is a light-colored metal panel with some electrical components.

BASF

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Joncryl LMV 7000 series low maintenance water-based polymers for printing inks reduce print waste by providing clean printing and excellent pH stability without sacrificing resistance properties. At BASF, we create chemistry.



Key Benefits

- Significant cost savings in ink additives and spoiled ink
- Improved pressroom efficiency
- Less print waste

Industry studies show that total press downtime in a flexo packaging operation can be as high as 50%. Of that downtime, 20% is “ink related.”

The Joncryl LMV 7000 series of low maintenance vehicles provide the printing industry a complete selection of resin solutions and emulsions. Ink makers now have the ability to offer printers and converters an alternative to current water-based technology with Joncryl LMV 7000 series polymers. This can reduce waste and downtime due to anilox plugging and ink buildup on plates.

Joncryl LMV 7000 series pH-stable polymers, when used to make low VOC inks for paper, film, and foil inks, demonstrate a balance of clean printing, resolubility, and excellent pH stability without sacrificing resistance properties.

Versatility

Joncryl LMV 7000 series' versatility allows the use of typical water-based additives. In addition, vehicles based on Joncryl LMV 7000 series polymers can be used with Joncryl LMV 7085-based pigment dispersions or conventional resinated dispersions. In some cases where the additives are pH sensitive, Joncryl LMV polymers can be adjusted to match the pH of the raw material with little or no effect on performance.

Print longer and cleaner with Joncryl LMV 7000 series polymers. They do not require the frequent additions of ammonium hydroxide or slow evaporating amines as do conventional polymers. Therefore, the press-side addition of special blends of slow amines and glycols to keep the print clean is not needed. Only water is needed to adjust the inks.

Since this technology produces polymers that are stable regardless of pH, Joncryl LMV 7000 series polymers can be used to make inks from a pH of 7.0 to 9.0 or higher if needed.



Demonstrated Results

Press runs have demonstrated that ink formulations based on Joncryl LMV 7000 technology will print cleanly for hours at speeds from 100 fpm to 500 fpm, on bladed systems with anilox roll configurations from 600 to 1200 line, and on substrates from paper and corrugated board to film. Even after numerous shutdowns to change substrates, the anilox rolls remained clean and print densities recovered within a few feet of running.

Results on wide-web flexo equipment are equally impressive. Speeds of 2000 fpm on 60" wide CI press have been achieved on paper. Print quality and ink densities remained consistent throughout the run. In addition, ink foaming and pressroom odor on the top decks of the CI press was much lower. No ink maintenance was required during these press runs.

Joncryl LMV 7000 series polymers can make inks that:

- Require fewer plate wash-ups
- Minimize rejects due to dirty printing
- Do not require ammonia additions or other press-side additives
- Improve color consistency during press runs

Resolubility

Inks based on Joncryl LMV 7000 series polymers have excellent resolubility on press. This benefit has a direct correlation to the amount of waste that a press generates when the ink dries in the cylinder after a process upset or other shutdown.

Figure 1 shows that inks based on Joncryl LMV 7031 recovered their original print density in less than four minutes, while conventional water-based polymers took considerably longer to recover. In this test, the print cylinder was allowed to dry for 10 minutes. The press was restarted and the time to develop the original print density was recorded.

Figure 1: Resolubility

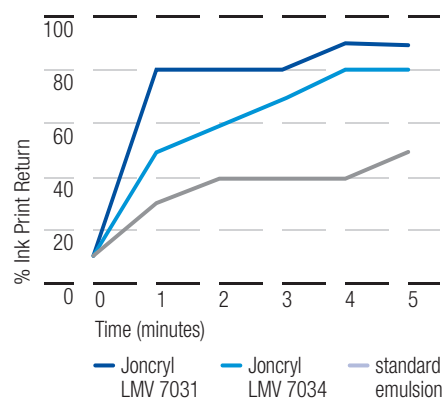


Figure 2: pH stability

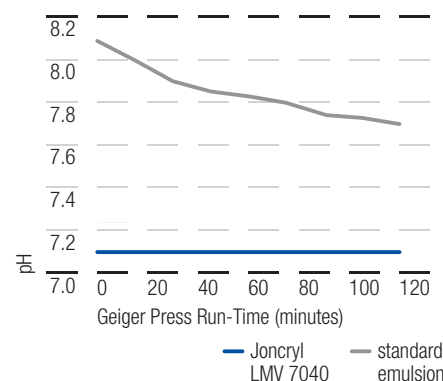
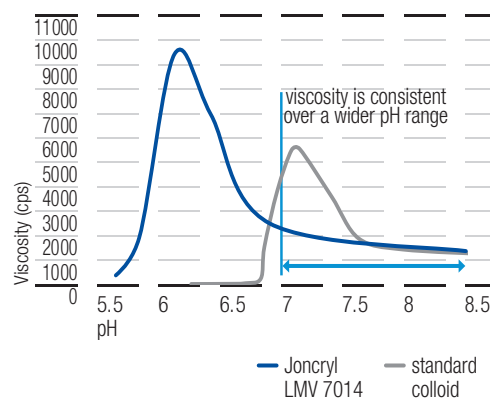


Figure 3: Viscosity vs. pH (22% solids)



Applications

Joncryl LMV 7000 series polymers can be used to make inks for many paper, paperboard, and film applications. Applications requiring fast drying inks such as envelopes, labels, folding cartons, and poly bags benefit from Joncryl LMV 7000 polymer technology. This series of low maintenance, pH-stable polymers also has benefits in narrow web label, post-print corrugated, and corrugated display where ink resolubility and low press maintenance are key requirements. This is only a partial list of the applications where the clean printing and low VOC attributes of Joncryl LMV 7000 series polymers will benefit printers and converters. Joncryl LMV 7000 series polymers can also be used in many other applications. Please contact a BASF representative for formulation assistance.

Additive Recommendations and Cautions

Many conventional defoamers, waxes, and additives can be used with the Joncryl LMV system. However, if formulating ink at near neutral pH, neutral pH additives should be considered. Keep in mind that some additives are not stable at a neutral pH.

Stability

Joncryl LMV 7000 series polymers maintain pH over long press runs — even on light coverage print jobs.

Figure 2 illustrates the excellent pH stability of inks based on Joncryl LMV 7040 emulsion. Inks were formulated with Joncryl LMV 7000 series polymers and compared with standard water-based polymers. The pH of the Joncryl LMV-based inks remained stable over the entire run.

Figure 3 illustrates that Joncryl LMV 7014 retains viscosity stability over a wider pH range than conventional colloidal emulsions. This enables more robust corrugated ink formulations.

Product Selection

Joncryl LMV 7014 is an acrylic colloidal emulsion that provides excellent resolubility and good ink transfer for cost-effective corrugated ink formulations. It can be used as a sole vehicle for carbon black ink or as a letdown vehicle for organic pigment color dispersions.

Joncryl LMV 7025 is a resin solution used to modify the drying speed and increase the resolubility of ink. As little as 5% of Joncryl LMV 7025 added to an ink formulation based on Joncryl LMV 7031 will decrease the time it takes for a print to fully recover after a press shutdown.

Joncryl LMV 7031 is a film forming emulsion that provides flexibility, water resistance, and adhesion for film and foil ink applications. It can also be used to improve the rub resistance of paper ink formulations.

Joncryl LMV 7034 is a film forming emulsion that provides adhesion and water-resistant characteristics for utility bag and other surface-print film and foil ink applications.

Joncryl LMV 7040 is a hard emulsion that provides film formation plus block and rub resistance for paper and paperboard ink applications.

Joncryl LMV 7050 is a fast dry, non-film forming emulsion that provides drying speed in ink formulations for corrugated, paper, and paperboard applications.

Joncryl LMV 7051 is a non-film forming emulsion that provides high gloss and holdout in ink formulations for high quality corrugated and other paper and paperboard applications.

Joncryl LMV 7085 is a resin solution that optimizes the dispersion of organic pigments in a neutral pH solution, providing excellent color development, low foaming, and good storage stability.

Product	Product Type	Non Volatile (%)	Tg (°C)	Viscosity @ 25°C (cps)	Molecular Weight (Mw)	Acid Number (NV)	Application				
							Film Ink	Paper and Board Ink	Corrugated Ink	Pigment Dispersion	Overprint Varnish
Joncryl LMV 7014	Colloid	34.0	50	< 100	45,000	201			■	■	
Joncryl LMV 7025	Solution	31.0	97	1,200	12,500	235	■	■	■	■	■
Joncryl LMV 7031	Emulsion	47.5	- 9	1,500	> 200,000	57	■	■			■
Joncryl LMV 7034	Emulsion	47.8	- 30	800	> 200,000	52	■				
Joncryl LMV 7040	Emulsion	45.5	28	750	> 200,000	115	■	■			■
Joncryl LMV 7050	Emulsion	47.5	98	950	> 200,000	85		■	■		■
Joncryl LMV 7051	Emulsion	44.5	98	450	> 200,000	115		■	■		■
Joncryl LMV 7085	Solution	34.5	77	2,000	12,500	215	■	■	■	■	

■ = Primary ■ = Secondary



Starting Point Formulations

The formulations below illustrate the versatility of the Joncryl LMV 7000 series polymers. Please contact a BASF representative for additional formulation assistance.

Pigment Dispersions

Joncryl LMV 7085 provides the rheology and wetting needed to produce high quality pigment dispersions. Joncryl LMV 7085 can be used to disperse either dry pigment or high solids presscake.

Joncryl LMV 7014 Neutralized Solution

Joncryl LMV 7014 colloidal emulsion requires neutralization with ammonia, MEA, or DMEA and water prior to incorporation into ink formulations.

Pigment Dispersions	Yellow	Red	Blue	Black
Yellow 14	40.1			
Red 57:1		35.0		
Blue 15:3			40.1	
Carbon Black				33.0
Joncryl LMV 7085	30.4	26.5	30.4	33.4
Water	29.3	38.3	29.3	33.4
Antifoam	0.2	0.2	0.2	0.2
Total	100	100	100	100

Joncryl LMV 7014 Neutralized Solution	Amount (%)
Joncryl LMV 7014	65.1
Ammonium Hydroxide, 28% Solution	4.0
Water	30.9
Total	100.0
pH	7.2

Tag and Label Inks

Narrow web label applications benefit from the pH stability characteristics of a combination of Joncryl LMV vehicles. Joncryl LMV 7040 provides film formation and rub resistance, while Joncryl LMV 7025 is used to enhance the resolubility and modify the drying speed of the ink formulation.

Economical Corrugated Inks

Joncryl LMV 7014, when neutralized, can be used as a letdown vehicle for organic pigment dispersions or as a sole vehicle for carbon black pH-stable corrugated inks.

Tag and Label Inks	Yellow	Red	Blue	Black
Yellow Dispersion	38.0			
Red Dispersion		43.0		
Blue Dispersion			38.0	
Black Dispersion				45.5
Joncryl LMV 7040	24.8	20.0	25.1	19.5
Joncryl LMV 7025	24	23.5	26	23.5
Propylene Glycol	2.0	2.0	2.0	2.0
Wax Emulsion	5.0	5.0	5.0	5.0
Water	5.7	6.0	3.4	4.0
Antifoam	0.5	0.5	0.5	0.5
Total	100	100	100	100

Economical Corrugated Inks	Yellow	Red	Blue	Black
Yellow Dispersion	40.0			
Red Dispersion		40.0		
Blue Dispersion			40.0	
Carbon Black				15.0
Joncryl LMV 7014 Neutralized Solution	28.6	29.8	29.3	33.5
Water	30.2	29.0	29.6	50.3
Wax Dispersion	1.0	1.0	1.0	1.0
Antifoam	0.2	0.2	0.2	0.2
Total	100	100	100	100

Flexible Film Inks

Printing inks on polyolefin substrates for utility bags and poly-coated cups can benefit from the pH stability properties of Joncryl LMV 7034. Inks with good adhesion, water resistance and excellent press stability can be formulated using Joncryl LMV 7034 emulsion.

Display Corrugated Inks

High quality, post-print or display inks can be formulated with a combination of Joncryl LMV vehicles. Joncryl LMV 7040 provides film formation and improves rub resistance, Joncryl LMV 7051 provides hardness and Joncryl LMV 7025 improves the resolubility and modifies the drying speed.

Flexible Film Inks	Yellow	Red	Blue	Black
Yellow Dispersion	40.0			
Red Dispersion		40.0		
Blue Dispersion			38.0	
Black Dispersion				50.0
Joncryl LMV 7034	46.0	45.6	47.4	39.2
Wax Emulsion	5.0	5.0	5.0	5.0
Silicone Emulsion	0.7	0.7	0.7	0.7
Water	8.2	8.6	8.8	5.0
Antifoam	0.1	0.1	0.1	0.1
Total	100	100	100	100

Display Corrugated Inks	Yellow	Red	Blue	Black
Yellow Dispersion	40.0			
Red Dispersion		40.0		
Blue Dispersion			40.0	
Black Dispersion				40.0
Joncryl LMV 7040	8.5	8.5	8.5	8.5
Joncryl LMV 7050	25.5	25.5	25.5	25.5
Joncryl LMV 7025	12.5	12.5	12.5	12.5
Water	8.0	8.0	8.0	8.0
Wax Emulsion	5.0	5.0	5.0	5.0
Antifoam	0.5	0.5	0.5	0.5
Total	100	100	100	100

About BASF

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