Imron® 2.1 HG-D +
Polyurethane High Gloss Topcoat (SH Quality)

GENERAL

DESCRIPTION
A 2.1 lb/gal (250 g/l) VOC compliant, two-component, low HAPS, acrylic polyurethane DTM designed to feature high gloss, high build and good topcoat appearance as a very durable, one-step system suitable for non-corrosive exposures and select harsh environments. It may be applied by brush, roll or spray.

PERFORMANCE PROPERTIES

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

SUGGESTED USES:
On hot rolled carbon steel, weathered and properly treated galvanized, aluminum, dry wall, and wood where:
- A one-step DTM (direct-to-metal) application is desired
- High build either as a DTM or high build topcoat is desired
- Outstanding DTM color and gloss retention are required
- Excellent adhesion and flexibility are desired
- Application by brush and roller, in addition to spraying, may be necessary
- Application to 35°F may be required
- Excellent hiding is needed

NOT RECOMMENDED FOR:
- Immersion service or floors
- Severely corrosive environments (as a one coat system)

COMPATIBILITY WITH OTHER COATINGS
- DTM (direct-to-metal) over properly prepared: aluminum, hot rolled carbon steel, and weathered galvanized surfaces, in non-corrosive exposures and selected harsher environments.
- Over most aged and hard cured coatings in good condition. Testing for lifting, bubbling and adhesion is recommended to assure compatibility with unknown coatings. For more protection, Imron 2.1 HG-D + Topcoat can also be used over properly primed surfaces in exterior exposures.
- Recommended primers: Imron 2.8 PR, Imron 2.1 PR, Tufcote™ 3.3 PR, Tufcote 3.5 PR, Corlar® 2.1 PR, Corlar 2.1 PR-P, and Corlar 2.8PR.

Contact Axalta Coating Systems for specific recommendations.

COLOR
Imron 2.1 HG-D + Topcoat uses binder DTM-2100P and MultiTint™ tints to make custom colors (SH quality). Two factory package colors are available:
- 163-67632 White Factory Packaged
- 163-67640 Black Factory Packaged

MIXING

COMPONENTS

Factory packaged colors (ex: 163-XXXXX)	1 gallon container (100% fill, 128 oz.)
MultiTint Tints	1 gallon container (100% fill, 128 oz.)
Imron 9T00-A Activator	1 quart container (100% fill, 32 oz.)
DTM-2100P Color Mix Binder	1 gallon container (100% fill, 128 oz.)

Other sizes may be available. Consult your distributor.

MIX RATIO

Mix pigmented portion until uniform in color. Measure out appropriate amounts and add activator with mixing. Material can be used immediately. Addition of thinner is not recommended and may affect film build and VOC. Note: Mix in ones yields 1.16 gallons.

DO NOT SEAL CONTAINERS of activated Imron, except for pressurized spray pots.

Component	Volume
163-XXXXX Color (SH Quality)	6
Imron 9T00-A Activator	1

MIXING

Best mixing practice is to thoroughly mix factory package color (1633-XXXXX) or mix quality “SH” using a good shear mixer, such as a Jiffy mixer HS, ES, or PS blade. Mix at the recommended speed to prevent air entrapment, generally up to 800 or 1000 rpm max. However, shaking may be used.

Add pictures

REDUCTION

- No reduction necessary to achieve 8 mils wet.
- When rolling Imron 2.1 HG-D +, add 1 oz. per activated gallon of 9M05 Rolling Thinner to reduce bubbling.
- Any thinning may hamper ability to achieve high film builds and may cause sagging.
- Application by brush or roller may require additional coats to achieve recommended dry film thickness.
- While no reduction is recommended to achieve recommended film builds, up to 5% 9M01, 9M02 or Y32401 can be added for additional flexibility in application. Please check VOC limitations before using.

APPLICATION THINNERS

Spray, Brush	None recommended
Electrostatic Spray	None recommended
Rolling	9M05

INDUCTION TIME

None

POT LIFE

Apply shortly after mixing.

APPLICATION

APPLICATION CONDITIONS

Do not apply if material, substrate or ambient temperature is below 35°F (2°C) or above 110°F (43°C). The substrate must be at least 5°F (3°C) above the dew point. Relative humidity should be below 90%.

SURFACE PREPARATION

- All surfaces should be cleaned with solvent (SSPC-SP1) to remove any grease or oil contamination prior to priming.
- For best results on steel, abrasive blast surface to an SSPC-SP-6 Commercial Blast. Profile should be 2.0 to 2.5 mils. Average peak to valley surface profile shall be 1.5 to 2.5 mils. If blasting is not possible or practical, hand tool clean to an SSPC-SP 2 or power tool clean to an SSPC-SP 3 may be used with sacrifice in performance vs. blasted surfaces.
- Aluminum surfaces should be properly treated. Surface preparations may include sanding, brush off blasting (SSPC-SP7), alodine treatment or other preparation necessary to ensure adhesion.
- Galvanized steel surface preparation may include detergent washing, pre-treatment and abrasion for new surfaces; for weathered surfaces, detergent washing and sanding. For new galvanized surfaces, an appropriate primer such as Corlar 2.1 ST should be used.
- For additional protection in exterior exposures, Imron 2.1 HG-D + can also be used over properly primed surfaces.
    - Recommended primers include: Imron 2.8 PR, Imron 2.1 PR, Tufcote 3.3 PR, Tufcote 3.5 PR, Corlar 2.1 PR, Corlar 2.1 PR-P, Corlar 2.8PR.
    - Contact your Axalta Coating Systems representative for specific recommendations.

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.

Brush & Roll

- Wooster® Pro/Doo-Z ¼"- ½" nap roller cover. Keep roll wet. Roll in one direction, rewet, then cross roll.
- Wooster China Bristle Brush 2”-4”

Conventional Pressure Fed Liquid		**Tip Size**
Sata	K3 RP or LM 3000 RP	1.0-1.3mm
Devilbiss	JGA, MBC, or FLG	1.1-1.4mm
Graco	DeltaSpray XT	1.0-1.5mm
Iwata	W-77, W-71, or W-200	1.2-1.4mm
Binks	2001 or 95	1.2-1.3mm

Fluid lines 3/8” ID or larger are required for proper fluid delivery.

HVLP Pressure Fed		
Sata	3000RP HVLP	1.0-1.3mm
Devilbiss	JGVH, EXL, or FLG	1.1-1.4mm
Graco	DeltaSpray XT - HVLP	1.1-1.5mm
Iwata	LPH 200 L VLP	1.2-1.4mm
Binks	Mach 1 & 1SL SV100 HVLP	1.2-1.4mm

Air Assisted Airless Spray		**Tip**	**Cap**
Graco	AA4000 HVLP	.021 - .027	AA10HP
	Alpha or Alpha Plus	.015 - .021	
Iwata	MSG 200 or 2000	Adjustable tip	
Binks	AA 1500	.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'.

Airless Spray

Graco	Section 1.02	Airless tip size .011 - .015
Graco	President	Pump 33:1
Iwata	ALG or Airlessco Guns ALG 33:1 min	Airless Tip Size .011 - .015
Binks	Airless 1	Airless Tip Size .011 - .017
Kremlin	Orca 32:1 pump	Airless Tip Size .011 - .013

- Minimum pump: 33:1
- Minimum pressure: 2500-4500 psi
- Filter 60 mesh
- 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

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

ORIFICE SIZE IN INCHES (MM)

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

APPLICATION FILM BUILD

- 6.0-8.0 mils (150-200 µm) wet film build recommended
- 4.0-5.0 mils (100-125 µm) dry film build recommended

Tips for Success

- Application by brush or roll may require multiple coats to achieve the recommended DFT.
- For best appearance, filter material prior to spray application.
- May be recoated by spray when tack-free.

Conventional and HVLP Application

- Pressurized pots or fluid delivery pumps are required. Pressure feed setup:
    - Pressure pot, 8 psi up to 50-psi pot pressure, line dependent.
    - Pump feed, 10 psi to 40-psi fluid pressure, line dependent.
- Fluid lines 3/8" ID or larger are required for proper fluid delivery.
- Test fluid flow and fan pattern and adjust according to equipment manufacturer specifications.
- Excessive air cap pressure may increase over-spray and reduce transfer efficiency.
- Hold the spray gun perpendicular to the surface being sprayed. Maintain a 50% overlap at a distance of 8" to 12" from the substrate to provide even coverage and reduce over-spray.
- Imron 2.1HG-D + should be sprayed in medium to full wet coats to achieve proper build and allow flow-out.
- Spray technique is comparable to Imron 3.5 HG-D DTM.

Airless and Air Assisted Airless Application

- WARNING - High Pressure Equipment. Read manufacturer's instructions and safety warnings before operating equipment.
- Stainless steel parts are recommended for ease of clean up.
- Equipment should be conditioned before use. Thoroughly clean, rinse with Y32035, T-1021, or T-1022.
- Pressurized pots or fluid delivery pumps are required (1500psi air assisted pump; 2500psi to 4500 psi airless pump).
- 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'.

- Adjust pressure according to equipment manufacturer specifications.
- Airless - Increase pump pressure until tails disappear from fan pattern.
- Air assisted – turn cap/atomizing air off
    1. Adjust pump pressure to eliminate tails in the fan pattern.
    2. Reduce fluid pressure until tails reappear.
    3. Turn air pressure on 10psi, increase air pressure until tails atomize into spray pattern.
- Hold the spray gun perpendicular to the surface being sprayed. Maintain a 50% overlap at a distance of 10” to 12” from the substrate to provide even coverage and reduce over-spray.
- Apply in a cross coat pattern. Each pass should be light to medium wet applied as a fine mist to provide a uniform film build.
- To achieve higher dry film builds, allow coats to dry, and then recoat.
- Avoid excessive film builds which may cause gassing and dieback in the coating.

Electrostatic Application

- Electrostatic spray may require an isolated delivery system due to high conductivity.
- Equipment suppliers have various methods of voltage/current isolation.
- Follow the equipment manufacturers’ instructions and safety procedures for proper application procedures.

Brush and Roll

Spray application is recommended for best results, but for touching up areas or in locations that will not allow spray, follow the basics.

- Brush: Good quality Wooster® China Bristle brush or equivalent.
- Roller: Good quality Short Nap ¼” to ½” for most surfaces.
- Work in approx 2’ x 2’ sections applying from dry into wet areas.
- For rolling, start with a W pattern to deposit paint evenly before rolling the entire section. May be cross rolled.

Brush and Roller Tips for Success

- Applying too much pressure may ruin the brush or leave roller marks.
- Do not try to squeeze every last drop of paint out of the brush or roller before rewetting.
- Add up to 1 oz. per gallon 9M05 Rolling Thinner to eliminate bubbles. Craters may develop if you exceed 2 oz. per gallon. Do not use in spray applications.
- For best results, allow 5 minutes mix time after addition of the rolling thinner.

CLEAN UP THINNERS

T-1021, Acetone, MEK

DRY TIMES

Cure Times at 5 mils suggested DFT

	At 77°F (25°C) 50% RH			At 90°F (32°C) 50% RH	
	Without Accelerator	**With 1oz. VG805**	**With 1oz. V389S**	**Without Accelerator**	**With 1 oz. VG805**
To Touch:	1.5 hours	30 minutes	30 minutes	30 minutes	30 minutes
To Handle	6 hours	5 hours	4 hours	3 hours	2 hours
To Recoat	4 hours	2 hours	1 hour	2 hours	1.5 hours
Pot Life	3 hours	2 hours	1.5 hours	2 hours	1.5 hours
Full Cure	7 days	6 days	6 Days	6 days	5 Days

Cure times will vary with environmental conditions. Air flow, sunlight, temperature, humidity and dew point may all affect cure times. Dry times can be improved by adding up to 1 oz. of VG-805 Accelerator per activated gallon. If accelerators have been used, recoating must be done within 48 hours. If more time has elapsed, scuff sand to ensure adhesion.

PHYSICAL PROPERTIES

Maximum Service Temperature:	250° F (93°C) in continuous service
Gloss (ASTM D 523)	90 measured @ 60° angle
Weight Solids (Avg. varies by color):	68% +/- 3%
Weight per gallon-(Avg. varies by color):	10-12 lbs
Flash Point-Tag Closed Cup:	Between 20ºC to 73ºF (-6º to 23ºC)
Volume Solids (Avg. varies by color):	62% +/- 3%
Shipping Weight (varies by color):	Enamel: 1 gallon container: 10-12 lbs Activator: 1 quart container: 2-3 lbs
Shelf Life:	1 year minimum
Theoretical Coverage Per Gallon:	994 ft² /gal at 1 mil DFT 198 ft² /gal at 5 mil DFT

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

Suggested Film Builds:	6.0-8.0 mils (150-200 µm) wet 4.0-5.0 mils (100-125 µm) dry

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

STORAGE CONDITIONS

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

THEORETICAL VOC (LESS WATER AND EXEMPT COMPOUNDS) & HAPS

Imron 2.1 HG-D + is designed to comply, under certain reduction condition to 2.08 lbs/gal. This product can also be used with additional flexibility, where 2.08 lbs/gal compliance is not required. Please see additional reduction conditions below.

	VOC Lbs/Gal	Grams/Liter	Lbs Volatile HAPs / gal of solids
No accelerator or reducer	2.08	249	0.367
5% 9M01	2.08	249	0.367
5% 9M02	2.15	258	0.367
5% Y32401	2.40	288	1.032
1 oz VG805	2.13	255	0.368
1 oz VG805 + 5% 9M01	2.13	255	0.367
1 oz VG805 + 5% 9M02	2.20	264	0.367
1 oz VG805 + 5% Y32401	2.45	294	1.038
1 oz V389S	2.08	249	0.368
1 oz V389S + 5% 9M01	2.08	249	0.368
1 oz 9M05	2.08	249	0.373
1 oz 9M05 + 5% 9M01	2.08	249	0.374

ASTM INFORMATION

Physical properties are for Imron 2.1 HG-D + Direct To Metal (DTM) only. Properties may be enhanced by use of appropriate primers. For other system recommendations, please contact Axalta.

Paint System:	Imron 2.1 HG-D +
Substrate:	Grit blasted cold rolled steel (or Bonderite1000 depending on the test)
Type-Color:	Polyurethane-White DFT 4-5 mils

TEST	RESULTS	
Adhesion (ASTM D335)		
X-cut	5 A-No failures	
Cross hatch	5 B-No failures	
Impact (ASTM D 2794) 80 in lbs.- Forward	No failures	
Mandrel Bend (ASTM D522) 1/8 " mandrel	No cracking	
Pencil Hardness	5H	
Chip Resistance	9A	
	500 hrs	**1000 hrs**
Salt Fog (ASTM B117)	No creep from scribe, no blistering	Creep: 0.5-1.0mm; Blistering:4-6 few
Relative Humidity (ASTM D2247)	No blistering	No blistering
QUV Condensation (ASTM D4587/340A)	97% gloss retention at 60º	94% gloss retention at 60º
Cleveland Condensation (ASTM D-4585)	No blistering	No blistering

SELECT CHEMICAL RESISTANCE

The following are chemical resistance ratings (1=poor, 10= excellent), after exposure to listed chemicals and 24 hour watch glass exposure.

Chemical	Rating	Chemical	Rating
Sulfuric Acid 1%	10	Diethylene Glycol Monobutyl Ether	8
Sulfuric Acid 10%	8	Sodium Hydroxide 10%	7
Phosphoric Acid 10%	10	Motor Oil (Mobil 10W-30)	10
Methyl Ethyl Ketone	9	Hydraulic Oil (Pennzoil)	10
Nitric Acid 1%	9	Cutting oil (Rigid)	7
Ammonium Hydroxide 5%	9	Unleaded Gas	8
Ammonium Hydroxide 28%	9	Skydrol (500B4L)	7
Sodium Hydroxide 1%	10	Tide Soap 10%	10
Sodium Hydroxide 5%	8	Fantastic	7
Ethanol	9	Bleach	7
Aromatic Controlled VM&P Naphtha	9	Break Fluid (DOT 3 Wagner Premium)	7
Isopropyl Alcohol	9	Cola	10

SAFETY AND HANDLING

For industrial use only by professional, trained painters. Not for sale to or use by the general public. Before using, read and follow all label and MSDS precautions. If mixed with other components, mixture will have hazards of all components.

Ready to use paint materials containing isocyanates can cause irritation of the respiratory organs and hypersensitive reactions. Asthma sufferers, those with allergies and anyone with a history of respiratory complaints must not be asked to work with products containing isocyanates.

Do not sand, flame cut, braze or weld dry coating without a NIOSH approved air purifying respirator with particulate filters or appropriate ventilation, and gloves.

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