Spectrum COATINGS, INC.

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MIL-DTL-64159 TY II

WATER BORNE CAMOUFLAGE ALIPHATIC POLYURETHANE (CARC) CHEMICAL AGENT RESISTANT COATING

DESCRIPTION

Mil-DTL-64159 Ty II coating is the most durable CARC coating available employing a polymeric extender in place of traditional mineral based materials to fully incorporate the pigment into the urethane resin system. This topcoat is approved for use by the **Army Research Laboratory** for use by all departments and agencies within the Department of Defense. Primary applications include the finishing of military vehicles, apparatus, missiles, aircraft and all forms of ground support equipment. Exhibiting an excellent balance of chemical and physical properties, cured films remain tough and durable for both interior and exterior use. The coating is resistant to chemical warfare agents and decontaminants. This coating system has a V.O.C. of 1.8 lbs/gal or less and is non-flammable.

ADVANTAGES

- HAPS Free
- Excellent Physical & Chemical Resistance
- Superior Exterior Durability
- Excellent Recoatability
- Compatible with Standard Military Pre-Treatments & Primers
- Easy Water Clean Up
- Minimal Isocyanate Hazard
- Lead & Chromate Free
- Smooth Finish

PHYSICAL PROPERTIES

Gloss: 60º 1% Max.
85º 3.5 % Max.

Pot Life: 4 Hours

Volume Solids: Varies by Color
Admixed: 45-48%

Recommended Film Thickness:
1.8 — 2.3 mils

Coverage: No Application Loss
225-340 sq.ft./gal @ 1.8-2.3 mils DFT

Dry Times: (77ºF, 50% RH)

To Touch:	45-60 mins
Hard:	4-6 Hours
Handle:	6-8 Hours
Recoat:	8-10 Hours

Air Quality: VOC
Less than or equal to 1.8 lbs. / gallon, minus water

Flexibility:
1/8" Mandrel 180º Bend: PASS

Weathering:
QUV > 1000 Hours
Xenon Weatherometer: > 2000 Hours

Chemical Resistance:
Meets or Exceeds Specification Requirements
Water: 168 Hours Immersion
Hydrocarbon TT-S-735 Type III: 168 Hours Immersion
10% Acetic Acid: 1 Hour Spot Test
Super Tropical Bleach (STB)
Live Agents

Shelf Life: (50-80ºF, ~50% R.H.)
1 Year from DOM, Unopened

Mix Ratio: (by volume)

Component A	2 Parts
Component B	1 Part
Deionized Water	1/2 Part

Water reduction may vary by color.

QUALIFIED COLORS

FS595	Color	Spectrum #
30051	Brown 383	WU2K-632
31136	Aircraft Red	WU2K-693
33446	Tan 686A	WU2K-621
33303	Sand	WU2K-714
33531	Sand	WU2K-730
33538	Aircraft Yellow	WU2K-694
34031	Aircraft Green	WU2K-577
34088	Olive Drab	WU2K-707
34094	Green 383	WU2K-619
35237	Blue Gray	WU2K-738
35044	AC Insignia Blue	WU2K-698
36300	Aircraft Gray	WU2K-562
36231	Int. AC Gray	WU2K-629
36375	Medium Gray	WU2K-618
37030	Black 383	WU2K-631
37031	Int AC Black	WU2K-778
37038	Aircraft Black	WU2K-631
37875	Aircraft White	WU2K-697

APPROVED PRIMERS

- MIL-PRF-23377 High Solids Epoxy
- MIL-P-53022B TY I & II Epoxy
- MIL-P-53030 Water Reducible Epoxy
- MIL-PRF-85582 Waterborne Epoxy
- MIL-P-53084 Cathodic Electrodeposition

APPROVED PRETREATMENTS

- MIL-A-8625 Anodizing Coating
- DOD-P-15328 Green Wash Primer
- MIL-C-8514 Wash Primer
- TT-C-490 Zinc Phosphate
- MIL-C-5541 Chromate Conversion

Chemical Agent Resistant Coating (CARC) System Application Procedures and Quality Control Inspection specification **Mil-DTL-53072C** should be referenced for proper cleaning, pretreatment and priming of different substrates.

CLEANING, PRETREATING & PRIMING

Cleaning: Surfaces must be clean and free from dirt, dust, rust, oil, finger marks, and other contaminants. Improperly cleaned surfaces can limit or interfere with paint adhesion, causing subsequent paint loss in service, which will affect physical performance of coating and leave the substrate unprotected from the environment.
DO NOT USE TACK CLOTHES/ RAGS. The use of tack clothes/rags will leave a film on substrate that will inhibit proper adhesion.
Unless otherwise specified, the surface should be thoroughly cleaned according to TT-C-490.

Steel: Where blasting is appropriate, blast in accordance with Steel Structures Painting Council (SSPC) Specification SSPC-SP-6 to remove millscale, products of corrosion, dirt, casting, sand, slag, and other foreign substances. Blast-cleaned surfaces that are to be pretreated with wash primer shall be chemically treated within four hours and dried for at least one hour at 70ºF to ensure completeness of the chemical reaction prior to application of a primer.

Aluminum: Depending upon contamination, clean with acidic cleaner or other appropriate cleaner. Pre-treat with chromate conversion coating (Mil-C-5541), DOD-P-15328 Wash Primer (Spectrum # GWP-421), or anodize per Mil-A-8625.

Repainting CARC Urethane:
Mil-DTL-64159 has been formulated to recoat Mil-C-53039, Mil-C-46168 and Mil-DTL-64159 CARC coatings. To properly recoat, scrape any flaking or peeling coating. Sand blast if necessary per SSPC-SP-6. Sand to uniform surface. Properly prime bare metal areas. Topcoat with Mil-DTL-64159.

Primers: This coating requires an epoxy primer.
Ferrous Substrate: Mil-P-53022B, Mil-P-53030 or Mil-P-53084.
Non-Ferrous Substrate:
Mil-P-53022B, Mil-PRF-23377J, Mil-P-53030, MIL-PRF-85582D or Mil-P-53084.

MIXING

Mix Ratio: (by volume)

Component A	2 Parts
Component B	1 Part
Deionized Water	1/2 Part

Always mix Part B into Part A using **vigorous mechanical agitation** (ie: Jiffy mixer) to insure the proper incorporation of both components.

Use a 4" dispersion blade when mixing 1.5 gallon or larger quantities and a 2" blade when mixing smaller batches. Your drill must have at least 1000 RPM to get proper shearing action of materials. A paint shaker can be used in conjunction with the dispersion blade mixer, but the use of a shaker alone **does not** properly mix Part A, or Parts A & B together.

Proper Mixing Instructions:

1. Using dispersion blade, stir contents of Part A until completely blended.
2. Pour Part A into mixing container.
3. While stirring Part A, create a whirlpool effect and **slowly** pour the appropriate quantity of Part B in. **Never pour Part B into Part A while not stirring!**
4. Mix for at least 5 minutes, the mixture will get thick like wallpaper paste when properly blended.
5. Let mixed material stand for 5 minutes. Pour in appropriate quantity of Deionized Water, but only after Part A and Part B have been properly mixed together. Never pour water directly into Part A or B, or unmixed A & B.
6. Mix for 5 minutes.
7. Mixture is now ready to spray!

Water Reduction: Always use Deionized Water to thin the coating. Thinning ratio may vary depending upon temperature, humidity, spray equipment, application and color. Water reduction ratio can vary from a minimum of 1/4 part to a maximum of 5/8 Parts.

APPLICATION

Spray application can be accomplished with one full wet coat. To obtain specification performance properties, it is necessary to apply the coating to a dry film thickness of 1.8 - 2.2 mils. When applying, do not exceed 6 - 7 wet mils due to the possibility of blistering with excessive one coat wet film builds.

Conventional Spray

- Air Pressure 45-60 psi

HVLP

- Air Pressure 65 psi
- Fluid Pressure 8-15 psi

Air Assisted Airless

- Air Pressure 50 psi
- Fluid Pressure 2100 psi

Tip size can vary depending upon desired spray pattern, size of gun and desired flow rate.

CLEANUP

Clean tools, mixing/spray equipment immediately after use with warm water. After warm water rinse, flush equipment with Isopropyl Alcohol or Acetone.

CURING

Production Applications:

- **Air Dry** (77ºF, 50% R.H.)
  To Touch: 45-60 minutes
  Hard: 4-6 Hours
  To Handle: 6-8 Hours
  Recoat:
  Minimum 8-10 Hours
  Maximum 7-10 days
  Recommended 18-24 Hours
- **Force Dry**
  To Handle:
  Allow sprayed part to air dry for 2-4 hours @ ~77ºF before force drying @:
  150º F 2 Hours or
  200º F 1 Hour

For packaging, allow parts to dry overnight for both air and force drying.

Quality Control—Test Curing:

- **Air Dry** (77ºF, 50% R.H.)
  Allow 7-10 Days before Testing
- **Force Dry**
  Air Dry for 4 Days then
  Force Dry 24 Hrs @ 225ºF then
  Allow to Air Dry for 24 Hrs before Testing

STORAGE

Protect both components from moisture. Materials should be stored inside at ambient temperatures: 50-80°F at ~50% Relative Humidity. Storage at elevated temperatures or high humidity for extended periods can result in shortened shelf life of materials.

PRODUCT LIMITATIONS

Do not vary catalyst ratio, this material has been formulated to achieve its optimum performance properties at listed ratios. Do not heat while applying, mixing, or storing. Heat shortens the pot life and shelf life of the materials. Protect all Spectrum Polyurethane products from moisture, heat, and store inside in ambient conditions. Temperature and humidity can effect drying times, cure rate, and color.

All recommendations, statements, and technical data contained herein are based upon tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. User shall rely on his/her own information and tests to determine suitability of the product for the intended use and assumes all risks and liability resulting from his/her use of the product.