



IMRON[®] 3.5 HG[™]

HIGH GLOSS POLYURETHANE

(formerly Imron[®] 333M[™])

Imron[®] 3.5 HG[™] high gloss aliphatic polyurethane enamel is a high-solids, two-package, VOC conforming product (3.5 lbs./gal.) based on patented DuPont resin technology, producing properties of both polyester and acrylic polyurethanes. The resulting highly durable finish delivers industry leading polyurethane performance.

SUGGESTED USES

As a high performance topcoat over suitable primers or tie coats on steel, galvanized steel, stainless steel, aluminum, concrete, concrete block, fiberglass, plastics and wood where:

- ◆ Outstanding gloss and color retention are desired.
- ◆ Excellent resistance to chemical and/or marine environments is required.
- ◆ Outstanding abrasion resistance and flexibility are required.
- ◆ Application by brush and roller, in addition to spraying, may be necessary.
- ◆ Application must be made at temperatures as low as 35° F.
- ◆ Mechanical surface preparation will be prohibited or impractical later when recoating.

NOT RECOMMENDED FOR:

Immersion Service

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. See Additional Comments #4

Imron[®] 3.5 HG[™] can be applied over other DuPont Industrial Coatings including, but not limited to, Imron[®] waterborne polyurethane copolymer coatings, Corlar[®] epoxies, Tufcote[®] acrylics, Tufcote[®] alkyd primers, and DuPont WP[™] wash primer.

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 Coating 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 Abuse | Excellent | Acids | Excellent |
| Alkalis | Excellent | Color & Gloss Retention | Excellent |
| Humidity | Excellent | Salts | Excellent |
| Solvents | Very Good | Weather | Excellent |

* For more information please see ASTM Information section.

VOC (THEORETICAL)

| | |
|---|-------------------------|
| Mixed VOC, no reduction | 3.4 lbs./gal. (408 g/l) |
| Mixed VOC, 3% reduction w/DuPont 68083 [™] or DuPont Y32401 [™] Thinner & 2 oz. VG-805 [™] Accelerator or 1 oz. Imron [®] VHY-691 [™] Accelerator | 3.5 lbs./gal. (420 g/l) |

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IMRON® 3.5 HG™ High Gloss Polyurethane (formerly Imron® 333M™)

COLOR

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

GLOSS (ASTM D523):

>82 measured @ 60° angle

Lower gloss levels in similar quality available. See Imron® 3.5 SG™ (43P™), Imron® 3.5 ST™ (45P™), and Imron® 3.5 FT™ (47P™) Data Sheets.

CURE TIME – HOURS @ 77°F (25°C), 50% R.H. @ 2.0-2.5 MILS SUGGESTED DFT

| | Without Accelerator | Hours with 2 oz. VG-805™ Accelerator | Hours with 1 oz. Imron® VHY-691™ |
|---------------|------------------------|---|-------------------------------------|
| Dry to Touch | 4 – 8 | 1.5 | 1 |
| Dry to Recoat | 5 | 3 | 1 |
| Dry To Handle | 7 | 4.5 | 1.5 |
| Pack/Ship | 24 | 8-10 | 8 |
| Full Cure | 7 days | 6 days | 6 days |
| Pot Life | 2-3 | 2.5 | 1.5 |

*See Additional Comments #1 & 2

THEORETICAL COVERAGE PER GALLON*

882 ft² (21.6 m²/L) @ 1 mil

441 ft² (10.8 m²/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 BUILD

4 – 4.5 mils (100 – 113 µm) wet (WFT)

2 – 2.5 mils (50 – 63 µm) dry (DFT)

VOLUME SOLIDS (MIXED):

55% ± 2% Varies by Color

WEIGHT SOLIDS (MIXED):

65% ± 4% Varies by Color

WEIGHT PER GALLON (MIXED):

8.8-10.75 lbs. (4.0-4.9 kg) Varies by Color

FLASH POINT (TAG CLOSED CUP)

Between 20 to 73°F (-6 to 23°C)

PACKAGING

Enamel: 1's (80% full) 5's (containing 4 gallons)

Activator: Quarts (80% full) and gallons (full)

SHIPPING WEIGHT (LBS) APPROXIMATE/AVG.

Enamel: 1 gallon container – 9 5 gallon container – 45

Activator: 1 quart container – 2 1 gallon container – 9

SHELF LIFE & STORAGE CONDITIONS

- ◆ Store in a dry, well-ventilated area. Storage temperatures should be between -30°F (-34°C) and 120°F (48°C).
- ◆ Shelf life – 1 year minimum

SAFETY INSTRUCTIONS

Consult the Material Safety Data Sheet for this product prior to use.



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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 4 parts Imron® 3.5 HG™ (42P™ Custom Color), then add 1 part Imron® VGM-6005™ Activator while stirring. No induction period is necessary.

POT LIFE

2 - 3 hours @ 77°F and 50% RH. Higher temperatures or the addition of Imron® VHY-691™ Accelerator may shorten pot life. With Imron® VHY-691™ : 1.5 – 2 hours.

REDUCTION

Normally 0-3% (1-4 oz.) reduction is adequate for spray application depending upon conditions and equipment. Use DuPont 68083™ Thinner for normal conditions (below 80°F) and DuPont Y32401™ Thinner for hot and windy conditions (above 80°F). If faster recoat and handling is required, add up to 2 oz./gal VG-805™ Accelerator or up to 1 oz./gal Imron® VHY-691™ Accelerator. For rolling application add 1 oz./gal. DuPont RT002P™ Rolling Thinner to reduce bubbling.

APPLICATION THINNERS & ADDITIVES

Spray: DuPont 68083™ – Below 80°F
DuPont Y32401™ – Above 80°F
Brush: DuPont Y32401™
Roll: DuPont RT002P™

CLEANUP THINNERS

DuPont Y-32035™ 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® VHY-691™ is recommended*. Relative Humidity should be below 90%.

*See Additional Comments #1

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.

CONVENTIONAL SPRAY

| Manufacturer Model | Sata K3 or K3 RP | DeVilbiss JGA or MBC | Graco DeltaSpray XT | Iwata W-77, W-71, or W-200 | Binks 2001 or 95 | Kremlin M22HPAP |
|---------------------------|----------------------------|--------------------------------|-------------------------------|---|----------------------------|---------------------------|
| Tip Size | 1.0 – 1.3 mm | 1.1–1.4mm | 1.0-1.5 mm | 1.2-1.8 mm | 1.2-1.8 mm | 1.2-1.8 mm |



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AIRLESS SPRAY

| Manufacturer | Graco | Iwata | Binks | Sata |
|--------------|----------------|----------------|-------------|----------------|
| Model | Silver or Plus | ALG or Airless | Airless 1 | Airless 250 II |
| Tip Size | .011 - .015 | .011 - .015 | .011 - .017 | .013 - .017 |
| Pump | 30:1 min | ALG 30:1 min | 30:1 min | Orca 32:1 pump |

HVLP SPRAY

| Manufacturer | Sata | DeVilbiss | Graco | Iwata | Binks | Kremlin |
|--------------|----------------|----------------------|-------------------------|--------------|--------------|------------|
| Model | 3000RP HVLP | JGHV, EXL, or FLG | DeltaSpray XT - HVLP | LPH 200 LVLP | MACH 1 & 1SL | E3K HVLP |
| Tip Size | 1.2 – 1.6 mm | 1.3–1.8mm | 1.3-2.2 mm | 0.8-1.2 mm | 1.0-1.7 mm | 1.5-1.8 mm |

AIR ASSISTED AIRLESS SPRAY

| Manufacturer | Graco | | Sata | Iwata | Kremlin | Binks |
|--------------|-------------------------------|------------------------|--|---|-------------|-------------|
| Model | AA4000 HVLP, AA10HP Cap | Alpha or Alpha Plus | Shark 32:1 or Dolphin 14:1, K3 spray mix | MSG 2000 Gun MSU11 13:1 or MSU32 17:1 | Airmix MVX | AA 1500 |
| Tip Size | .021 - .027 | .015 - .021 | .011-.018 | .011 - .018 | .011 - .020 | .013 - .019 |

ROLL

Manufacturer: Wooster® Pro/Doo-Z™ ¼" - ½" nap.
Additions: Add 1 oz./gallon DuPont RT002P™ Rolling Thinner to eliminate bubbles. Craters may develop if you exceed 2 oz./gallon.
May be cross-rolled.
Add up to 3% DuPont Y-32401™ Thinner to maintain wet edge.
For best results, allow 5 minutes mix time after adding DuPont RT002P™
Do not use DuPont RT002P™ in spray applications.

BRUSH

Manufacturer: Wooster® China Bristle
Additions: Add up to 3% DuPont Y-32401™ Thinner to maintain wet edge. Do not cross brush to reduce lap marks. Add up to 1 oz./gallon DuPont RT002P™ Rolling Thinner to eliminate bubbles.
For best results, allow 5 minutes mix time after adding DuPont RT002P™
Do not use DuPont RT002P™ in spray applications.

ADDITIONAL COMMENTS

1. For application between 35 – 45°F, add Imron® VHY-691™ Accelerator up to 1 oz./activated gallon.
2. Dry times can be improved by adding VG-805™ Accelerator up to of 2 oz./activated gallon.
3. May be recoated by spray when tack-free. Rapid overcoating of primer may result in some loss of gloss.
4. If accelerators have been used, recoating must be done within 48 hours. If more time has elapsed, scuff sand to ensure adhesion.
5. All information listed for Imron® 3.5 HG™ includes 42P™ custom mix versions of this high gloss polyurethane as well. Custom mix formulas will continue to use quality code 42P™.



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ASTM INFORMATION

Test results are for a system of Corlar® 2.1 ST™ (formerly Corlar® 25P™)/Imron® 3.5 HG™ (formerly Imron® 333M™) with total dry film thickness 12 mils DFT.

| | | |
|---|----------------------|--|
| ◆ Tabor Abrasion per ASTM D-4060 weight loss in grams | | 0.07 |
| ◆ Salt fog per 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) | 1916 psi | Cohesive failure within the primer |
| ◆ Dry Heat (ASTM D2485) | 250° F for 24 hours | No cracking, no loss of adhesion, no discoloration |
| ◆ Electrical Resistance (ASTM D2457) | 6.0×10^{14} | |
| ◆ Cle Cond (ASTM D4585) | 1000 hours | No rusting, no blistering, no delamination |
| ◆ UVA 340 Con (ASTM D4587)* | 3000 hours | Gloss before exposure: 82.78 |
| | | Gloss after exposure: 79.8 |
| | Evaluation | No rusting, no blistering, no delamination |
| ◆ Impact (ASTM D2794) | 8 inch pounds | |
| ◆ Mandrel Bend (ASTM D522) | % elongation | 0% |

*8 hrs UV @ 50° C, 4 hrs condensation @ 40° C, gloss readings @ 60°

CHEMICAL RESISTANCE - The following chemicals had no effect (24 hours watch glass)

| | |
|---------------------------|------------------------|
| Sulfuric Acid | 10 & 50% |
| Hydrochloric Acid | 10 & 20% |
| Nitric Acid | 10 & 20% |
| Acetic Acid | 10% (50% failed) |
| Sodium Hydroxide | 10 & 50% |
| Ammonium Hydroxide | 10% , concentrated |
| Methylpentamethyl Diamine | 10%, 50%, concentrated |
| Distilled Water | |
| MEK | |
| Toluene | |
| Cyclohexane | |
| Methanol | |
| Isopropanol | |
| Gasoline | |
| 5% Gasahol | |