



Industrial Coatings



# Imron® 3.5 HG™ + Polyurethane High Gloss Topcoat Product Data Sheet (Mix Quality RH)

## Description:

DuPont™ Imron® 3.5 HG™ + is the new generation of Imron® technology. Based upon unique DuPont formulations and resin technology, Imron® 3.5 HG™ + is the newest Imron® yet, providing the “Wet Look that Lasts” with compliant environmental features. Imron® 3.5 HG™ + is a high gloss 3.5 lbs/gal VOC conforming, low HAPS, polyurethane topcoat. The resulting finish product provides a brush, roll or sprayable topcoat suitable for use in any environment where long term color and gloss retention are desired.

## Suggested Uses:

As a high performance, tough, industrial polyurethane topcoat over properly prepared and primed aluminum, carbon steel, galvanized, concrete or dry wall where:

- Long term color retention is desired
- Long term gloss retention is desired
- Compliance with 3.5 lb VOC regulations is desired
- Use in corrosive or industrial marine environments is needed
- Application by brush, roll or spray is desired
- Excellent chemical resistance is desired
- Very good Skydrol® resistance is needed
- Outstanding flexibility is needed
- Faster dry times are desired

**Not recommended for:** Immersion service or floors

## COMPATIBILITY WITH OTHER COATINGS

- Aged Imron® 3.5 HG™ + may be re-coated with itself following washing with clean, fresh water – no mechanical surface preparation is required.
- Imron® 3.5 HG™ + can be applied over other DuPont Industrial Coatings including, but not limited to Imron® Industrial Strength Primers and other Imron® primers, Imron® Waterborne Polyurethane Copolymer coatings, Corlar® epoxies, Tufcote® acrylics, and Tufcote® alkyd primers.
- Imron® 3.5 HG™ + may be used over most aged and hard-cured coatings in good condition. Testing for lifting, bubbling and adhesion is recommended to assure compatibility with unknown coatings. Contact your DuPont Performance Coatings representative for specific recommendations.

## MAXIMUM SERVICE TEMPERATURE

250°F (93°C) in continuous service.  
300°F (148°C) in intermittent heat.

Some yellowing of light colors may occur at elevated temperatures.

## PERFORMANCE PROPERTIES

Abrasion & Mechanical	Excellent	Color & Gloss Retention	Excellent
Alkalis	Excellent	Acids	Excellent
Humidity	Excellent	Salts	Excellent
Solvents	Excellent	Weather	Excellent

\* For more information please see ASTM Information section.

### VOC (Theoretical less water and exempt compounds).

Compliant at 3.5 lbs/gal VOC

	Imron® 3.5 HG™ +					
	Normal			Hot		
	Less than 85°F	VOC	VOC (TBAc exempt)	Higher than 85°F	VOC	VOC (TBAc exempt)
+ Y-32401™	2%	3.44 lbs/gal	3.28 lbs/gal	2%	3.44 lbs/gal	3.28 lbs/gal
+ 9M01™	5%	3.44 lbs/gal	3.28 lbs/gal	5%	3.44 lbs/gal	3.28 lbs/gal
+ VG-805™	1 oz / mixed gal	3.48 lbs/gal	3.33 lbs/gal	1 oz / Mixed gal	3.48 lbs/gal	3.33 lbs/gal
+ 9M05™	1 oz / mixed gal	3.49 lbs/gal	3.34 lbs/gal	1 oz / Mixed gal	3.49 lbs/gal	3.34 lbs/gal
+ 9M02™	[REDACTED]			Or instead of Y-32401™		
				5%	3.45 lbs/gal	3.29 lbs/gal

This product contains T-Butyl Acetate (TBAc).

### HAPS Information – Theoretical

	Imron® 3.5 HG™ +			
	Normal		Hot	
	Less than 85°F	HAPS lbs/gal solids	Higher than 85°F	HAPS lbs/gal solids
+ Y-32401™	2%	0.6	2%	0.6
+ 9M01™	5%	0.6	5%	0.6
+ VG-805™	1 oz / mixed gal	0.6	1 oz / mixed gal	0.6
+ 9M02™	[REDACTED]		Or instead of Y-32401™	
			5%	0.3

### COLOR

Selected high-volume colors available in factory package. Over 5000 custom colors can be mixed.

#### Color Availability:

Imron® 3.5 HG™ + consists of a mixing system utilizing 19 tints and 1 binder to specific mixing formulas. Select Factory Package colors are also available.

### Gloss (ASTM D 523)

>90 measured @ 60° angle

**Note:** Imron® 3.5 + can also be made into variable gloss ranges using 9T20™ Flattener. Imron® 3.5 + can be formulated into Semi Gloss (RM), Satin Gloss (RA) and Flat (RF). Please consult the specific product data sheet for the low gloss qualities. Please also note that the mix ratio for reduced qualities of Imron® 3.5 +, changes from 4 to 1 with RH, High Gloss quality, to 8 to 1 with all reduced gloss qualities.

### Flash Point – Tag Closed Cup

Between 20° to 73° F (-6° to 23° C)

### Packaging

- Factory packaged colors – 33-XXXXX – 1 gallon container 80% full (104.2 oz.)
- Tints 1 gallon containers- Full filled
- Activator – 9T00-A™ – Quart container 80% full (25.6 oz.) (other sizes available-consult customer service rep)
- 3500P™ Color Mix Binder 100% full

### Shipping Weight – lbs – approximate

Enamel: 1 gallon container: 9 -12 lbs  
Activator: 1 quart container: 2 - 3 lbs

### SHELF LIFE & STORAGE CONDITIONS

Store in a dry, well-ventilated area. Storage conditions should be between 35° F (2° C) and 120° F (48° C)

- Shelf Life: 1 year minimum.

### Cure Times – HOURS @ 2.0 - 3.0 MILS SUGGESTED DFT

	@ 77° F, 50% RH(2% Y-32401™)		@ 90° F, 50% RH(5% 9M02™)	
	Without VG-805™ Accelerator	With 1 oz. VG-805™ Accelerator	Without VG-805™ Accelerator	With 1 oz. VG-805™ Accelerator
To Touch	3 hours	1.5 hours	2 hours	1 hour
To Handle	7 hours	4.5 hours	7 hours	4 hours
To Recoat	5 hours	3 hours	5 hours	3 hours
Pot Life	3 hours	2 hours	2.5 hours	2 hours
Full Cure	7 days	6 days	6 days	5 days

### Activated Volume Solids – Avg. varies with color

55% +/- 2%

### Activated Weight/ gallon – Avg. varies with color

8-11 lbs

### Activated Weight Solids – Avg. varies with color

62% +/- 3%

### Theoretical Coverage Per Gallon

882 ft<sup>2</sup> (21.6 m<sup>2</sup>/l) @ 1 mil dft

441 ft<sup>2</sup> (10.8 m<sup>2</sup>/l) @ suggested DFT of 2 mils

Material losses during mixing and application will vary and must be taken into consideration when estimating job requirements.

### Suggested Film Builds

3 - 5 mils (75-125 µm) wet

2 – 3 mils (50 – 75 µm) dry

Application by brush and roller may require additional coats to achieve recommended films thickness.

## SAFETY

Consult the Material Safety Data Sheet for this product prior to use. All Imron® 3.5 HG™ + products are intended for professional use only.

## APPLICATION INFORMATION

### SURFACE PREPARATION

Newly primed surfaces should be clean and dry. If contaminated, detergent/water wash, then blow dry. Previously painted surfaces should have all loose paint removed and the edges feathered. Prime bare spots with appropriate primer.

### Activation

Thoroughly mix all colored portions until uniform. To 4 parts 33-XXXXX base or Imron® 3.5 HG™ + (RH quality) mixing formula, add 1 part 9T00-A™ Activator. If using a mix formula, follow specific color formulas for color desired. No induction period is necessary. Measure out appropriate amounts, add activator and mix thoroughly. Reductions can be done using either Y-32401™, Imron® 9M01™ or 9M02™ Thinners. Special attention must be paid to reduction amounts to stay within VOC compliance. Mix thoroughly using a mechanically powered sheer “Jiffy” mixer with variable RPM settings; use medium speed RPM. Move mixer up and down through paint to assure uniform mixing.

**DO NOT SHAKE.** (See reduction section below.)

### Pot Life

3 hours @ 77°F and 50% RH. Higher temperatures or the addition of Imron® VG-805™ Accelerator may shorten pot life.

### Reduction

For spray use (pressure pot and airless, depending upon conditions and equipment):

Normally, 0-2% Y-32401™ and/or up to 5% 9M01™ can be used for spray application less than 85°F. For applications greater than 85°F use Y-32401™ 2% max or 5% max 9M02™.

For Brush and Roll use: Normally, 0-2% Y-32401™ and/or up to 5% 9M01™ can be used when temperature is less than 85°F. For application above 85°F, use 0-2% max, Y-32401™ or 5% max 9M02™. In addition, when rolling only, use 1 oz per mixed gallon of 9M05™ Rolling Additive to help eliminate bubbles.

After addition of 9M05™ Rolling Additive, allow 5 minutes induction before applying.

If faster recoats are required, use VG-805™ Accelerator 1 oz per mixed gallon. May be recoated by spray when tack-free. If accelerators have been used, recoating must be done within 48 hours. If more time has elapsed, scuff sand to ensure adhesion.

**DO NOT USE** Lacquer thinners for reduction. **Use only recommended reduction solvents.**

### Application Thinners

Spray, Brush & Roll – Below 85°F:

DuPont Y-32401™, Imron® 9M01™

Spray, Brush & Roll – Above 85°F:

DuPont Y-32401™, Imron® 9M02™

Rolling Additive:

Imron® 9M05™

### Clean Up Thinners

Imron® T-1021™, Acetone or MEK

### APPLICATION CONDITIONS

Do not apply if the application surface temperature is below 45°F (7°C) or above 110°F (43°C), or if the atmospheric temperature is within 5°F of the dew point. For application temperatures below 45°F, the use of Imron® VG-805™ is recommended. Relative Humidity should be below 90%.

## APPLICATION EQUIPMENT

- Apply by spray, brush or roll
- Manufacturers listed below are a guide. Others may be used. Changes in pressure and tip size may be required to achieve proper application.
- Application by gravity feed or siphon is not recommended. For best results use pressure pot or airless.

## ROLL

Manufacturer: Wooster® Pro/Doo-Z™ ¼" – ½" nap

- Additions:
- Add 1 oz./gallon Imron® 9M05™ Rolling Additive to eliminate bubbles.
  - Add to 0-2% DuPont Y-32401™ and/or up to 5% M901™. For applications above 85°F, use 0-2% max, Y-32401™ or 5% max 9M02™ reducer to maintain wet edge.
  - Cross-roll with 50% over-lap.
  - For best results, allow 5 minutes mix time after adding Imron® 9M05™.
  - Do not use Imron® 9M05™ in spray applications.

## BRUSH

Manufacturer: Wooster® China Bristle

- Additions:
- Add 0-2% DuPont Y-32401™ and/or up to 5% 9M01™. For applications above 85°F, use 0-2% max, Y-32401™ or 5% max 9M02™ reducer to maintain wet edge.
  - Do not cross brush to reduce lap marks.

## CONVENTIONAL SPRAY

- Additions:
- Normally, 0-2% DuPont Y-32401™ and/or up to 5% 9M01™ can be used for spray application less than 85°F. For applications greater than 85°F, use DuPont Y-32401™, 2% max or 5% max 9M02™
  - May be recoated by spray when tack-free.
  - Imron® 9M05™ Rolling Additive is not recommended for spray application.

Manufacturer	Sata	DeVilbiss	Graco	Iwata	Binks
<b>Model</b>	K3 or K3 RP	JGA or MBC	DeltaSpray XT	W-77, W-71, or W-200	2001 or 95
<b>Tip Size</b>	1.0 – 1.3 mm	1.1 - 1.4 mm	1.0 - 1.5 mm	1.2 – 1.4 mm	1.2 – 1.3 mm

\*Fluid lines 3/8" ID or larger are required for proper fluid delivery.

## HVLP PRESSURE FED:

Manufacturer	Sata	DeVilbiss	Graco	Iwata	Binks
<b>Model</b>	3000RP HVLP	JGHV, EXL, or FLG	DeltaSpray XT – HVLP	LPH 200 LVLP	MACH 1 & 1SL SV100 HVLP
<b>Tip Size</b>	1.0 – 1.3 mm	1.1 - 1.4 mm	1.1 – 1.5 mm	1.2 – 1.4 mm	1.2 – 1.4 mm

## AIRLESS SPRAY:

Manufacturer	Graco	Iwata	Binks	Kremlin
<b>Model</b>	Graco President	ALG or Airlesso	Airless 1	Airless
<b>Tip Size</b>	.011 - .015	.011 - .015	.011 - .017	.011 - .013
<b>Pump</b>	33:1 min	ALG 33:1 min	33:1 min	Orca 32:1

- Fluid lines > ¼" ID are recommended for lengths up to 25', 3/8" ID or larger are required for proper fluid delivery at lengths longer than 25'.
- Minimum pressure: 2500-4500 psi.
- Filter 60 Mesh

### AIR ASSISTED AIRLESS SPRAY:

Manufacturer	Graco	Graco	Iwata	Binks
Model	AA4000 HVLP, AA10HP Cap	Alpha or Alpha Plus	MSG 200 or 2000	AA 1500
Tip Size	.021 - .027	.015 - .021	Adjustable Tip	.013 - .019

- Fluid lines > ¼" ID are recommended for lengths up to 25', 3/8" ID or larger are required for proper fluid delivery at lengths longer than 25'.

### ELECTROSTATIC:

Manufacturer	Graco	Nordson	Ransburg
Model	PRO Xs3 Or XS4 Electrostatic Gun	Kinetix Systems AA, KVLP & Conventional	REA 90 or AA90

#### Orifice Size

in.	(mm)	in.	(mm)
.031	(0.8)	.055	(1.4)
.042	(1.0)	.067	(1.7)
.043	(1.1)	.070	(1.8)
.051	(1.3)	.080	(2.0)



## ASTM INFORMATION

Physical properties are average. Properties listed are for a system of Corlar<sup>®</sup> 2.1 ST<sup>™</sup> and DuPont Imron<sup>®</sup> 3.5 HG +. Total dry film thickness 7.5 mils.

Tabor Abrasion per ASTM D-4060 weight loss in grams		0.042
Salt Fog (ASTM B-117)	1000 hours	No rusting, no blistering
	2000 hours	No rusting, no blistering
	3000 hours	No rusting, no blistering, no undercutting at the scribe
Humidity Resistance (ASTM D2247)	1000 hours	No rusting, no blistering
	2000 hours	No rusting, no blistering
	3000 hours	No rusting, no blistering
Adhesion (ASTM D4541)		Excellent
Cle Cond (ASTM D4585)	1000 hours	No rusting, few blisters, no delamination
UVA 340 Con (ASTM D4587*)	2500 hours	Gloss before exposure: 89.7
		Gloss after exposure: 91.4
	Evaluation	No rusting, no blistering, no delamination
Impact (ASTM D2794)	12 inch pounds	
Mandrel Bend (ASTM D522)	% elongation	0%

\* 8 hrs UV @ 50°C, 4 hrs condensation @ 40°C, glo ss readings @ 60°C

## SELECT CHEMICAL RESISTANCE

The following chemicals had no effect (24 hours watch glass).

	<u>Rating</u>
Sulfuric Acid	10% (50% slight color change)
Hydrochloric Acid	10 & 20%
Nitric Acid	10 & 20%
Acetic Acid	10%
Sodium Hydroxide	10 & (50% slight ring)
Ammonium Hydroxide	10%, concentrated
Distilled Water	
MEK	
Toluene	
Cyclohexane	
Methanol	
Isopropanol	
Gasoline	
5% Gasahol	

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