TRAINING MANUAL

H & C Series Firearm Coatings

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Cerakote® Firearm Coatings are designed for professionals and should be applied by NIC-trained applicators and coating professionals with proper training and equipment. This training manual is intended to be used as a supplemental guide for certified and professional applicators **ONLY**. It is critical to follow all instructions in this manual. If for any reason you are not willing to, or cannot follow the steps in this manual, do not attempt to coat any product using Cerakote®, or any other NIC product. If you have any questions, please contact NIC Industries.

Thank you

Cerakote Firearm Coatings
A Division of NIC Industries, INC.
866-774-7628
CERAKOTE.COM
**PHASE 1: DISASSEMBLE**

**Disassemble:**

Completely disassemble the firearm.

Detail strip your firearm. If you are unfamiliar with this level of disassembly have a certified gunsmith perform the disassembly and reassembly.

Take a photograph of all the parts received. Make note of the substrate type on each piece (i.e: Steel, Aluminum, plastic, composite, polymer, etc.)
Phase 2: Degrease

Degrease:

Soak each metal part for 20-30 minutes in a non-water based degreaser such as Brake-Kleen® (NIC Part # SE-174) or acetone. Spraying or wiping is not sufficient; soaking is required. Using a small tank with a wire basket makes degreasing quick and easy. Place the screws, pins and other small parts in a smaller container so they are not lost during the soaking process. Allow parts to air dry after soaking.

From this point on it is critical to avoid touching the parts with your bare hands. Use powder-free latex style gloves to handle the parts.

Tip:

- In most cases it is not necessary or recommended to soak plastic and polymer parts in a solvent based degreaser as to avoid damaging the part. Thoroughly wiping plastic and polymer parts with a compatible degreaser, such as Wax & Grease Remover, is sufficient.
PHASE 3: SURFACE-PREP

Surface Prep:

Begin by plugging the bore at both the chamber and the muzzle end of the barrel prior to blasting. Grit blast the parts with #100 to #120 grit aluminum oxide or garnet sand at 80 to 100 psi. Lightly blast (30-40 psi) non-metal parts such as: wood, fiberglass, plastic or polymer. For anodized aluminum parts, set the blasting pressure to 30-40 psi. Strive for an even blast pattern over the surface of the part.

**TIP:**

- If the part’s surface is still shiny after blasting, you haven’t blasted enough.

- If you use too coarse of grit, the microscopic valleys on the part’s surface will be too deep for the 1.0 mil (.001”) coating to completely fill while covering the corresponding “peaks” sufficiently to assure a satisfactory coating.

- Don’t use sand that has been previously used to clean dirty, greasy or oily parts. Doing so will contaminate your parts.

- Anodized parts, such as AR-15 uppers and lowers, do require blasting, however, it is not necessary to completely remove the anodized finish. Anodized parts that have been sufficiently blasted should have a dull, matte appearance.

**CAUTION:**

- If you use #120 grit, be sure the grit does not wear out as you are using it. #120 is pretty fine at the start, and will wear to an ineffective dust.

**DO NOT** use any type of round blasting media such as glass beads or steel shot. Round media will dimple the surface rather than etching it, and will not yield a sufficient blast profile for optimum coating adhesion.

**DO NOT** hand sand parts as this will not yield a sufficient profile for optimal coating adhesion.
**Phase 4: Racking/Masking**

**Racking:**
Hang or otherwise fixture your parts so that you can access all the surfaces of each part with your HVLP gun. A variety of metal hooks in multiple sizes are ideal for racking larger parts, while thin wire or alligator clips are ideal for fixturing screws, pins and other small parts.

*REMEMBER TO ALWAYS WEAR POWDER-FREE, LATEX-STYLE GLOVES.*

**Correct Racking Techniques**

Properly racked lower receiver

Properly racked small components
Recommended Masking & Racking Supplies:

The following products can be purchased at www.Cerakote.com

**Cerakote Plug Kit:**
High Quality Plug Set loaded with over 300 of the most common plug sizes.
NIC part # SE-220

**Kit Features:**
- Most complete starter kit on the market
- Plugs can withstand continuous temperatures of 600°F (315°C)
- Great for Cerakote masking

**High Heat Tape:**
Used for masking areas where coating is not desired.
Available in 1/4” to 4”
NIC part # SE-121 through SE-127

**Cerakote Shake-N-Blast Canister:**
Metal Shake-N-Blast Canister is perfect for blasting small parts without worry of losing any components.
NIC part # SE-221

**Cerakote Coating Hook Kit:**
Exclusive Hook Kit loaded with the most common hook sizes.
NIC part # SE-175

**Kit Features:**
- Most complete firearm coating hook kit on the market
- Reusable Industrial Coating Hooks
- Multiple Styles, Lengths and Gauges for all coating scenarios
- Hand picked sizes from the Cerakote Instructors to work on all firearm types
Phase 5: Gas-Out

Gas-Out:

After parts are racked, heat metal parts in the oven at 300 degrees Fahrenheit (F) for 60 minutes. Gassing out will evaporate any remaining moisture and solvents and bring any remaining oils to the surface.

Remove the parts from the oven and allow them to cool. If no oil has been brought to the surface, proceed to Phase six.

See Oil?

If you see any oil residue or other indications that oil was brought to the surface of the part, re-clean the part by soaking it in the degrease tank and gassing out for an additional thirty minutes.

This step will need to be repeated until no oil residue is visible after gas out. When the parts are free of oil, re-blast to remove any residue from the surface and proceed to phase six.

CAUTION:

- Plastic and polymer parts should be gassed-out at a lower temperature, generally between 150-180 degrees Fahrenheit (F).

If you are unsure as to the temperature stability of your parts, contact the manufacturer prior to gassing-out and curing non-metallic parts.

- Note: there are alternative degreasing methods that may be more appropriate for your situation. Contact a Technical Advisor to discuss other suitable degreasing methods.
Selecting The Right Cerakote Series for the Application.

**Cerakote® H-Series:**

H-Series is the most durable of the standard Cerakote® product and provides the best performance in hardness, wear, scratch resistance, adhesion and corrosion resistance. Cerakote can withstand temperatures up to 500 degrees F and is available in over 90 colors. H-Series is a thermal cure finish and therefore should not be applied to items or substrates which cannot be cured at the required temperatures. (See cure schedule table, Page 18.)

**Cerakote® C-Series:**

C-Series should **ONLY** be used for very high-temp applications up to 1200 degrees F, such as suppressors and machine gun barrels. C-Series should **NOT** be mixed with H-Series Catalyst or Coatings. C-Series is available in a wide range of colors to match the overall finish requirement of the firearm or weapons system. C-Series is used to coat scopes and other optics, as well as fiberglass, polymer and other substrates which cannot be thermally cured. (See application guide on Page 25.)

Please review product specific Technical Data Sheets found at Cerakote.com
Coating Preparation:

Prepare the Cerakote for application. Begin by vigorously shaking the bottle until the coating is completely mixed, *then shake some more for good measure*. Determine how much Cerakote you intend to use before mixing (see table 1 pg. 12) Pot life for mixed Cerakote is approximately two hours in an open or closed container. Consequently, mix only what you intend to use, to avoid wasted coating. (see usage chart pg. 12)

1.) Pour the desired quantity of Cerakote into a glass graduated cylinder.

2.) Add the catalyst. Use table 1 pg. 12 to determine Cerakote to catalyst ratio for finish type.

3.) Mix thoroughly.

4.) Pour mixed coating through a disposable automotive type paint filter, or a reusable filter shown (NIC Part # SE-139)

*Do not mix Cerakote and catalyst in plastic containers as this will compromise the integrity of the coating*
Coating Preparation Continued:

**NOTE:** If the proportions of Cerakote to Catalyst are incorrect, or the combination of Product and Catalyst are not thoroughly mixed, the quality and performance of the coating will be adversely affected.

**Table 1**

<table>
<thead>
<tr>
<th>Matte Finish</th>
<th>24:1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satin Finish</td>
<td>18:1</td>
</tr>
<tr>
<td>Semi Gloss</td>
<td>12:1</td>
</tr>
</tbody>
</table>

**Do not** exceed the recommended Cerakote to Catalyst mix ratios.

**Table 2 (18:1 Ratio)**

<table>
<thead>
<tr>
<th>Firearm</th>
<th>Cerakote mL/cc</th>
<th>Hardener mL/cc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pistol</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>Rifle</td>
<td>72</td>
<td>4</td>
</tr>
</tbody>
</table>

**Read and follow the instructions that come with the color(s) you are using. Some Product to Catalyst ratios are different depending on the color used.**

***Please Note: Some H-Series coatings require a specific catalyst and mix ratio. Please refer to the product specific technical data sheets at Cerakote.com prior to coating preparation.***

Clean all containers and equipment with acetone. A squeeze bottle and bottle brush are helpful tools for cleaning.
Spraying

**CAUTION:**
Spray in a well-ventilated, well-lit spray booth, wear a respirator, protective gloves and safety glasses. Refer to the SDS for additional safety and handling information.

**Final Checklist Before Spraying:**

- Plug or mask off all parts that are not to be coated. Remember Cerakote is applied at 0.0005” - 0.001” which is very thin, most areas do not require masking, however, if you are unsure, contact Cerakote for assistance.

- Ensure all parts to be coated are hung securely to avoid contact during the application process.

- Do not coat springs as it is not recommended to heat springs during the curing process.

- Plug the bore to prevent overspray inside the bore.

- During the application process, ensure that the coating is properly agitated. Due to the high level of solids, Cerakote settles quickly and should be agitated frequently.

- Do not begin the spraying process unless you are able to complete the curing or flash process directly after spraying. Letting parts sit uncured or unflashed for extended periods of time will reduce the performance of the finished product.

**PRACTICE:**
Practice spraying on a piece of paper to adjust the spray pattern and to practice your spraying technique. Spray with the gun 3 to 5 inches away from the paper and adjust the spray pattern to between 2 and 3 inches wide.

A particularly good exercise is to spray and cure a few machine screws and matching nuts. You should be able to screw the nut onto the machine screw without difficulty. If you can’t, you may be spraying too heavily.
Recommended Mixing & Spraying Supplies

We recommend the following products for the best results during the coating prep and application process:

**Graduated Cylinder:**
NIC Part # SE-147A (100 ml) or NIC Part # SE-147B (50 ml) Depending on coating volume.

NIC suggests using a glass 100M/L graduated cylinder for accurate ratio measurements of Cerakote to catalyst.

**IWATA LPH-80 HVLP GUN FEATURES**

1. **Fan Pattern**
   - Controls Spray Pattern of Atomized Fluid
   - Adjust In (Clockwise) For Detailed Circular Pattern
   - Adjust Out (Counter-Clockwise) For Larger Oval Pattern
   - Use Small Circular Pattern With Lower Air Pressures For Detailed Work
   - Use Larger Pattern For Larger Areas Of Coverage

2. **Fluid Knob**
   - Controls The Amount of Fluid Atomized Through The Gun
   - Adjust In (Clockwise) For Fine or Detail Spray Areas
   - Adjust Out (Counter-Clockwise) For Full Fluid Usage
   - Throttle Will Affect The Spray Pattern When Adjusted In or Out
   - Use to Achieve Desired Material Thickness

3. **Air Pressure**
   - Regulates Inlet Pressure
   - Too Little Pressure Will Cause Spitting & Dry Spray
   - Too Much Pressure Will Cause A Split Pattern or Too Much Material Being Applied

**IWATA LPH-80:**
NIC Part # SE-138

*HVLP gun with spray characteristics:*

- Features adjustable spray pattern from round to full fan shape.
- A stainless-steel nozzle, paint passage and heat tempered needle ensure long-lasting, peak performance spraying.
- Uses the reliable and easy-to-service cartridge-style “air-valve” set, which can be serviced outside the gun and easily placed back into the gun body.
- 4 oz. (110 ml) stainless-steel gravity cup is center-mounted and rotates, allowing for spraying.
Phase 7: Spraying

Spraying Continued:

Blow off parts with dry compressed air to make sure there is no trapped media in holes or pockets. Sand left behind will cause surface defects.

Start spraying in the most difficult area of each part, then progress and finish to the easier areas. This should help avoid runs and thin spots. 20-25 psi is recommended for proper application.

**CAUTION:**
The most common application mistake is dry spray. Dry spray has a rough, sandpaper like appearance and is typically caused by spraying too far away from the part, too wide of a spray pattern, not enough material coming out of the gun or too much air pressure.

If you experience dry spray, ensure you are no further away than 3 to 5 inches away from the part, reduce your spray pattern to between 2 and 3 inches wide, check that your air pressure is no higher than 20 to 25 psi, and finally adjust your fluid control to ensure you have adequate coating material being applied to “wet out” the part in one pass.
Spraying Continued:

When spraying, strive for even coverage (you are seeking a half thousandth to 1 thousandth inch coating thickness). Spray with sufficient volume so that the Cerakote does not dry spray, which is when the coating dries in the air before reaching the part.

When spraying, the part should appear wet but not so wet that it wants to run. Cerakote will still be wet to the touch until it is oven cured. If you touch any coated parts before curing, the coating will be smudged and will need to be refinished. To achieve the recommended film thickness, one to two wet coats are recommended.

**TIP:**
- Do not spray with a too wide pattern (i.e. 4-6” pattern). Doing so may cause dry spray or a rough finish.
- Spray with a 2-3” horizontal fan 3-5” away from the part.
- Insufficient volume of coating being applied with the 2” pattern will result in dry spray or a rough texture.
Spraying Continued:

After each part is coated, set it aside for about five to ten minutes. Cerakote will still be wet to the touch until it is oven cured.

If you touch any coated parts before curing, the coating will smudge and will have to be refinished.

“MISTAKES”

If a mistake is made during spraying (such as a run), do not attempt to wipe down the part and re-spray. Rather, remove the wet coating with Brake-Kleen® or acetone, allow to dry, then re-blast the part. Finally, blow off the part and re-spray.

Cleaning Up:

Clean your tools with acetone. Contact Cerakote with questions regarding cleaning solvent compatibility. Discard any unused “mixed” Cerakote according to local and state regulations.

Do not return any unused “mix” to the bottle. Pouring catalyzed Cerakote back into the original bottle will render the remaining coating useless.
**PHASE 8: CURING**

**Oven Cure:**
Carefully move each part into the oven and cure at 250 degrees (F) for two hours. If you must hurry the process, curing for 1 hour at 300 degrees (F) is an alternative cure schedule. If the part(s) being coated are heat sensitive, 150 to 180 degrees (F) for two hours will adequately cure plastic, polymer, wood and composite parts.

After curing is completed, remove the parts from the oven and allow the parts to cool. Once parts are cool enough to handle, the firearm can be reassembled.

**CAUTION**
If you are unsure as to the temperature stability of your parts, contact the manufacturer prior to oven cure.

### Cure Schedule Table For MOST** H-Series Coatings

<table>
<thead>
<tr>
<th>Material</th>
<th>Temperature</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metal (Standard)</strong></td>
<td>250 Degrees F</td>
<td>2 Hours</td>
</tr>
<tr>
<td><em><em>Metal</em> (Quick Cure)</em>*</td>
<td>300 Degrees F</td>
<td>1 Hour</td>
</tr>
<tr>
<td><strong>Metal</strong> (Flash, when using stencils)</td>
<td>180 Degrees F</td>
<td>15 Minutes</td>
</tr>
<tr>
<td>Plastic or Polymer</td>
<td>150-180 Degrees F</td>
<td>2 Hours</td>
</tr>
<tr>
<td><strong>Wood</strong></td>
<td>150 Degrees F</td>
<td>2 Hours</td>
</tr>
</tbody>
</table>

*Please refer to the individual Product Technical Data Sheets available at Cerakote.com for product specific cure temperatures.

**TIP:**
- “**Flashing**” parts allows for partial curing at 180-200 degrees (F) for 15 minutes. This technique is used when applying and removing stencils.

****Note:** When flashing parts for camouflage or stencils, all parts must be fully cured within 24 hours from the initial flash.
Cerakote® Firearm Coating Training Program

NIC Industries offers the only one-on-one training program for Cerakote® Firearm Coating. With individual training, our instructors speak with the customers prior to the training course to custom design each class to meet the specific needs of each customer. Customers can apply any of NIC’s industry leading firearm coatings on their own parts, or parts supplied by NIC. Courses are taught at NIC’s training facility in White City, Oregon, or onsite*. While every class is custom tailored to meet each customer’s needs, below are topics typically covered in most courses.

**Training Topics**

- Metal Prep
- Out-gassing
- Racking Techniques
- Coating selection for various applications
- Basic to advanced ceramic application
- Proper curing techniques and schedules
- Problem solving and troubleshooting defects
- Proper equipment and operation
- Re-works
- Cost analysis
- Marketing

*Contact NIC for further information about on-site training at 866-774-7628.

**Class Location**

NIC Industries, Inc. is located at 7050 Sixth Street, White City, OR, 97503. White City is located in Southern Oregon approximately 5 miles from Medford, Oregon, and approximately 280 miles from Portland, Oregon.

**Transportation**

Rogue Valley International Airport (MFR) is located 6 miles from NIC and provides daily flights from several major west coast airports. All major rental car companies are located at the Rogue Valley International Airport.

**Lodging**

NIC has negotiated discounted rates with several hotels in close proximity to our facility. Information can be found at [http://www.cerakoteguncoatings.com/resource/downloads/](http://www.cerakoteguncoatings.com/resource/downloads/)
H-Series CERAKOTE® Firearm Coatings

The unique formulation used for Cerakote® firearm coating enhances a number of physical performance properties including: abrasion/wear resistance, corrosion resistance, chemical resistance, impact strength, and hardness. Each of these properties is rigorously tested to guarantee that Cerakote® products remain at the forefront of the firearm coatings market. For this study, the performance properties of Cerakote® H-146 Graphite Black were compared to the products of two firearm coatings competitors, denoted as C1 and C2. Each coating was evaluated on nine important aspects including performance and cost. These results are summarized in table 1, shown below, and a more extensive description is given in the following paragraphs.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Cerakote®</th>
<th>C1</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taber Abrasion Testing (ASTM D4060)</td>
<td>Wear cycles per mil: 6000</td>
<td>Wear cycles per mil: 597</td>
<td>Wear cycles per mil: 418</td>
</tr>
<tr>
<td>Corrosion Testing (ASTM B117)</td>
<td>Corrosion-free at: 1000 hours</td>
<td>Onset of Corrosion: 100 hours</td>
<td>Onset of Corrosion: 45 hours</td>
</tr>
<tr>
<td>Pencil Hardness (ASTM D3363)</td>
<td>9h</td>
<td>9h</td>
<td>7h</td>
</tr>
<tr>
<td>Adhesion Cross-Cut Tape (ASTM D3359)</td>
<td>5b</td>
<td>5b</td>
<td>5b</td>
</tr>
<tr>
<td>Mandrel Bend (ASTM D522)</td>
<td>32%</td>
<td>32%</td>
<td>32%</td>
</tr>
<tr>
<td>Impact (ASTM D2794)</td>
<td>160 inch-lbs</td>
<td>160 inch-lbs</td>
<td>140 inch-lbs</td>
</tr>
<tr>
<td>Chemical Resistance</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Good</td>
</tr>
<tr>
<td>Theoretical Coverage (ft²/gal at 1 mil thickness)</td>
<td>478</td>
<td>250*</td>
<td>321</td>
</tr>
<tr>
<td>Cost ($/ft²)</td>
<td>$0.62/ft²</td>
<td>$0.65/ft²</td>
<td>$0.99/ft²</td>
</tr>
<tr>
<td>VOC Compliance</td>
<td>VOC compliant in all 50 states</td>
<td>Non Compliant</td>
<td>Non Compliant</td>
</tr>
</tbody>
</table>

*Theoretical coverage if applied according to manufacturers specifications of 0.5 mil.

See all the test results at [http://www.cerakoteguncoatings.com/testing/](http://www.cerakoteguncoatings.com/testing/).
Taber Abrasion is a test using a weighted abrasive wheel that rotates at a constant speed to determine the resistance of finishes to abrasion and wear, as stated by test standard ASTM D4060. 7 competitive finishes including Cerakote® H-146 Graphite Black were tested in accordance with ASTM D4060. Each finish was tested three separate times in order to validate the test result. Panel weights and mil thickness were measured prior to the start of each test to determine a wear rating. A 1000 gram weight was placed on a CS-17 Taber Abrasion wheels as required by ASTM testing standards for testing finishes. Panels were cycled until the Taber wheel wore through the finish to the steel substrate. Finishes that required more than 500 cycles to wear through to the substrate were stopped every 500 cycles for the Taber abrasion wheels to be cleaned. Cleaning the Taber wheels every 500 cycles is a requirement to ensure accurate results. Once the Taber wheel has breached the finish, the Taber abrader is stopped and a final weight is taken to determine the wear rating for each finish. Wear ratings are calculated by taking the weight of the test panel before abrasion and subtracting the weight of the test panel after abrasion and multiplying that by 1,000. That number is then divided by the number of cycles completed before the finish was worn through. The resulting number is the specified wear rating for that finish. Based on ASTM testing standard D4060, Cerakote® Finished Strong by lasting nearly twice as long as the nearest competitive finish and 24 times as long as the furthest competitive finish.

**Technical Information**

**Abrasion Test: ASTM D4060**

Cerakote® Abrasion: ASTM D4060

**Wear Cycles Per Mil**

- Ion Bond: 250 Cycles
- Blueing: 500 Cycles
- Duracoat: 641 Cycles
- Parkerizing: 690 Cycles
- Keg GunKote: 744 Cycles
- Black Oxide: 3333 Cycles
- Cerakote® Graphite Black: 6000 Cycles

**Divisions of NIC Industries:**

- Prismatic Powders
- Cerakote® Firearm Coatings
- Cerakote® High Temperature Coatings

**Cerakote.com**
TECHNICAL INFORMATION

TEST: ASTM B117

CORROSION

Salt Spray (ASTM B117) Corrosion testing is used to evaluate the relative corrosion resistance of coated panels exposed to a salt spray or fog at an elevated temperature. Coated panels are placed in an enclosed salt spray chamber at a 15-30 degree angle and subjected to a continuous indirect spray of a neutral (ph 6.5-7.2) salt water solution. The chamber/cabinet is kept at an operating temperature of 95F and fogging a 5% salt solution at the required 12ml/hr. Cerakote® H-146 Graphite Black panels were checked for corrosion at specific intervals of 45, 160, 255, 385, 675, 850, 1000, 2000, 3000 and 3500 hours. At 3500 hours Cerakote® H-146 was not corroded. This study shows that Cerakote® preserves the life of a firearm in a corrosive environment longer than any competitive coatings.

HARDNESS

TEST: ASTM D3363

Hardness, or Pencil Hardness (ASTM D3363), is measured by using different grades of pencil lead to cut through a coating surface. To conduct this test, a coated panel is placed on a flat, horizontal surface. A weighted trolley with the hardest pencil lead (9h) is placed on the panel and pushed away from the operator. The length of the stroke should be about 6.5 mm. This process is repeated until a lead is found that will not cut through the coating to the metal for a distance of at least 3 mm (this is the pencil hardness rating). This process is then repeated until a lead is found that will not cut nor scratch the coating (this is the scratch hardness rating). Cerakote® H-146 Graphite Black finished strong with a 9h hardness rating, the highest hardness rating that can be achieved.
The ability of Cerakote® H-146 to resist chemical attack was tested by dipping coated panels into a series of solvents to which the coating may be exposed during regular use and extreme conditions. The panels were placed in the solution and allowed to sit for 24 hours. Afterward, the samples were removed, analyzed and assigned a rank depending on the resistance to each specific chemical. The results of this test are shown in the table below.

The performance of Cerakote® H-146 was classified as excellent for 14 of the solvent tests. This indicates that the coating was not affected following a 24-hour immersion in the solvents. The coating also showed good resistance to HCL and experienced only a slight change in texture after 24-hour immersion.

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>CERAKOTE™ H-146</th>
</tr>
</thead>
<tbody>
<tr>
<td>GUN CLEANER</td>
<td>★★★★★★</td>
</tr>
<tr>
<td>WD-40</td>
<td>★★★★★</td>
</tr>
<tr>
<td>BRAKE CLEANER</td>
<td>★★★★★</td>
</tr>
<tr>
<td>DENATURED ALCOHOL</td>
<td>★★★★★</td>
</tr>
<tr>
<td>LACQUER THINNER</td>
<td>★★★★★</td>
</tr>
<tr>
<td>METHYL ETHYL KETONE</td>
<td>★★★★★</td>
</tr>
<tr>
<td>ACETONE</td>
<td>★★★★★</td>
</tr>
<tr>
<td>GASOLINE</td>
<td>★★★★★</td>
</tr>
<tr>
<td>MINERAL SPIRITS</td>
<td>★★★★★</td>
</tr>
<tr>
<td>PAINT STRIPPER</td>
<td>★★★★★</td>
</tr>
<tr>
<td>5% HCL SOLUTION</td>
<td>★★★★</td>
</tr>
</tbody>
</table>

★ ★ ★ ★ ★ = EXCELLENT CHEMICAL RESISTANCE
★ ★ ★ ★ = GOOD CHEMICAL RESISTANCE
★ ★ ★ = FAIR CHEMICAL RESISTANCE
★ ★ = POOR CHEMICAL RESISTANCE
★ = NO CHEMICAL RESISTANCE
Durability

Test: ASTM D2794

Impact Resistance (ASTM D2794) measures the resistance of organic coatings to the effects of rapid deformation (Impact). Impact resistance is measured by placing a coated panel in an universal impact tester. A standard weight is dropped a distance to strike an indenter that deforms the coating and the substrate. The indentation can be either an intrusion or an extrusion. By gradually increasing the distance the weight drops, (1 inch at a time) the point at which failure occurs can be determined by cracking or delamination of the coating. Cerakote® H-146 Graphite Black was tested to have an impact strength measuring 160 inch-lbs which is the maximum the impact tester can measure.

Flexibility

Test: ASTM D522

Flexibility, or Mandrel Bend (ASTM D522), testing is measured by placing a coated panel in a conical mandrel apparatus and bending the coated test panel over a conical shaped mandrel in order to assess the elasticity or resistance of a coating to cracking, elongation and/or detachment from the metal test panel in accordance with ASTM D522. The conical shape of the bending area allows the deformation of the test panel and examination of the elasticity range of a coating over any diameter between 3.1 mm and 38 mm in one single test. Cerakote® H-146 Graphite Black was tested in accordance with ASTM D522 and exhibited excellent flexibility and no signs of cracking, elongation or detachment from the steel panel.
C-Series Ambient Cure Ceramic Firearm Coatings

Preparation of substrate is crucial for maximum adhesion and performance of this material.

1.) Completely disassemble the firearm. Detail strip your firearm. If you are unfamiliar with this level of disassembly, have a certified gunsmith perform the disassembly and reassembly. If pins or parts are left in, they can produce runs and ruin the finish. Take a photograph of all the parts received. Make note of the substrate type on each piece (i.e. Steel, Aluminum, plastic, composite, polymer, etc.)

2.) Soak each part for 10-15 minutes in a non-water based degreaser such as Brake-Kleen® or acetone. Spraying is not sufficient; soaking is required. Allow parts to air dry after soaking. From this point on it is critical to avoid touching the parts with your bare hands. Use powder-free latex style gloves to handle the parts. In most cases it is not necessary or recommended to soak plastic and polymer parts in a solvent based degreaser as to avoid damaging the part. Thoroughly wiping plastic and polymer parts with a compatible degreasing solvent is sufficient.

3.) Begin surface preparation by plugging the bore at both the chamber and the muzzle end of the barrel prior to blasting. Grit blast the parts with #100 to #120 grit aluminum oxide or garnet sand at 80 to 100 psi. Strive for an even blast pattern over the surface of the parts. Lightly blast (30-40 psi) non-metal parts such as: wood, fiberglass, plastic and polymer. Hard anodizing does not need to be removed if it withstands 3-5 seconds of blasting at normal blast pressure (80-100 psi) in one location without coming off the part.

**TIPS:** If the part’s surface is still shiny after blasting, you haven’t blasted enough. If you use too coarse of grit, the microscopic valleys on the part’s surface will be too deep for the 1.0 mil (.001”) coating to completely fill while covering the corresponding “peaks” sufficiently to assure a satisfactory coating. Don’t use sand that has been previously used to clean dirty, greasy, or oily parts. Doing so will contaminate your parts. When blasting hard anodizing or delicate substrates such as plastics, polymers, wood, fiberglass, be sure to be 8-10” away and lightly etch the part only to remove the sheen and to avoid an over aggressive blast profile. If you use #120 grit, be sure the grit does not wear out as you are using it. #120 is pretty fine at the start and will wear to an ineffective dust. **DO NOT** use any type of round blasting media such as glass beads or steel shot. Round media will dimple the surface rather than etching it, and will not yield a sufficient blast profile for optimum coating adhesion.

4.) Hang parts to allow for best view and application access. This can be done by using support wires or hooks. Make sure to place parts in such a way that they will not bump into each other. **Do not touch parts with bare skin.** Alligator clips or 30-gauge wire are recommended for small parts such as screws and springs.

5.) After parts are racked, heat metal parts in the oven at 300 degrees Fahrenheit (F) for 60 minutes to drive off any remaining solvents or contaminants. Remove the parts from the oven and allow them to cool. If you see any oil residue or other indication that oil was driven out of the part, re-clean by soaking in the degrease tank and reheat for an additional thirty minutes. Any contamination from this point onward will result in a less than satisfactory finish. Be careful, and take your time. If further degreasing is required, repeat as necessary until no oil residue is visible. **CAUTION:** Plastic and polymer parts should be gassed-out at a lower temperature. Gassing-out non-metallic parts can be done at the same temperature they are cured at. Refer to the cure schedule table on pg. 18 for these temperatures. If you are unsure as to the temperature stability of your parts, contact the manufacturer prior to gassing-out and curing non-metallic parts.
6.) Shake the **C-Series** product until the coating is completely mixed and no solids remain in the bottom of the container. Failure to completely disperse the product will result in poor chemical ratios and product failure. **DO NOT MIX WITH H-SERIES CATALYST OR COATINGS.**

7.) Blow off the substrate with a high-pressure air nozzle to remove any blasting dust left on the surface. Wear safety goggles or face shield for your protection. Work in a well-ventilated area. If ventilation is not available, wear a respirator - see MSDS for additional information.

8.) Recommended spray equipment is an HVLP gun with a metal cup and point-8 millimeter tip. The use of a small spray tip pattern will aid in coating hard to reach areas without excessive build up in surrounding areas. Electrostatic application may also be an option. **Material does not need to be thinned. Use as received.**

9.) A single application of product at 20 psi is recommended for a 0.5 to 1.0 mil film thickness. Work from the most difficult surface out to the easiest. This will aid in reducing runs or excessive build up.

10.) Allow to air-dry. Parts will be tack free after approximately 35 minutes. Until this point the coating is still wet, so take care not to bump or touch the parts. Parts will be partially cured after 24 hours and fully cured 5 days after application.

11.) Finished goods may be shipped after 24 hours when the coating is partially cured.

12.) Clean tools and equipment with acetone or Cerakote® cleaning solvent.

Please contact a Cerakote® technician with questions on proper use and/or application. Onsite or offsite training courses are available for further instruction. Consult your MSDS for proper handling, disposal, and precautions while using this product.