



**SHERWIN
WILLIAMS.**

Aircraft Green, 34031 F93G505
 Tan 686A, 33446 F93H504
 Interior Gray, 36231 F93A501

Chemical Coatings

CC-M21

MIL-DTL-64159, Type II Waterborne Polyurethane Chemical Agent Resistant Coating

Green 383, 34094 F93G504
 Black, 37030 F93B505
 Woodland Desert Sage, 34201 . F93G510

Brown 383, 30051 F93N505
 Aircraft Black, 37038 F93B506
 Catalyst (Component B) V93V502

<u>DESCRIPTION</u>	<u>CHARACTERISTICS</u>	<u>SPECIFICATIONS</u>																				
<p>MIL-DTL-64159, Type II CARC coatings are two component waterborne polyurethane chemical agent resistant coatings (CARC) for military equipment. They meet the performance and composition of the MIL-DTL-64159, Type II specification.</p> <p>Advantages:</p> <ul style="list-style-type: none"> VOC of less than 1.8 lb/gal Less than 0.9 lb/gal Volatile Organic Emissions Reduces with water - means considerable cost savings in solvents Low odor Excellent atomization Smooth finish versus standard CARC May be applied with two component equipment Free of lead and chromate hazards Excellent exterior durability. <p>The following products have been approved by U.S. Army Research Lab, Aberdeen Proving Ground, Aberdeen, MD and given the approval codes listed below.</p> <table border="0"> <tr> <td>Sherwin-Williams</td> <td>Approval No.</td> </tr> <tr> <td>F93G504</td> <td>Q1653</td> </tr> <tr> <td>F93H504</td> <td>Q1660</td> </tr> <tr> <td>F93B505</td> <td>Q1655</td> </tr> <tr> <td>F93N505</td> <td>Q1654</td> </tr> <tr> <td>F93G505</td> <td>Q1661</td> </tr> <tr> <td>F93B506</td> <td>Q1680</td> </tr> <tr> <td>F93A501</td> <td>Q1765</td> </tr> <tr> <td>F93G510</td> <td>Q1910</td> </tr> <tr> <td>V93V502</td> <td></td> </tr> </table>	Sherwin-Williams	Approval No.	F93G504	Q1653	F93H504	Q1660	F93B505	Q1655	F93N505	Q1654	F93G505	Q1661	F93B506	Q1680	F93A501	Q1765	F93G510	Q1910	V93V502		<p>Gloss - 2.0 mils dry: 60° 1.0 unit maximum 85° 3.5 units maximum</p> <p>Volume Solids: varies by color Component A: 32-38% Component B: 69.3 ±1% Admixed: 45-48%</p> <p>Viscosity: varies by color 15-26 seconds #3 Zahn Cup catalyzed and reduced</p> <p>Recommended film thickness: Mils Wet 3.8 - 4.9 Mils Dry 1.8-2.3</p> <p>Spreading Rate (no application loss) 314-427 sq ft/gal @ 1.8-2.3 mils DFT</p> <p>Drying (77°F, 50% RH): Set to Touch: 60 minutes Dry Hard: 6 hours Dry Through: 8 hours Complete Cure: 7 days Force Dry: flash 1 hour, then dry 45 minutes at 180°F. Flash time is dependent on air movement, humidity and temperature. The one hour flash can be reduced with an air dehydrator or fans to help remove the water.</p> <p>Flash Point: 200°F</p> <p>Mixing Ratio: 2 part Component A 1 part Component B V93V502 0.5 part Deionized or Distilled Water</p> <p>Reduction rate varies by color. See application section for details.</p> <p>Pot Life: 4 hours Package Life: 12 months, unopened</p> <p>Air Quality Data: Non-photochemically reactive Volatile Organic Compounds (VOC) catalyzed and reduced as above, maximum 1.8 lb/gal, 216 g/L Volatile Organic Emissions Catalyzed and reduced as above, maximum 0.9 lb/gal, 108g/L</p> <p>An Environmental Data Sheet is available from your local Sherwin-Williams facility.</p>	<p>Steel: Surface must be clean and free of grease, dirt, oil, rust, fingerprints, and other contaminants to insure optimum adhesion and performance properties. Chemical pretreatment, (zinc phosphate) or DOD-P- 15328D Wash Primer, E90G4, gives best adhesion and performance results. Where blasting is appropriate, blast in accordance with SSPC- SP6. For optimum adhesion pretreat blasted surface. Prime with wash primer E90G4 within two hours after blasting.</p> <p>Aluminum: Clean with acidic cleaner or other appropriate cleaner depending on contamination. Pretreat with chromate conversion coating MIL-DTL-5541F, DOD-P-15328D Wash Primer, E90G4, or anodize per MIL-A-8625F. See below for primers.</p> <p>Galvanized and other metals: Clean and remove oxidation contamination on surface, followed by treatment with DOD-P-15328D Wash Primer, E90G4. Due to the variability in these surface, testing adhesion on each situation is recommended. See below for primers.</p> <p>Primers must be applied under the CARC topcoat. For ferrous substrates, use MIL-DTL-53022C primer, e.g. E90W201 (Type I), E90H226 (Type II, faster recoat). For non-ferrous substrates, MIL-PRF-23377J, E90G203 (Type I, Class C2, 2.8 VOC), MIL-DTL-53022C (see above).</p> <p>Check the data sheet of each primer for recoat time of topcoat, e.g. E90H226 can be topcoated in 20-30 minutes air dry.</p> <p>Note: See MIL-DTL-53072C for details.</p> <p>Testing: Due to the wide variety of substrates, surface preparation methods, application methods, and environments, the customer should test the complete system for adhesion and compatibility prior to full scale application.</p>
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APPLICATION

Typical Setups

Special Mixing Instructions:

Component A should be shaken 5 minutes on Red Devil type shaker before opening, then mix Component B into Component A for 3 minutes using a mechanical air agitator. Sherwin-Williams highly recommends the use of a cage mixer. An air drill capable of 2000 rpm is also a necessity. Contact your Sherwin-Williams representative for an initial demonstration. The viscosity of the admixed components increase. Reduce to spray then mix well.

Reduction: Reduce with deionized or distilled water. Reduction may vary depending on application variables. More water may be added to achieve desired viscosity.

Conventional Spray:

Air Pressure45-60 psi
Tip070"

Air Assisted Airless:

Air Pressure 50 psi
Fluid Pressure 2100 psi
Tip 611

HVLP:

Air Pressure65 psi
Fluid Pressure5-10 psi
Tip070"

Cleanup:

Clean tools/equipment immediately after use with water.

Then flush equipment with MIL-T-81772, Type I Thinner, R91K20, to prevent rusting. Another method is the use of Acrastrip® 600 BIG MOD (Military) manufactured by Polychem, U.S. patent #5,972,865.

Follow manufacturer's safety recommendations when using any solvent.

SPECIFICATIONS

Product Limitations:

- These coatings (Component A) must be catalyzed with Catalyst (Component B), V93V502, at 2:1 ratio by volume.
- Do not use other catalysts other than V93V502. Do not vary catalyst mixing ratio.
- Component A must be well agitated prior to use by using a Red Devil type shaker.
- Component A, Component B, and Reducer must be mixed with a squirrel cage mixer and air drill or using proper two component equipment.
- Potlife will be shorter under warmer temperature.
- Force curing prior to the water evaporating will result in a soft film. However, after seven days, full cure will be obtained.

Performance Properties:

Meets all the performance properties of MIL-DTL-64159, Type II.

CAUTION:

Admixed material should not be discarded in sealed drums. Vented plugs should be used on the drums. This material will generate carbon dioxide gas within the first 24 hours of being mixed. After the material has been mixed for 24 hours, the gas is no longer emitted and the drums can be sealed.

CAUTIONS

FOR INDUSTRIAL SHOP APPLICATION

Thoroughly review product label and Material Safety Data Sheet (MSDS) for safety and cautions prior to using this product.

A Material Safety Data Sheet is available from your local Sherwin-Williams facility.

Please direct any questions or comments to your local Sherwin-Williams facility.

Note: Product Data Sheets are periodically updated to reflect new information relating to the product. It is important that the customer obtain the most recent Product Data Sheet for the product being used. The information, rating, and opinions stated here pertain to the material currently offered and represent the results of tests believed to be reliable. However, due to variations in customer handling and methods of application which are not known or under our control, The Sherwin-Williams Company cannot make any warranties as to the end result.