OPTI-MATT™ 2300C 100% Acrylic Emulsion

What is OPTI-MATT™ 2300C 100% Acrylic Emulsion?

OPTI-MATT™ 2300C is a 100% Acrylic Emulsion designed as a premium interior architectural resin. It features pigment-composite technology to optimize TiO_2 efficiency and specially engineered polymer architecture to help enable matte paint formulations without inorganic extender pigments. OPTI-MATT™ 2300C Emulsion can replace both the resin and extenders in a formulation, offering low sheen aesthetics with the durability and resistance characteristic of higher sheen coatings.

Key Attributes

- Helps enable low sheen architectural coatings without inorganic extender pigments
- Excellent scuff and mar resistance
- Improved color transfer resistance
- Excellent stain resistance and film properties
- Eliminates the need for dry powders in manufacturing, helping enable grind-free paints

Formulation Features

- Film-forming emulsion polymer
- Achieves matte sheen as a sole resin
- Blendable with other acrylics to achieve higher sheen paints
- Composite-forming technology for TiO_2 efficiency
- Efficient matting

Property*	OPTI-MATT™ 2300C Emulsion
Appearance	Opaque, white to off-white liquid
Solids, % wt.	44
pH	8.9
Weight per U.S. Gallon (Wet, lbs/gal)	8.70
MFFT (°C)	~8-10
Coalescent level (%)	6-8

*These properties are typical but do not constitute specifications.

Matte Paints with Excellent Resistance Properties

Table 1. Performance Summary of Matte White Paints

Resin	Paint Formulated with RHOPLEX™ VSR-1065C Emulsion	Paint Formulated with OPTI-MATT™ 2300C Emulsion
Extender	Minex 7	None
60° Gloss	3.5	5.4
85° Gloss	7.6	8.9
Contrast Ratio	96.69	96.24
Color Properties, 2 fl. oz. Colortrend 808 Lamp Black		
Color acceptance, ΔE76	0.45	0.31
Tint Strength	Control	113.8
Y-reflectance	43.21	45.43
Household Stain Resistance	Control	++
Scuff and Mar Resistance, rated 1-5, 5=best		
Denim	2	5
Aluminum	1	3
Felt	2	5
Color Transfer Resistance, rated 1-5, 5=best	**4**	**5**

In a matte formulation, OPTI-MATT™ 2300C Emulsion shows equal off-the-mill properties (Table 1) compared to a control formulation that contains RHOPLEX™ VSR-1065C Emulsion and traditional extenders, while the resistance performance properties of the paint with OPTI-MATT™ 2300C are significantly greater than the control formulation. Gloss, sheen, contrast ratio, and color acceptance are fairly equal between the two paints. In replacing both the resin and traditional extender with OPTI-MATT™ 2300C, the tint strength can be significantly improved.

Improved Household Stain Resistance in Matte Paints

Household stain resistance (Figure 1), scuff and mar resistance (Figure 2), and color transfer resistance are also all notably better with OPTI-MATT™ 2300C in the formulation. These performance benefits are also observed in deep base matte paints.

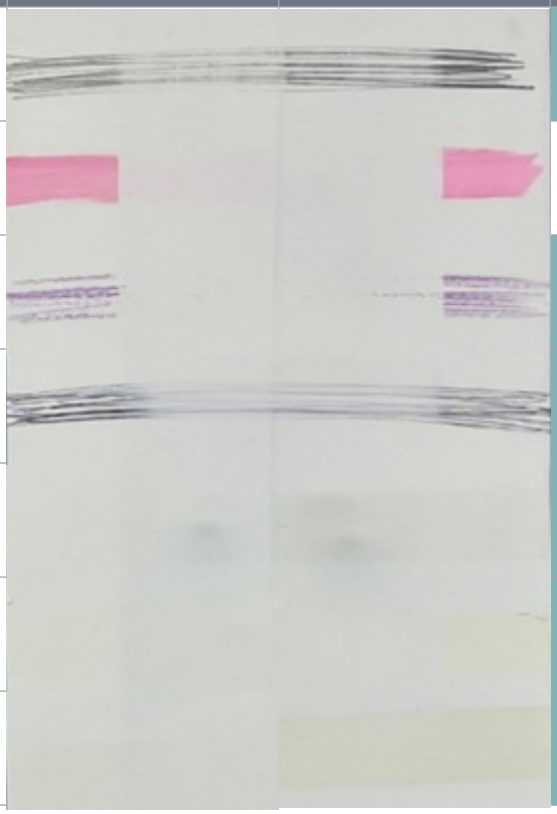
Paint Formulation Resin	OPTI-MATT™ 2300C	RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C	RHOPLEX™ VSR-1065C
Paint Formulation Extender	None	Minex 7	None	Minex 7
Pencil			+	Control
Red Lipstick			-	Control
Purple Crayon			+	Control
Black Ball Point Pen			+	Control
Red Wine			+	Control
Mustard			+	Control
Coffee			+	Control

Figure 1. Household stain resistance of matte paints formulated with OPTI-MATT™ 2300C Emulsion compared to a control paint

Scuff and Mar Resistance in Matte Paints

Paint Formulation Resin	RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C	RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C	RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C
Paint Formulation Extender	Minex 10	None	Minex 10	None	Minex 10	None
Matte White Paint						
Matte Deep Paint						

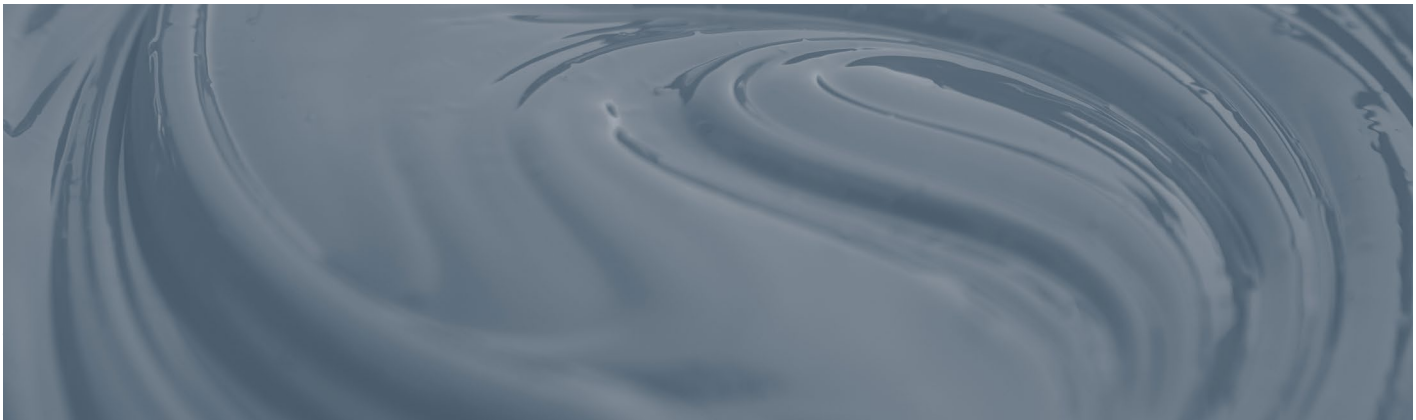
Figure 2. Scuff and mar resistance of matte paints formulated with OPTI-MATT™ 2300C Emulsion compared to a control paint

Test Method Details:

- 7mil drawdown on Leneta black vinyl chart
- 5-day dry time
- VESLIC Tester model 402354 from SDLATLAS fitted with a black felt pad and an aluminum foil wrapped pad
- 30 run cycles across the sample surface

Formulation Details:

Paint Formulation Resin		RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C
Paint Formulation Extender		Minex 10	None
White Base	PVC %	49	22
	VS %	39	38
Deep Base	PVC %	38	0
	VS %	36	37



Improved Scuff and Mar Resistance in Eggshell Sheens

To achieve a higher sheen paint, OPTI-MATT™ 2300C Emulsion can be blended with other resins. In an eggshell formulation, OPTI-MATT™ 2300C blended with RHOPLEX™ VSR-1065C Emulsion demonstrates exceptional scuff and mar resistance in both white and deep bases. In Figure 3, a white and deep base eggshell formulation containing OPTI-MATT™ 2300C without any extender pigments shows exceptional resistance to scuffing from both felt and aluminum media. The control formulation containing Minex 4 and the commercial benchmark paint show significant scuffing under the same test conditions.

In the deep base formulation with 12oz/gal of red iron oxide, the paint containing OPTI-MATT™ 2300C continues to resist scuffing from felt, outperforming the control formulation and the commercial benchmark.

OPTI-MATT™ 2300C also provides improved color transfer resistance in tinted paints. In Figure 5, the tinted paint containing the blend of OPTI-MATT™ 2300C and RHOPLEX™ VSR-1065C Emulsions shows significantly less colorant transferred onto the damp felt medium compared to both the control paint and the commercial eggshell benchmark.

Paint Formulation Resin	OPTI-MATT™ 2300C/ RHOPLEX™ VSR-1065C	RHOPLEX™ VSR-1065C	Commercial Eggshell Paint
Paint Formulation Extender	None	Minex 4	
Eggshell White Base			
Eggshell Deep Base			

Figure 3. Scuff and Mar Resistance with Felt (Top: white base; Bottom: deep base)

Paint Formulation Resin	OPTI-MATT™ 2300C/ RHOPLEX™ VSR-1065C	RHOPLEX™ VSR-1065C	Commercial Eggshell Paint
Paint Formulation Extender	None	Minex 4	
Eggshell White Base			

Figure 4. Scuff and Mar Resistance with Aluminum

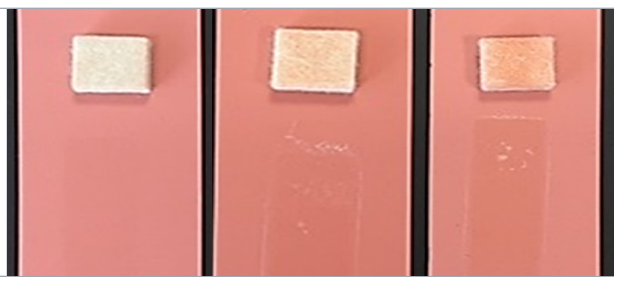
Eggshell White Base with 4 oz. red iron oxide	

Figure 5. Color Transfer Resistance with Felt

Test Method Details:

- 7mil drawdown on Leneta black vinyl chart
- 5-day dry time
- VESLIC Tester model 402354 from SDLATLAS fitted with a black felt pad and an aluminum foil wrapped pad
- 30 run cycles across the sample surface

In Summary

OPTI-MATT™ 2300C is a 100% Acrylic Emulsion that serves as a distinct, premium interior resin, offering excellent durability in lower sheen formulations. OPTI-MATT™ 2300C is a self-matting resin capable of replacing both the resin and inorganic extender pigments in a formulation without compromising performance. Additionally, it can be blended with other resins to achieve higher sheen paints or to fine-tune specific performance properties.

Starting Point Formulations

Matte White Base Formulation with OPTI-MATT™ 2300C Emulsion

Paint Formulation Resin	RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C
Paint Formulation Extender	**Minex 7**	**None**
Ingredients (in lbs)		
Grind		
Water	100.00	70.00
TAMOL™ 165 A Dispersant	16.00	11.38
DOWSIL™ 8590 Defoamer	1.00	1.00
TRITON™ HW-1000 Surfactant	2.00	2.00
Ti-Pure R-706	225.00	225.00
Minex 7	233.61	-
Grind Total	**577.61**	**309.38**
Let-Down		
RHOPLEX™ VSR-1065C Emulsion	368.75	-
OPTI-MATT™ 2300C Emulsion	-	629.42
ROPAQUE™ Ultra Opaque Polymer	25.00	25.00
Texanol	5.76	15.00
Optifilm Enhancer 400	-	2.50
Propylene Glycol	9.00	-
TERGITOL™ 15-S-40 (70%) Surfactant	3.00	3.00
DOWSIL™ 8590 Defoamer	1.00	1.00
ACRYSOL™ RM-8W Rheology Modifier	4.71	2.31
ACRYSOL™ RM-1600 Rheology Modifier	16.68	10.60
Water	155.29	37.09
Total	**1166.80**	**1035.30**
Formulation Properties		
Total PVC wo Add, %	48.6	21.7
Volume Solids wo Add, %	39.0	38.1
Density, lbs/gal	11.67	10.35
Calculated VOC, g/L	42.6	44.1

Matte Deep Base Formulation with OPTI-MATT™ 2300C Emulsion

Paint Formulation Resin	RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C
Paint Formulation Extender	**Minex 10**	**None**
Components, lbs / 100 gals.	**Grind**	**Premix**
Water	132.20	-
OPTI-MATT™ 2300 Emulsion	-	780.00
TAMOL™ 165A Dispersant	5.00	5.00
TRITON™ HW-1000 Surfactant	2.00	2.00
DOWSIL™ 8590 Defoamer	1.00	1.00
Minex 10	297.97	-
Grind Total	**438.17**	**788.00**
Let-Down		
RHOPLEX™ VSR-1065C Emulsion	410.50	-
Texanol	6.16	14.50
Optifilm Enhancer 400	-	6.00
Propylene Glycol	8.00	-
TERGITOL™ 15-S-40 (70%) Surfactant	3.00	3.00
DOWSIL™ 8590 Defoamer	1.00	1.00
ACRYSOL™ RM-995 Rheology Modifier	47.34	19.42
2:1 Dilution with Water		
ACRYSOL™ RM-3000 Rheology Modifier	33.55	16.06
Water	91.83	21.22
Total	**1039.55**	**869.20**
Formulation Properties		
Total PVC wo Add, %	48.6	21.7
Volume Solids wo Add, %	39.0	38.1
Density, lbs/gal	11.67	10.35
Calculated VOC, g/L	42.6	44.1

Eggshell White Base Formulation with OPTI-MATT™ 2300C and RHOPLEX™ VSR-1065C Emulsions

This starting point eggshell white formulation comprises 39% volume solids and 35% PVC, while the deep base formulation consists of 38% volume solids and 0% PVC. OPTI-MATT™ 2300C requires approximately 6-8% coalescent to pass low-temperature film formation, resulting in a calculated VOC of less than 50 g/L for both formulations. The deep base is tinted with 12oz/gal of Colortrend 808 Red Iron Oxide.

Paint Formulation Resin	RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C
Paint Formulation Extender	**Minex 4**	**None**
Grind		
Water	100.00	70.00
Ti-Pure R-706	225.00	225.00
TAMOL™ 165A Dispersant	12.00	8.00
DOWSIL™ 8590 Defoamer	1.00	1.00
TRITON™ HW-1000 Surfactant	2.00	2.00
Minex 4	118.93	-
Grind Total	**458.92**	**306.00**
Let-Down	-	285.50
OPTI-MATT™ 2300C Emulsion	465.58	323.75
RHOPLEX™ VSR-1065C Emulsion	25.00	25.00
RHOPAQUE™ Ultra EF Opaque Polymer	7.21	15.00
Texanol	-	2.50
Optifilm Enhancer 400	8.00	-
Propylene Glycol	3.00	3.00
TERGITOL™ 15-S-40 (70%) Surfactant	1.00	1.00
DOWSIL™ 8590 Defoamer	5.70	2.41
ACRYSOL™ RM-8W Rheology Modifier	20.37	10.45
ACRYSOL™ RM-1600 Rheology Modifier	104.71	58.67
Water		
Total	**1099.49**	**1033.28**
Formulation Properties		
Total PVC wo Add, %	35.1	21.0
Volume Solids wo Add, %	39.0	39.2
Wt Solids wo Add, %	53.1	50.3
Density, lbs/gal	10.99	10.33
Calculated VOC, g/L	44.42	43.15

Eggshell Deep Base Formulation with OPTI-MATT™ 2300C and RHOPLEX™ VSR-1065 Emulsions

Paint Formulation Resin	RHOPLEX™ VSR-1065C	OPTI-MATT™ 2300C
Paint Formulation Extender	**Minex 7**	**None**
Grind / Premix	**Grind**	**Premix**
OPTI-MATT™ 2300C Emulsion	-	474.38
Water	77.26	70.00
TAMOL™ 165A Dispersant	5.00	8.00
TRITON™ HW-1000 Surfactant	2.00	1.00
DOWSIL™ 8590 Defoamer	1.00	2.00
Minex 7	198.64	-
Grind Total	**338.84**	**482.37**
Let-Down		
RHOPLEX™ VSR-1065C Emulsion	531.12	296.19
Texanol	8.00	15.00
Optifilm Enhancer 400	-	3.00
Propylene Glycol	7.00	-
TERGITOL™ 15-S-40 (70%) Surfactant	3.00	3.00
DOWSIL™ 8590 Defoamer	1.00	1.00
ACRYSOL™ RM-995 Rheology Modifier	14.82	5.42
ACRYSOL™ RM-3000 Rheology Modifier	24.42	16.52
Water	110.08	49.82
Total	**983.33**	**872.32**
Formulation Properties		
Total PVC wo Add, %	24.00	0.00
Volume Solids wo Add, %	38.00	38.20
Wt Solids wo Add, %	47.20	40.90
Density, lbs/gal	9.83	8.72
Calculated VOC, g/L	43.50	43.20

Images: dow_5484495623, dow_65732991684, adobestock_357187584, dow_87191326163, adobestock_17711271

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