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Webinar: Spotlight Products for Paper & Paperboard

Simon Foster & Jennifer Rigney

September 27, 2018

Introductions

Market Trends & Performance Drivers

Spotlight Products

Trends driving our lives and our industry:
Implications for Paper & Paperboard ink & coatings suppliers

Consumer Preferences:	Printer Implications:
Growth in E-commerce 52% of consumers more willing to buy from merchant that provides premium packaging	**Printing on both sides of corrugated board** to enhance customer 'un-boxing' experience upon delivery
Sustainability & Handling Amazon, Starbucks, McDonalds, & Kraft-Heinz among the brands setting sustainability packaging goals	Increased focus on **handling implications** of inks on workers, end customers
On-demand Economy, Convenience 50% of meals have been replaced by snacks	Increasing demand for packaging, **rapid print** speeds, and **automated printing** presses.

BASF Solutions:

- Support high-speed printing and drying operations.
- Eliminate handling challenges, like foaming
- Low VOC products that reduce handling challenges
- High-quality inks that enable fine lines and text printing

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Sources: Shopify, Food Engineering, Nielsen

Paper & Paperboard Spotlight Products:

Designed to address the needs of the changing printing landscape

Product	'Two Words'	Extended Description
Joncryl® 633	High Opacity	Non-film-forming, opaque emulsion supporting TiO_2 cost savings
Joncryl 1616	Low Foam	Excellent gloss & clarity with low foaming
Joncryl 2110	Low VOC	Long open time and low VOC for fine anilox process printing
Joncryl 2121	Quick Dry	Fast dry polymer for high-speed printing

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Joncryl 633

Opaque emulsion supporting TiO_2 cost savings in white inks

Joncryl 633

Market context of increasing RM prices

May 8, 2017
"…today announced global **price increases for all its titanium dioxide pigments.** The following increases are effective July 1, 2017…North America: $0.08 per pound (USD)"
Source: PRnewswire

March 28, 2018
"Titanium dioxide producer…has announced **price increases** that will come into effect on April 1, according to a letter to customers …in North America, prices will increase by $0.07 per pound (USD)"
Source: Industrial Minerals

January 22, 2018
"…**will increase prices on inks, coatings, adhesives and pressroom chemicals**, effective February 19, 2018, in response to the continuing and sustained rise in raw material and supply chain costs…**Titanium Dioxide supply is tight on a global basis resulting in well-publicized price escalation over the last 12 months**."
Source: Label & Narrow Web

April 24, 2018
"…is still struggling with headwinds from **rising raw material costs, including for titanium dioxide**…"
Source: Industrial Minerals

April 25, 2018
"…the latest coatings company to **report headwinds from rising titanium dioxide (TiO2) prices**…"
Source: Industrial Minerals

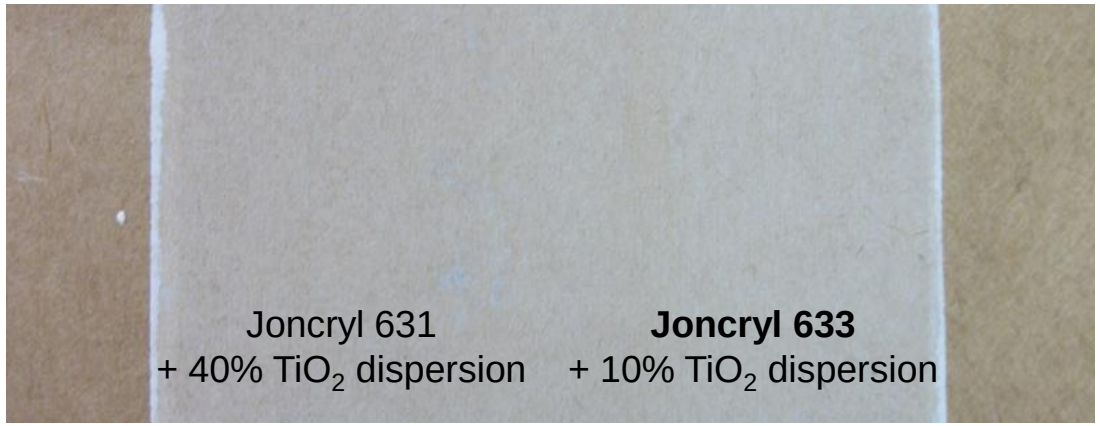
Joncryl 633

A non-film-forming, opaque emulsion enabling brights and whites

TiO_2 replacement example

	J631	J633
TiO_2 dispersion	40	10
Emulsion	46	71
Joncryl Wax 4	2.5	2.5
FoamStar SI 2280	0.5	0.5
Water	11	16

Joncryl 633 helps customers reduce costs by replacing expensive TiO_2 without sacrificing opacity.



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Joncryl 633

A non-film-forming, opaque emulsion enabling brights and whites

Key Features and Benefits

- Excellent opacity
- Good resolubility
- Good water and rub resistance

Physical Characteristics

Appearance	White emulsion
Molecular weight	>200,000
Non-volatile	37%
pH	7.2
Acid value (solids)	60
Viscosity (at 25°C)	600 cP
Density (at 25°C)	1.05 g/cm^3
Tg	104°C
MFFT	> 50°C
Total VOC	< 0.1% wt

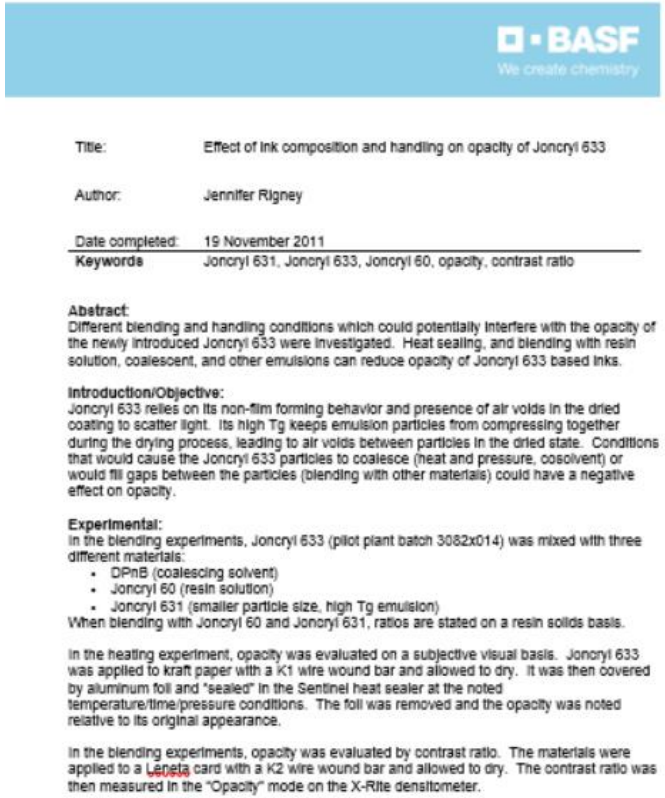
Joncryl 633

A non-film-forming, opaque emulsion enabling brights and whites

Formulation support

- Opacity depends on keeping spaces between particles
- There are limits to what can be blended in without impacting opacity
- Customers may not see expected results with a simple drop-in
- Formulation support is available

Additional product information →



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Title: Effect of ink composition and handling on opacity of Joncryl 633

Author: Jennifer Rigney

Date completed: 19 November 2011

Keywords Joncryl 631, Joncryl 633, Joncryl 60, opacity, contrast ratio

Abstract:
Different blending and handling conditions which could potentially interfere with the opacity of the newly introduced Joncryl 633 were investigated. Heat sealing, and blending with resin solution, coalescent, and other emulsions can reduce opacity of Joncryl 633 based inks.

Introduction/Objective:
Joncryl 633 relies on its non-film forming behavior and presence of air voids in the dried coating to scatter light. Its high Tg keeps emulsion particles from compressing together during the drying process, leading to air voids between particles in the dried state. Conditions that would cause the Joncryl 633 particles to coalesce (heat and pressure, cosolvent) or would fill gaps between the particles (blending with other materials) could have a negative effect on opacity.

Experimental:
In the blending experiments, Joncryl 633 (pilot plant batch 3082x014) was mixed with three different materials:

- DPnB (coalescing solvent)
- Joncryl 60 (resin solution)
- Joncryl 631 (smaller particle size, high Tg emulsion)

When blending with Joncryl 60 and Joncryl 631, ratios are stated on a resin solids basis.

In the heating experiment, opacity was evaluated on a subjective visual basis. Joncryl 633 was applied to kraft paper with a K1 wire wound bar and allowed to dry. It was then covered by aluminum foil and "sealed" in the Sentinel heat sealer at the noted temperature/time/pressure conditions. The foil was removed and the opacity was noted relative to its original appearance.

In the blending experiments, opacity was evaluated by contrast ratio. The materials were applied to a Leneta card with a K2 wire wound bar and allowed to dry. The contrast ratio was then measured in the "Opacity" mode on the X-Rite densitometer.


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Joncryl 1616
Excellent gloss and clarity with low foaming
BITES
Jungle

Joncryl 1616

A hard film-forming emulsion with good gloss and clarity and reduced foaming

Key Features and Benefits

- Excellent gloss, clarity and holdout
- Ink viscosity stability
- Resolubility and printability
- Low foaming during handling

Physical Characteristics

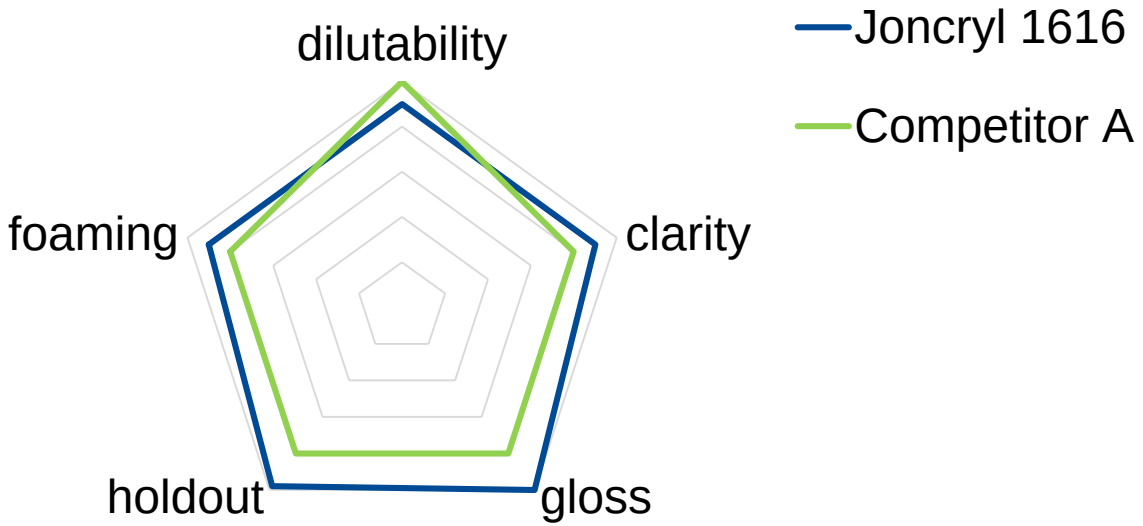
Appearance	Translucent emulsion
Molecular weight	>200,000
Non-volatile	42.7 %
pH	8.5
Acid value (solids)	140
Viscosity (at 25°C)	800 cP
Density (at 25°C)	1.05 g/cm^3
Tg	40°C
MFFT	15°C
Total VOC	1.2% wt

Joncryl 1616

A hard film-forming emulsion with good gloss and clarity and reduced foaming

Key Features and Benefits

- Excellent gloss, clarity and holdout
- Ink viscosity stability
- Suitable for flexo and gravure
- Suitable for inks and OPVs in packaging end uses



Additional product information →

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Joncryl 2110

Long open time and low VOC for fine anilox process printing

Joncryl 2110

Film-forming emulsion with long open time for fine-line anilox printing

Key Features and Benefits

- Long open time with low VOC
- Outstanding gloss, clarity and holdout
- Excellent on-press resolubility and printability
- Good pH stability on long runs
- Glycol ether free and HAP free

Physical Characteristics

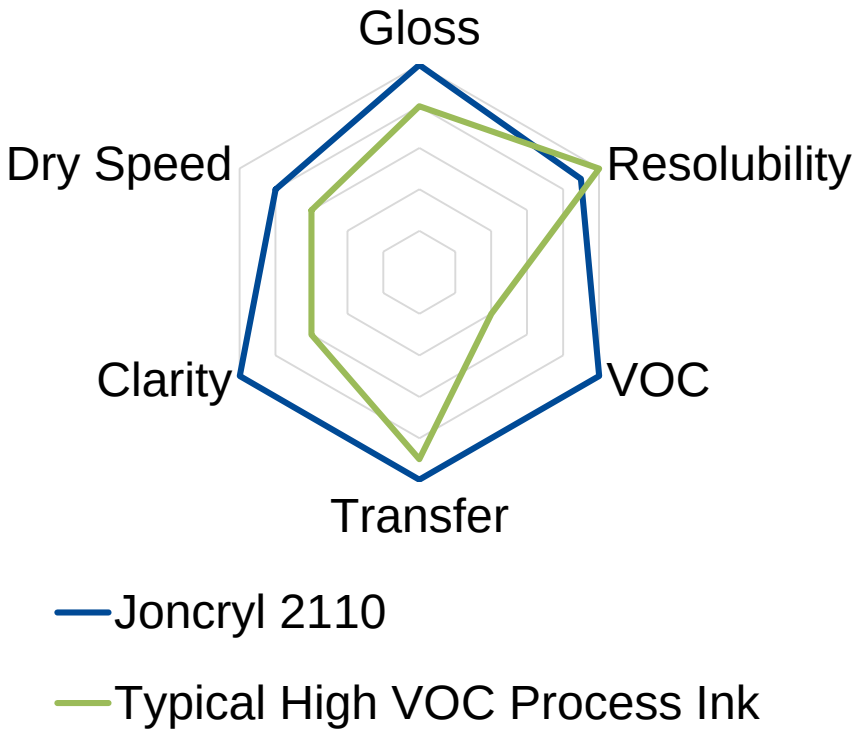
Appearance	Translucent emulsion
Molecular weight	>200,000
Non-volatile	49%
pH	9.0
Acid value (solids)	65
Viscosity (at 25°C)	1200 cP
Density (at 25°C)	1.05 g/cm^3
Tg	22°C
MFFT	< 5°C
Total VOC	0.4% wt

Joncryl 2110

Film-forming emulsion with long open time for fine-line anilox printing

Key Features and Benefits

- Long open time with low VOC
- Enables high strength inks with high pigment loading and excellent transfer
- Outstanding gloss, clarity and holdout
- Excellent on-press resolubility and printability
- Good pH stability on long runs



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Joncryl 2121

Fast dry polymer for high-speed printing

Joncryl 2121

A non-film-forming, fast drying emulsion with good gloss and clarity

Key Features and Benefits

- Fast dry speed
- Excellent resolubility and printability
- Viscosity stability
- Low VOC

Physical Characteristics

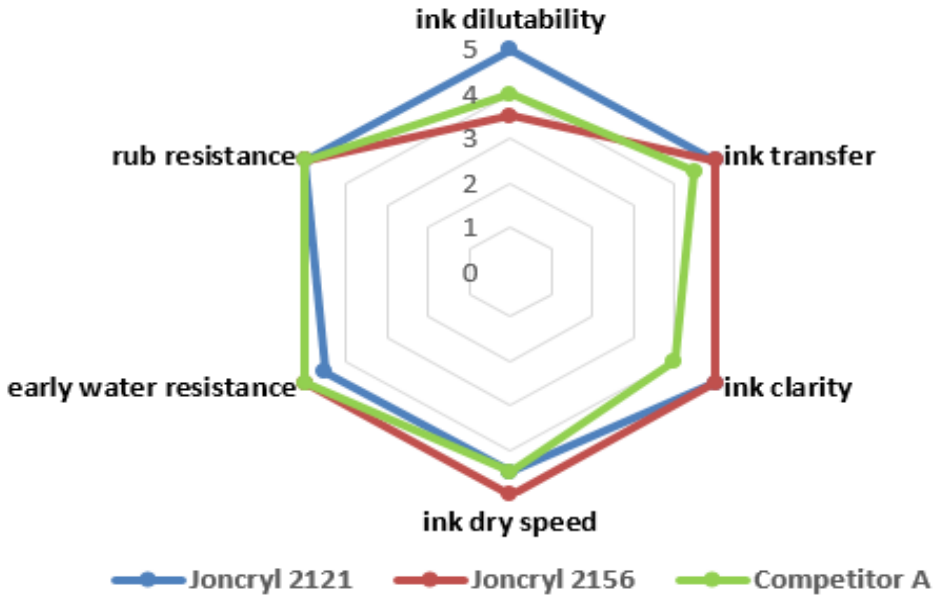
Appearance	White emulsion
Molecular weight	>200,000
Non-volatile	51%
pH	8.0
Acid value (solids)	42
Viscosity (at 25°C)	750 cP
Density (at 25°C)	1.03 g/cm^3
Tg	98°C
MFFT	>80°C
Total VOC	< 1.0% wt

Joncryl 2121

A non-film-forming, fast drying emulsion with good gloss and clarity

Key Features and Benefits

- Designed for high speed gravure and flexo printing
- Excellent gloss, holdout and clarity
- Glycol ether free
- Good dilutability for enhanced cost-in-use



Additional product information →

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Paper and Paperboard Key Contacts

- **Simon Foster**
  Market Segment Manager – Paper & Paperboard
  Phone: 248-948-2006, Mobile: 832-557-5494, Email: simon.foster@basf.com

- **Jack Miller**
  Product Manager – Joncryl
  Phone: 248-948-2030, Mobile: 734-552-0313, Email: jack.miller@basf.com

- **Jennifer Rigney**
  Technical Specialist – Water-based Resins for Printing & Packaging
  Phone: 248-948-2328, Mobile: 734-626-7162, Email: jennifer.rigney@basf.com

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