



**SHERWIN
WILLIAMS.**

Chemical Coatings

CC-M2

MIL-C-46168D, Type II, CARC 2K Aliphatic Polyurethane Chemical Agent Resistant Coating

Tan 686A, 33446 F93H1
Green 383, 34094 F93G3

Aircraft Black, 37038 F93B7
Brown 383, 30051 F93N9

Black 37030 F93B10
Catalyst (Component B) V93V20

| <u>DESCRIPTION</u> | <u>CHARACTERISTICS</u> | <u>SPECIFICATIONS</u> | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|----------------------------|----------------------------|-------|---------|-------|---------|---------|-------|-------|---------|-------|-------|---------|---------|------|---------|--------|--|---------|--|--|
| <p>MIL-C46168, Type II, CARC coatings are two component (2K) aliphatic polyurethane camouflage chemical agent resistant coatings (CARC) for military equipment. They conform to MIL-C-46168D, Type II, composition and performance specification. They can be effectively decontaminated after exposure to liquid chemical agents.</p> | <p>Gloss: Black, Brown & Green: 60° 1.0 unit maximum 85° 3.5 units maximum Tan: 60° 1.5 unit maximum 85° 4.0 units maximum</p> <p>Volume Solids: Component A: 34.4-45.2% Component B: 68.7-70.7% Admixed: 41.3-50.3%</p> <p>Weight Solids: Component A: 56.0-64.0% Component B: 74.0-76.0%</p> <p>Weight per Gallon: Component A: 10.6-12.9 lb/gal Component B: 8.6-9.0 lb/gal</p> <p>Viscosity: Component A: 70-85 Krebs Units Component B: 12-20 seconds #4 Ford Admixed: 20-60 seconds #4 Ford</p> <p>Recommended film thickness: Mils Wet 5.0-9.0 Mils Dry 2.0-3.0 Minimum 1.8 mils dft per MIL-C-46168D.</p> <p>Spreading Rate (no application loss) 220-403 sq ft/gal @ 2.0-3.0 mils DFT</p> <p>Drying (2 mils dft, 77°F, 50% RH): Set to Touch: 30 minutes maximum Dry Hard: 3 hours maximum Dry Through: 4 hours maximum Complete Cure: 7 days Force Dry: to obtain dry hard 5 min. at 275°F, or 10 min. at 210°F, or 20 min. at 165°F, or 30 min. at 145°F</p> <p>Thicker films or lower temperature will increase cure time.</p> <p>Flash Point: 60°F Pinsky-Martens Closed Cup</p> <p>Mixing Ratio: 4 parts 1 part 1 part Component A Component B (V93V20) Reducer (Optional)</p> <p>Pot Life: 8 hours</p> <p>Package Life: 24 months, inside storage</p> <p>Air Quality Data: Photochemically reactive Volatile Organic Compounds (VOC) catalyzed and reduced, maximum 4.8 lb/gal, 575 g/L</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-15328 wash primer, e.g. E90G4, gives best adhesion and performance results. Where blasting is appropriate, blast in accordance with SSPC-SP6. For optimum adhesion pretreat blasted surface immediately. 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-C-5541), wash primer DOD-P-15328, E90G4, or anodize per MIL-A-8625.</p> <p>Galvanized and other metals: Clean and remove oxidation contamination on surface, followed by treatment with DOD-P-15328 wash primer, E90G4. Due to the variability in these surface, testing adhesion on each situation is recommended.</p> <p>Primers must be applied under the CARC topcoat. For ferrous substrates, use MIL-P-53022B primer, e.g. E90W201 (Type I), E90H226 (Type II, faster recoat), or E90WY14 (2.8 VOC).</p> <p>For non-ferrous substrates, use MIL-P-23377F, e.g. E90Y203 (Type I, Class 1), E90G204 (Type II, Class I), MIL-P-23377G, E90G203 (Type I, Class C, 2.8 VOC); or MIL-P-53022 (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>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> | | | | | | | | | | | | | | | | | | | | | |
| <p>Advantages:</p> <ul style="list-style-type: none"> Free of lead and chromate hazards | | | | | | | | | | | | | | | | | | | | | | | |
| <p>The following MIL-C-46168D, Type II, CARC products have been approved by U.S. Army Research Lab, Aberdeen Proving Ground, Aberdeen, MD, and are listed on QPL list under Pratt & Lambert's product codes. New Sherwin-Williams codes are assigned without any change in product composition, manufacturing process and manufacturing location.</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="0"> <tr> <td>Sherwin-Williams</td> <td>QPL</td> <td>Pratt & Lambert</td> </tr> <tr> <td>F93H1</td> <td>Q1397</td> <td>754-225</td> </tr> <tr> <td>F93G3</td> <td>Q1248</td> <td>754-217</td> </tr> <tr> <td>F93B7</td> <td>Q842</td> <td>754-212</td> </tr> <tr> <td>F93N9</td> <td>Q792</td> <td>754-209</td> </tr> <tr> <td>F93B10</td> <td>Q701</td> <td>754-203</td> </tr> <tr> <td>V93V20</td> <td></td> <td>754-201</td> </tr> </table> | Sherwin-Williams | QPL | Pratt & Lambert | F93H1 | Q1397 | 754-225 | F93G3 | Q1248 | 754-217 | F93B7 | Q842 | 754-212 | F93N9 | Q792 | 754-209 | F93B10 | Q701 | 754-203 | V93V20 | | 754-201 | | |
| Sherwin-Williams | QPL | Pratt & Lambert | | | | | | | | | | | | | | | | | | | | | |
| F93H1 | Q1397 | 754-225 | | | | | | | | | | | | | | | | | | | | | |
| F93G3 | Q1248 | 754-217 | | | | | | | | | | | | | | | | | | | | | |
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| F93N9 | Q792 | 754-209 | | | | | | | | | | | | | | | | | | | | | |
| F93B10 | Q701 | 754-203 | | | | | | | | | | | | | | | | | | | | | |
| V93V20 | | 754-201 | | | | | | | | | | | | | | | | | | | | | |
| <p>The following products are currently not stocked and are available by special order only:</p> | | | | | | | | | | | | | | | | | | | | | | | |
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| F93A4 | 36300 | Q1181 | 754-216 | | | | | | | | | | | | | | | | | | | | |
| <p>An Environmental Data Sheet is available from your local Sherwin-Williams facility.</p> | | | | | | | | | | | | | | | | | | | | | | | |

APPLICATION

Typical Setups

Reduction: If required, use MIL-T-81772 Type 1 Reducer, R91K20 or equivalent. MAK R6K30 (slow), Polane® Reducers R7K84 and R7K94 (medium) are also acceptable. Reducer must be polyurethane grade.

Conventional Spray:

Air Pressure 50-60 psi

Tip070"

Air Assisted Airless:

Air Pressure 20-30 psi

Fluid Pressure 500-800 psi

Tip011-.015"

HVLP:

Atomizing Air 65-100 psi

Fluid Pressure 5-10 psi

Tip070"

Please consult with your Sherwin-Williams sales representative for proper settings for your spray equipment.

Cleanup:

Clean tools/equipment immediately after use with MEK, MIBK, MAK or any Polane® Reducer. A blend of MIBK and Xylene works well also.

Follow manufacturer's safety recommendations when using any solvent.

SPECIFICATIONS

Product Limitations:

- MIL-C-46168D, Type II, CARC coatings (Component A) must be catalyzed with Catalyst (Component B), V93V20, at 4:1 ratio by volume.
- Do not use other catalysts or isocyanates other than V93V20.
- Do not vary catalyst mixing ratio.
- Component A must be well agitated prior to use.
- Agitate entire mixture, Component A, Component B, and Reducer well before spray.
- Potlife will be shorter under warmer temperature.

Performance Properties:

Meets all the performance properties of MIL-C-46168D, Type II.

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.

CAUTIONS

Thoroughly review product label 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.

LABEL CAUTIONS

SEE CONTENTS STATEMENT ON LABEL.

Contents are FLAMMABLE. Vapors may cause flash fires. Keep away from heat, sparks, and open flame. During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

VAPOR HARMFUL. Use only with adequate ventilation. This product must be used with an appropriate catalyst. Follow the respirator requirement and instructions on the catalyst.

Adequate ventilation required when sanding or abrading the dried film. If adequate ventilation cannot be provided wear an approved particulate respirator (NIOSH approved). Follow respirator manufacturer's directions for respirator use.

Avoid contact with eyes and skin. Wash hands after using. Keep container closed when not in use. Do not transfer contents to other containers for storage.

FIRST AID: If INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet. If on SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing. Launder before re-use. If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention. If SWALLOWED: Call Poison Control Center, hospital emergency room, or physician immediately.

SPILL AND WASTE: Remove all sources of ignition. Ventilate and remove with inert absorbent. Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulation regarding pollution.

DELAYED EFFECTS FROM LONG TERM OVER-EXPOSURE.

Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Abrading or sanding of the dry film may release crystalline silica which has been shown to cause lung damage and cancer under long term exposure. This product must be mixed with other components before use. Before opening the packages, READ AND FOLLOW WARNING LABELS ON ALL COMPONENTS.

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN.

FOR INDUSTRIAL USE ONLY.

SEE MATERIAL SAFETY DATA SHEET.22084-061404.

Catalyst CONTAINS ISOCYANATES. People who have chronic (long-term) lung or breathing problems or have had a reaction to isocyanates, must not be in the area where this product is being applied. Where overspray is present, a positive pressure air-supplied respirator should be worn. If unavailable, a properly fitted organic vapor/particulate respirator may be effective. Consult catalyst MSDS and product label for complete handling instructions.