



## RHOPLEX™ I-2350 Emulsion

### Regional Product Availability

- North America

### Description

RHOPLEX™ I-2350 Emulsion is a versatile, all-acrylic aqueous vehicle suitable for overprint varnishes and letdowns for flexographic and gravure ink applications. It is a hard film former that combines high heat resistance (non zinc containing) and gloss with excellent compatibility. On press, RHOPLEX I-2350 Emulsion has excellent transfer and printability with good resolubility for ease of cleanup.

### Key Features

#### As an Overprint:

- Scuff resistance
- High inherent COF
- Very good heat resistance, can be modified with zinc crosslinkers to enhance heat resistance
- Excellent clarity over offset inks
- Good gloss

#### As a Letdown Vehicle:

- With aluminum paste pigments for good stability
- Good solvent compatibility with other resins, alcohols and commonly used additives

### Typical Physical Properties

(These properties are typical but do not constitute specifications.)

Property	Value
Appearance	Milky white emulsion
Solids, %	30.0
pH	8.5
Viscosity, cP	1000
Tg, °C	65
Acid number	75
Molecular weight	>200,000
Freeze/thaw stability	Fail, 5 cycles
VOC	No

### Compatibility Guidelines

#### Solvent Compatibility with RHOPLEX™ I-2350 Emulsion

RHOPLEX I-2350 Emulsion is compatible with the typical alcohols and glycol ether solvents utilized in the graphic arts industry.

#### Compatibility with Other Polymers

RHOPLEX I-2350 Emulsion is compatible with the standard styrene/acrylics that are used in the graphic arts industry.

Typical Starting Point Formulations

Application: Overprint Varnish

	Scuff	Heat	Offset
RHOPLEX™ I-2350 Emulsion	39.5	79.8	74.5
RHOPLEX I-545 Emulsion	39.5	—	—
Water	15.6	11	15.1
Flexonic 600 <sup>1</sup> wax dispersion	5.0	—	—
Michem Emulsion ME39235 <sup>2</sup> wax emulsion	—	5.0	6.7
Zinplex 15 <sup>3</sup> zinc ammonium carbonate complex	—	4.0	—
Surfynol 104H <sup>4</sup> surfactant	—	—	3.4
Patcote 811 <sup>5</sup> defoamer	0.4	0.2	0.3
Total	100.0	100.0	100.0
TS, %	29.4	26.0	27.0
Viscosity, #2 Zahn cup, sec.	50	60	60
Static Slide Angle	18	25	
Kinetic Slide Angle	10	20	
Sutherland Rub Resistance		Pass 500 cycles	
Sentinel Heat Test		Passes 375°	
Clarity	Excellent	Very Good	Excellent

<sup>1</sup>Flexonic 600 wax dispersion – Supplied by and a trademark of Resolution Specialty Materials

<sup>2</sup>Michem Emulsion ME39235 wax emulsion – Supplied by and a trademark of Michelman

<sup>3</sup>Zinplex 15 zinc ammonium carbonate complex – Supplied by and a trademark of Ultra Additives

<sup>4</sup>Surfynol 104H surfactant – Supplied by and a trademark of Air Products

<sup>5</sup>Patcote 811 defoamer – Supplied by and a trademark of Hydrite

Application: Heat Resistant Flexo Ink for Paper and Paperboard

Sunsperse <sup>1</sup> RHD-6002 (pigment red)	23.9
RHOPLEX™ I-2350 Emulsion	50.8
Michem Emulsion ME39235 <sup>2</sup> wax emulsion	1.8
Water	23.4
Defoamer	0.1
Total	100.0
Sentinel Heat Resistance, face-to face, 2 seconds, 40 psi	350°F
Viscosity, #2 Zahn cup, sec.	35

<sup>1</sup>Sunsperse RHD-6002 pigment red – Supplied by and a trademark of Sun Chemical

<sup>2</sup>Michem Emulsion ME39235 wax emulsion – Supplied by and a trademark of Michelman

Food Legislation

FDA Regulation	Complies	Limitations	Opinion Date
21CFR175.105 (Adhesives)	Yes		28 Sep 12
21CFR176.170 (Components of paper and paperboard in contact with aqueous and fatty foods)	Yes with Limitations	▪ LIMITED TO USE WITH ALL FOOD TYPES EXCEPT THOSE CONTAINING MORE THAN 8% ALCOHOL AS PER 176.170 (c) TABLE 1, AND CONDITIONS OF USE E IN TABLE 2 (AT TEMPERATURES UP TO 120°F)	28 Sep 12
21CFR176.180 (Components of paper and paperboard in contact with dry food)	Yes		28 Sep 12

## Product Stewardship

The Dow Chemical Company and its subsidiaries ("Dow") has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our Product Stewardship program rests with each and every individual involved with Dow products — from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

## Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

## Medical Applications Policy

NOTICE REGARDING MEDICAL APPLICATION RESTRICTIONS: Dow will not knowingly sell or sample any product or service ("Product") into any commercial or developmental application that is intended for:

- a. long-term or permanent contact with internal bodily fluids or tissues. "Long-term" is contact which exceeds 72 continuous hours;
- b. use in cardiac prosthetic devices regardless of the length of time involved ("cardiac prosthetic devices" include, but are not limited to, pacemaker leads and devices, artificial hearts, heart valves, intra-aortic balloons and control systems, and ventricular bypass-assisted devices);
- c. use as a critical component in medical devices that support or sustain human life; or
- d. use specifically by pregnant women or in applications designed specifically to promote or interfere with human reproduction.

Dow requests that customers considering use of Dow products in medical applications notify Dow so that appropriate assessments may be conducted.

Dow does not endorse or claim suitability of its products for specific medical applications. It is the responsibility of the medical device or pharmaceutical manufacturer to determine that the Dow product is safe, lawful, and technically suitable for the intended use. **DOW MAKES NO WARRANTIES, EXPRESS OR IMPLIED, CONCERNING THE SUITABILITY OF ANY DOW PRODUCT FOR USE IN MEDICAL APPLICATIONS.**

## Disclaimer

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, the Customer is responsible for determining whether products and the information in this document are appropriate for the Customer's use and for ensuring that the Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Dow assumes no obligation or liability for the information in this document. **NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.**

NOTICE: If products are described as "experimental" or "developmental": (1) product specifications may not be fully determined; (2) analysis of hazards and caution in handling and use are required; (3) there is greater potential for Dow to change specifications and/or discontinue production; and (4) although Dow may from time to time provide samples of such products, Dow is not obligated to supply or otherwise commercialize such products for any use or application whatsoever.

## Additional Information

North America		Europe/Middle East	+800-3694-6367
U.S. & Canada:	1-800-441-4369		+31-11567-2626
	1-989-832-1426	Italy:	+800-783-825
Mexico:	+1-800-441-4369		
Latin America		South Africa	+800-99-5078
Argentina:	+54-11-4319-0100		
Brazil:	+55-11-5188-9000		
Colombia:	+57-1-219-6000	Asia Pacific	+800-7776-7776
Mexico:	+52-55-5201-4700		+603-7965-5392

[www.dowplastics.com](http://www.dowplastics.com)

This document is intended for use within North America.  
Published October, 2013.  
© 2013 The Dow Chemical Company

