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 Skydro® 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.  Some yellowing of light colors may occur at
300°F (148°C) in intermittent heat.  elevated temperatures.

PERFORMANCE PROPERTIES
<table>
<thead>
<tr>
<th>Property</th>
<th>Aged Imron® 3.5 HG™ +</th>
<th>Imron® 3.5 HG™ +</th>
<th>Imron® 3.5 HG™ +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion &amp; Mechanical</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>Alkalis</td>
<td>Excellent</td>
<td>Acids</td>
<td>Excellent</td>
</tr>
<tr>
<td>Humidity</td>
<td>Excellent</td>
<td>Salts</td>
<td>Excellent</td>
</tr>
<tr>
<td>Solvents</td>
<td>Excellent</td>
<td>Weather</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

* For more information please see ASTM Information section.
VOC (Theoretical less water and exempt compounds).
Compliant at 3.5 lbs/gal VOC

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th></th>
<th>Hot</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 85°F</td>
<td>VOC (TBAc exempt)</td>
<td>Higher than 85°F</td>
<td>VOC (TBAc exempt)</td>
</tr>
<tr>
<td>+ Y-32401™</td>
<td>2%</td>
<td>3.44 lbs/gal</td>
<td>2%</td>
<td>3.44 lbs/gal</td>
</tr>
<tr>
<td>+ 9M01™</td>
<td>5%</td>
<td>3.44 lbs/gal</td>
<td>5%</td>
<td>3.44 lbs/gal</td>
</tr>
<tr>
<td>+ VG-805™</td>
<td>1 oz / mixed gal</td>
<td>3.48 lbs/gal</td>
<td>1 oz / Mixed gal</td>
<td>3.48 lbs/gal</td>
</tr>
<tr>
<td>+ 9M05™</td>
<td>1 oz / mixed gal</td>
<td>3.49 lbs/gal</td>
<td>1 oz / Mixed gal</td>
<td>3.49 lbs/gal</td>
</tr>
<tr>
<td>+ 9M02™</td>
<td>Or instead of Y-32401™</td>
<td>5%</td>
<td>3.45 lbs/gal</td>
<td>3.29 lbs/gal</td>
</tr>
</tbody>
</table>

This product contains T-Butyl Acetate (TBAc).

HAPS Information – Theoretical

<table>
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<th>Normal</th>
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<th>Hot</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 85°F</td>
<td>HAPS lbs/gal solids</td>
<td>Higher than 85°F</td>
<td>HAPS lbs/gal solids</td>
</tr>
<tr>
<td>+ Y-32401™</td>
<td>2%</td>
<td>0.6</td>
<td>2%</td>
<td>0.6</td>
</tr>
<tr>
<td>+ 9M01™</td>
<td>5%</td>
<td>0.6</td>
<td>5%</td>
<td>0.6</td>
</tr>
<tr>
<td>+ VG-805™</td>
<td>1 oz / mixed gal</td>
<td>0.6</td>
<td>1 oz / Mixed gal</td>
<td>0.6</td>
</tr>
<tr>
<td>+ 9M02™</td>
<td>Or instead of Y-32401™</td>
<td>5%</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

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 35º F (2º C) and 120º F (48º C)
- Shelf Life: 1 year minimum.

Cure Times – HOURS @ 2.0 - 3.0 MILS SUGGESTED DFT

<table>
<thead>
<tr>
<th></th>
<th>@ 77º F, 50% RH(2% Y-32401™)</th>
<th>@ 90º F, 50% RH(5% 9M02™)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without VG-805™ Accelerator</td>
<td>Without VG-805™ Accelerator</td>
</tr>
<tr>
<td>To Touch</td>
<td>3 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>To Handle</td>
<td>7 hours</td>
<td>7 hours</td>
</tr>
<tr>
<td>To Recoat</td>
<td>5 hours</td>
<td>5 hours</td>
</tr>
<tr>
<td>Pot Life</td>
<td>3 hours</td>
<td>2.5 hours</td>
</tr>
<tr>
<td>Full Cure</td>
<td>7 days</td>
<td>6 days</td>
</tr>
</tbody>
</table>

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 ft² (21.6 m²/l) @ 1 mil dft
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 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
<table>
<thead>
<tr>
<th>SATA</th>
<th>DeVilbiss</th>
<th>Graco</th>
<th>IWATA</th>
<th>BINKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sata</td>
<td>JGA or MBC</td>
<td>DeltaSpray XT</td>
<td>W-77, W-71, or W-200</td>
<td>2001 or 95</td>
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</table>

### Tip Size
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
<table>
<thead>
<tr>
<th>SATA</th>
<th>DeVilbiss</th>
<th>Graco</th>
<th>IWATA</th>
<th>BINKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sata</td>
<td>JGHV, EXL, or FLG</td>
<td>DeltaSpray XT</td>
<td>LPH 200 LVLP</td>
<td>MACH 1 &amp; 1SL</td>
</tr>
<tr>
<td>HLV</td>
<td>X – HLVLP</td>
<td></td>
<td></td>
<td>SV100 HVLP</td>
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</tbody>
</table>

### Tip Size
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
<table>
<thead>
<tr>
<th>Graco</th>
<th>IWATA</th>
<th>BINKS</th>
<th>Kremlin</th>
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<tbody>
<tr>
<td>Graco</td>
<td>ALG or Airless 1</td>
<td>Airless</td>
<td></td>
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</table>

### Tip Size
.011 - .015
.011 - .015
.011 - .017
.011 - .013

### Pump
33:1 min
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:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Graco</th>
<th>Graco</th>
<th>Iwata</th>
<th>Binks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>AA4000</td>
<td>Alpha or MSG 200</td>
<td>Alpha Plus or 2000</td>
<td></td>
</tr>
<tr>
<td>Tip Size</td>
<td>.021 - .027</td>
<td>.015 - .021</td>
<td>Adjustable Tip</td>
<td>.013 - .019</td>
</tr>
</tbody>
</table>

- 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:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Graco</th>
<th>Nordson</th>
<th>Ransburg</th>
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</thead>
<tbody>
<tr>
<td>Model</td>
<td>PRO Xs3 Kinetix Systems REA 90</td>
<td>Or XS4 AA, KVLP &amp; or AA90</td>
<td></td>
</tr>
<tr>
<td>Electrostatic</td>
<td>Gun</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Orifice Size</th>
<th>in.</th>
<th>(mm)</th>
<th>in.</th>
<th>(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.031</td>
<td>(0.8)</td>
<td></td>
<td>.055</td>
<td>(1.4)</td>
</tr>
<tr>
<td>.042</td>
<td>(1.0)</td>
<td></td>
<td>.067</td>
<td>(1.7)</td>
</tr>
<tr>
<td>.043</td>
<td>(1.1)</td>
<td></td>
<td>.070</td>
<td>(1.8)</td>
</tr>
<tr>
<td>.051</td>
<td>(1.3)</td>
<td></td>
<td>.080</td>
<td>(2.0)</td>
</tr>
</tbody>
</table>
ASTM INFORMATION

Physical properties are average. Properties listed are for a system of Corlar® 2.1 ST™ and DuPont Imron® 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, gloss readings @ 60°C

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

<table>
<thead>
<tr>
<th>Rating</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>10% (50% slight color change)</td>
</tr>
<tr>
<td>Hydrochloric Acid</td>
<td>10 &amp; 20%</td>
</tr>
<tr>
<td>Nitric Acid</td>
<td>10 &amp; 20%</td>
</tr>
<tr>
<td>Acetic Acid</td>
<td>10%</td>
</tr>
<tr>
<td>Sodium Hydroxide</td>
<td>10 &amp; (50% slight ring)</td>
</tr>
<tr>
<td>Ammonium Hydroxide</td>
<td>10%, concentrated</td>
</tr>
<tr>
<td>Distilled Water</td>
<td></td>
</tr>
<tr>
<td>MEK</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td></td>
</tr>
<tr>
<td>Cyclohexane</td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td></td>
</tr>
<tr>
<td>Isopropanol</td>
<td></td>
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<tr>
<td>Gasoline</td>
<td></td>
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<tr>
<td>5% Gasohol</td>
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</table>

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