

EPS[®] 2535

ACRYLIC EMULSION

DATA SHEET

Description

EPS 2535 is a styrenated acrylic emulsion offering outstanding corrosion resistance, adhesion, early water resistance and high gloss development / gloss retention. EPS 2535 provides paint formulators a low VOC waterborne alternative to alkyd maintenance vehicles and general product finishes on ferrous and non-ferrous metal, wood and plastic substrates.

- ✓ Superior corrosion resistance, with or without the use of corrosion resistant pigments / additives
- ✓ Excellent gloss development / gloss retention
- ✓ Excellent early water resistance
- ✓ Excellent adhesion to ferrous and non-ferrous metal substrates
- ✓ Broad solvent compatibility: EPS 2535 allows the formulator the ability to use typical hydrophilic solvents (EB, DB), as well as non-HAPS, hydrophobic solvents (DPnB, Texanol) for superior performance.

Specifications

Weight Solids: 45.0 ± 0.7%
 Weight/Gallon: 8.70 ± 0.10
 pH: 7.5 – 8.5

Suggested Coalescing Solvent(s)

(% Solvent on Binder Solids-Pass 40°F LTC Test)

DPnB, Texanol	25 %
EB, DB	35%
PnB	30%

Typical Properties

Volume Solids: 42.0 ± 0.7%
 MFFT: 56°C
 Acid Value (on solids): 25
 Volatile(s): Water

Suggested Formulations

EPS 2535 WHT ST1 - White High Gloss Enamel
 EPS 2535 WHT SP3 - 40 PVC White DTM Primer
 EPS 2535 WHT SG2 - White DTM Semi-Gloss (spray)
 EPS 2535 BLK ST1 - Black High Gloss DTM Enamel (spray)
 EPS 2535 ROX SP1 - 40 PVC Red Oxide Spray Primer

05-08-2014

Questions? Call EPS Technical Service @ 1-800-601-8111

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EPS[®] 2535

FORMULATING GUIDELINES

The following guidelines are offered to assist the paint formulator in achieving the high performance properties offered by EPS 2535. Several suggested paint formulations are also available for reference. Questions? – Please call EPS Technical Service at 800.601.8111.

Pigment Volume Concentration (PVC):

Formulating at the correct PVC is critical in optimizing corrosion resistance of coatings. For best results in high gloss coatings, the PVC should be formulated as low as possible (less than 20 % is suggested) to obtain maximum corrosion protection and gloss development. In primer formulations, where a higher PVC or the use of corrosion inhibitive pigments is desired, it is necessary to use a higher level of dispersant. Formulas at a PVC of approximately 40% still show good long-term viscosity stability, as well as resistance to settling and separation. The use of AMP-95 (Dow), at a level of 1 pound per 100 gallons, has also been found effective in terms of long term stability, as well as aiding in pigment dispersion and grind base stability of these higher PVC coatings.

Dispersants:

Tamol 681 (Dow), Byk 190 (BYK), and Disperse-Ayd W-22 (Elementis) are recommended for use with EPS 2535. Each should be evaluated and compared to see which fits your particular formulating needs. Disperse-Ayd W22 has been found most effective in high PVC (40%) primer formulas (such as EPS 2535 SP-3). This formula shows a slightly higher level of dispersant than would be used at lower PVCs, although this level was determined necessary for the proper balance of required properties.

Co-solvents:

The use of DPnB (25% on resin solids) is recommended to form films as low as 40°F while offering excellent corrosion resistance and excellent open dry times for finishing large objects. Small additions of plasticizer, such as Paraplex WP-1, Santicizer 160, or KP140 may enhance the film properties. Other co-solvents, such as Texanol (25% on solids), PnB (30%) have been found to be adequate when used with EPS 2535, albeit with slightly less performance.

Thickeners:

Most rheological additives work well with the EPS 2535. It may be necessary at times to use a package of Rheology modifiers, in order to attain viscosity control as well as proper sag resistance. Among those showing particular success were Acrysol RM-825 and Acrysol RM-2020 (Dow), Tafigel PUR-60 (Munzing), Rheolate 1 (Elementis), and Attagel 50 (BASF).

Corrosion Inhibitive Pigments:

While EPS 2535 has been found stable with a large variety of corrosion inhibitors, the proper balance of corrosion resistance in regard to properties such as viscosity stability, settling and desired gloss can be difficult to attain. In high PVC primer formulas, EPS has determined that a unique synergy makes the combination of SZP-391 (Halox) and Shieldex AC-5 (Grace), at levels of 25 and 15 pounds per 100 gallons, respectively, an ideal choice to attain all properties.

Flash Rust Inhibitors:

The addition of a flash rust additive to DTM paints is recommended. Sodium nitrite is recommended at a maximum level of one pound per 100 gallons of paint.

Defoamers:

For difficult foaming issues, or during formulation of higher PVC coatings, it may be necessary to use a combination of defoaming products. Strong defoamers, such as BYK 024 (BYK), or Dehydran 1620 (BASF), may not be as effective for microfoaming. In this case, an additional anti-foam agent may be required. Laboratory results have found Foamaster 111, Foamaster S (BASF) and Surfynol DF-210 (Air Products) to be adequate for this purpose. Most anti-foam agents evaluated with EPS 2535 proved effective to various degrees.

pH:

The pH of paints produced with EPS 2535 should be 8.0-9.5. AMP-95 (Dow) and ammonium hydroxide are recommended for pH adjustments.

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EPS[®] 2535

SUGGESTED FORMULATION

FORMULA: EPS 2535 WHT ST1 (03/11/09)
WHITE HIGH GLOSS ENAMEL

<u>Pounds</u>	<u>Gallons</u>	<u>Raw Material</u>	<u>Supplier</u>	<u>Instructions</u>
50.0	6.00	Water		Add in order, under agitation.
9.0	0.99	Tamol 681	Dow	
3.0	0.34	Surfynol PSA-336	Air Products	
1.0	0.13	AMP-95	Dow	
3.0	0.36	Octafoam S-675	Hi-Mar Specialties	
170.0	4.98	Ti-Pure R-706	Du Pont	Add with good agitation. Disperse to 7+ Hegman.
583.0	67.01	EPS 2535	EPS	Letdown in order with good agitation.
2.0	0.22	Nuosept 498	Ashland	Add grind at this point.
46.2	5.55	Water		Premix and add with good agitation.
10.0	1.20	4% Sodium Nitrite solution		
65.6	8.58	DPnB	Lyondell	
25.9	3.00	Propylene Glycol		
12.0	1.31	Acrysol RM-2020	Dow	Add with good agitation.
1.5	0.17	Propylene Glycol		Premix and add to adjust viscosity.
<u>1.5</u>	<u>0.17</u>	DSX 1550	BASF	
983.7	100.00	Totals		

Formulation Parameters

Weight Solids	45.36	%
Volume Solids	34.54	%
Weight / Gallon	9.84	lb/gal
Pigment Volume Conc.	15.03	%
Pigment / Binder	0.65	
VOC	248	g/l
	2.07	lb/gal

Typical Paint Properties

Viscosity (Stormer)	75 - 85 KU
pH	8.5 - 9.0
20°/60° Gloss (2.0-2.5 mils DFT)	50+ / 85+
Corrosion Resistance (2.0-2.5 mils DFT on CRS)	300+ Hours

Suggested Application Methods

Brush, Roll, Spray

02-24-2011

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EPS[®] 2535

SUGGESTED FORMULATION

FORMULA: EPS 2535 SP3 (01/06/03)

40 PVC WHITE DTM PRIMER

<u>Pounds</u>	<u>Gallons</u>	<u>Raw Material</u>	<u>Supplier</u>	<u>Instructions</u>
80.0	9.60	Water		Add in order with good agitation.
18.0	2.05	Disperse-Ayd W-22	Elementis	
3.0	0.41	Surfynol 104A	Air Products	
1.0	0.13	AMP-95	Dow	
1.5	0.17	BYK 024	BYK	
100.0	2.87	RCL-535	Millenium	Add with agitation.
200.0	9.06	Atomite	Imerys	
15.0	1.00	Shieldex AC-5	Grace	Disperse to 6+H.
25.0	1.00	SZP-391	Halox	
425.0	48.85	EPS 2535	EPS	Letdown in order.
0.5	0.06	BYK 024	BYK	
1.5	0.16	Nuosept 95	Ashland	
130.9	15.71	Water		Premix next 3 items before adding DPnB & Santicizer 160; add entire premix under agitation.
10.0	1.20	4% Sodium Nitrite		
4.0	0.45	Rheolate 1	Elementis	
38.3	5.01	DPnB	Lyondell	
19.1	2.05	Santicizer 160	Ferro	
1.0	0.11	Acrysol RM-825	Dow	Premix and add to adjust viscosity.
<u>1.0</u>	<u>0.12</u>	Water		
1074.8	100.01	Totals		

Formulation Parameters

Weight Solids	52.38	%
Volume Solids	37.84	%
Weight / Gallon	10.75	lb/gal
Pigment Volume Conc.	40.43	%
VOC	116	g/l
	0.97	lb/gal

Typical Paint Properties

Viscosity (Stormer)	80 - 90 KU
pH	8.0 - 8.5
60° Gloss	< 10
DFT	1.50 mils

Suggested Application Methods

Spray, Brush, Roll

02-22-2011

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EPS[®] 2535

SUGGESTED FORMULATION

FORMULA: EPS 2535 WHT SG2 (05/10/00 - R1)
 WHITE DTM CORROSION RESISTANT SEMI-GLOSS

<u>Pounds</u>	<u>Gallons</u>	<u>Raw Material</u>	<u>Supplier</u>	<u>Instructions</u>
50.00	6.00	Water		Add with good agitation
20.00	2.27	Disperbyk 190	BYK	
2.00	0.28	Surfynol 104A	Air Products	
1.00	0.12	BYK 024	BYK	
2.00	0.25	Amp-95	Dow	
100.00	2.87	RCL 535	Millenium	
40.00	2.67	Shieldex AC-5	Grace	
25.00	1.05	Nytal 400	Vanderbilt	Disperse to 6NS
542.00	62.30	EPS 2535	EPS	Premix emulsion with water.
50.00	6.00	Water		Add grind paste.
33.30	4.00	Water		Premix the next four items
10.00	1.20	4% Sodium Nitrite Soln.		
1.50	0.16	Nuosept 95	Ashland	
79.30	10.37	DPnB		Add with good agitation.
2.00	0.23	RM-825	Dow	Premix with water, adjust viscosity.
<u>2.00</u>	<u>0.24</u>	Water		
960.10	100.00	Totals		

Formulation Parameters

Weight Solids	44.00	%
Volume Solids	34.20	%
Weight / Gallon	9.60	lb/gal
Pigment Volume Conc.	20.11	%
Pigment/Binder"	0.68	
VOC	218	g/l

Typical Paint Properties

Viscosity (Stormer)	70 – 80 KU
pH	8.5 - 9.5
Color	White
Gloss (60°)	< 30

Suggested Application Methods

Spray

02-24-2011

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EPS[®] 2535

SUGGESTED FORMULATION

FORMULA: EPS 2535 BLK ST1 (05/12/97)

BLACK HIGH GLOSS DTM ENAMEL

<u>Pounds</u>	<u>Gallons</u>	<u>Raw Material</u>	<u>Supplier</u>	<u>Instructions</u>
16.66	2.00	Water		Add with good agitation
0.30	0.04	Ammonia 26%		
3.50	0.40	Disperse-Ayd W-22	Elementis	
20.00	1.33	Raven 850 Carbon Black	Columbian Chem.	Disperse to a 7 NS
16.66	2.00	Water		Wash water.
652.50	75.00	EPS 2535	EPS	Letdown
24.99	3.00	Water		
1.50	0.19	Dehydran 1620	BASF	Add grind.
16.66	2.00	Water		Premix, then add
10.00	1.20	Sodium Nitrite 4%		under good agitation.
4.00	0.54	Ammonia 26%		
74.00	9.67	DPNB		
2.00	0.28	Surfynol 104A	Air Products	
16.66	2.00	Water		
<u>5.00</u>	<u>0.56</u>	Rheolate 1	Rheox	Premix, adjust viscosity.
864.43	100.20	Totals		

Formulation Parameters

Weight Solids	36.90	%
Volume Solids	33.40	%
Weight / Gallon	8.63	lb/gal
Pigment Volume Conc.	4.06	%
Pigment/Binder	0.07	
VOC	208	g/l

Typical Paint Properties

Viscosity (Zahn #2)	30 - 35 seconds
pH	8.5 - 9.5
Color	Black
60° Gloss	85+
20° Gloss	65+

Suggested Application Methods

Spray

02-24-2011

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SUGGESTED FORMULATION

FORMULA: EPS 2535 ROX SP1 (04-16-03)
40 PVC RED OXIDE SPRAY PRIMER

<u>Pounds</u>	<u>Gallons</u>	<u>Raw Material</u>	<u>Supplier</u>	<u>Instructions</u>
90.0	10.80	Water		Add with agitation
18.5	2.10	Disperse-Ayd W-22	Elementis	
3.0	0.41	Surfynol 104A	Air Products	
1.0	0.13	AMP-95	Dow	
1.5	0.17	BYK 024	BYK	
95.0	2.56	RO-4097 Kroma Red Iron Oxide	Elementis	Add with agitation; disperse to 5+H.
210.0	8.86	Atomite	Imerys	
25.0	1.00	SZP-391	Halox	
15.0	1.00	Shieldex AC-5	Grace	
416.7	47.90	EPS 2535	EPS	Letdown in order with good agitation.
50.0	6.00	Water		
1.5	0.16	Nuosept 95	Ashland	
0.5	0.06	BYK 024	BYK	Add grind at this point.
50.0	6.00	Water		Premix next 3 items, then add solvent and plasticizer; Mix well and add with agitation.
10.0	1.20	4% Sodium Nitrite		
4.0	0.45	Rheolate 1	Elementis	
28.1	3.79	Hexyl Cellosolve (EH)	Dow	
14.1	1.51	Santicizer 160	Ferro	
47.2	5.67	Water		
1.0	0.12	Water		Premix and add to adjust viscosity.
<u>1.0</u>	<u>0.11</u>	Acrysol RM-825	Dow	
1083.4	100.00	Totals		

Formulation Parameters

Weight Solids	51.71	%
Volume Solids	36.48	%
Weight / Gallon	10.83	lb/gal
Pigment Volume Conc.	40.01	%
Pigment / Binder	1.84	
VOC	9	g/l
	0.783	lb/gal

Typical Paint Properties

Viscosity (Stormer)	75 - 85	KU
pH	8.0 - 8.5	
60° Gloss	< 5	
Dry Film Thickness	1.0-1.5	Mil

Suggested Application Methods

Airless Spray

02-24-2011

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