CERAKOTE®

AN INNOVATION OF **NIC INDUSTRIES, INC.**
866.774.7628 White City, Oregon 97503

F-SERIES

TRAINING MANUAL

TRAINING VIDEO

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THE F-SERIES TRAINING VIDEO

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F-SERIES

TRAINING MANUAL

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F-SERIES

Cerakote® Ceramic Coatings are designed for professionals and should be applied by Cerakote Certified 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. 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 us.

If you are coating parts that will sustain temperatures greater than 500°F or parts that cannot be cured in an oven, refer to the high temperature coatings section at Cerakote.com. Please refer to product specific application guides at Cerakote.com.

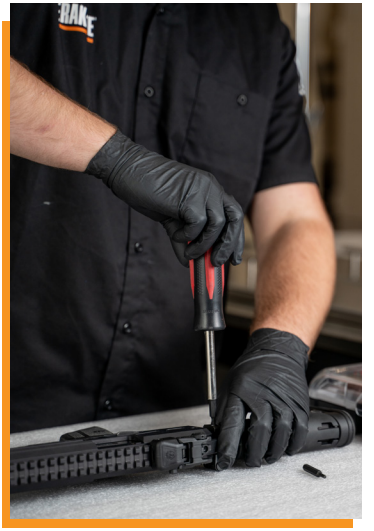
PHASE 1

DISASSEMBLY

Deviation from the Training Manual may yield different results in aesthetics or product performance.

Detail strip your project. If you are working with a mechanical part and are unfamiliar with the level of disassembly, have a trained professional perform the disassembly and reassembly.

Take a photo of all the parts for accurate inventory. Make note of the substrate type on each piece (e.g. steel, aluminum, plastic, composite, polymer, etc.).



Detail Strip your Project. Take a photo of all the parts for accurate inventory.

PHASE 2

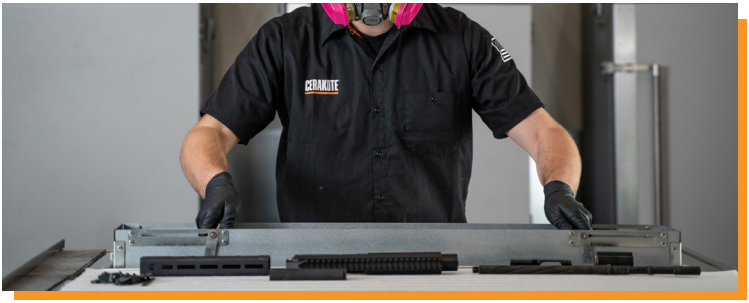
DEGREASE

From this point on it is critical to avoid touching the parts with your bare hands. Use latex powder-free gloves (Item SE-355) or nitrile gloves (Item SE-356) to handle the parts.

DEGREASE METAL PARTS

Soak each metal part for 20–30 minutes in a solvent-based degreaser, such as non-chlorinated brake parts cleaner or acetone. For a water-based degreaser, utilize Simple Green® or an equivalent. Spraying or wiping is not sufficient for metal parts; soaking is required.

Using a Cerakote Degrease Tank™ (Item SE-518) with a medium degreasing basket makes the process quick and easy. To avoid losing smaller parts during the soaking process, place all smaller parts in a separate degrease basket (Item SE-520). Following the soaking period, remove parts from the degrease tank and allow to air dry.



Degrease your parts once your parts are detail stripped.

DEGREASING PLASTICS, POLYMERS, CARBON FIBER & FIBERGLASS

Plastics, polymers, carbon fiber, and fiberglass should be thoroughly wiped down using a lint-free cloth and a degreaser, such as wax & grease remover.

NOTE

There are alternative high-volume degreasing methods that may be more suitable for your situation. Please contact TechnicalSupport@Cerakote.com to discuss other degreasing processes.

PHASE 3

MASKING

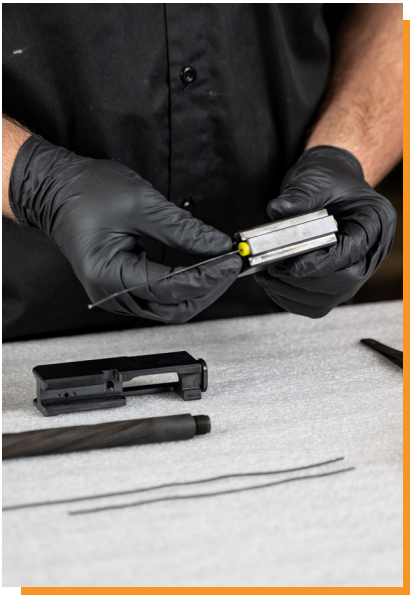
Begin by plugging and/or masking off any areas that you do not want coated.

NOTE

Improper masking with certain mechanical parts may cause tolerance or functionality issues.

Mask any areas that you do not want coated.

Trim any excess masking tape.



Plug any areas that you do not want coated.

PHASE 4

SANDBLASTING

Sandblast metal parts with #100 grit aluminum oxide or garnet sand at 80 to 100 PSI. Lightly etch blast 30-40 PSI non-metal parts such as: carbon fiber, fiberglass, plastics, or polymers.

Anodized parts will require sand blasting, however it is not necessary to completely remove the anodized finish. It is recommended to lightly etch blast at 30-40 PSI. Anodized parts that have been sufficiently blasted should have a dull, matte appearance.

- X **DO NOT** hand sand parts as this will not yield a sufficient profile for optimal coating adhesion.
- X **DO NOT** use any type of round blasting media such as glass beads or steel shot. Round media will dimple the surface rather than etch it and will not yield a sufficient blast profile for optimum coating adhesion.
- X **DO NOT** use sand or aluminum oxide that has been previously used to clean dirty, greasy, or oily parts. Doing so will contaminate your blast media and cause possible adhesion issues or defects in the finish.

Sandblast parts and strive for an even blast pattern.

Use the Shake N Blast Canister (Item SE-3115) for small parts.

TIPS FOR SANDBLASTING

If the part's surface retains a shiny appearance after sand blasting, you have not blasted enough. To promote maximum coating adhesion, continue to sand blast parts striving for an even blast pattern.

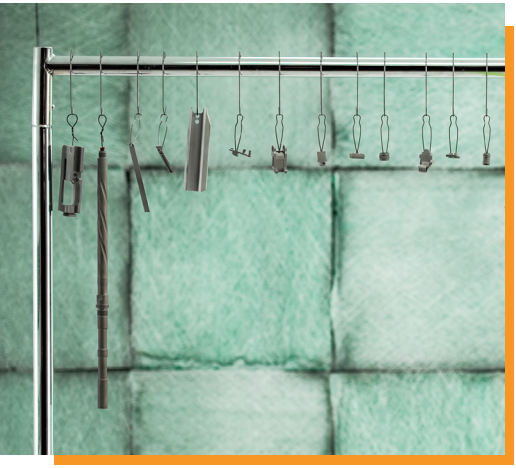
Too coarse of sand or aluminum oxide will profile the parts surface too deep and won't create a uniform finish.

PHASE 5

RACKING

REMEMBER

Always wear powder-free latex or nitrile gloves when handling parts.
Avoid touching parts with your bare hands.



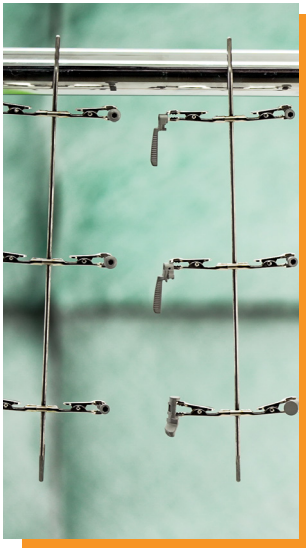
Metal hooks are ideal for racking larger parts.

Hang or otherwise fixture your parts so that you can access all the surface areas with your HVLP/LVLP spray gun (Item SE-138).

A variety of metal hooks (Item SE-195) in multiple sizes are ideal for racking larger parts, while thin wire or a small parts rack (Item SE-346 and SE-347) are ideal for fixturing screws, pins and other small parts.

TIPS FOR RACKING SMALL PARTS

- For smaller screws or bolts, clamp alligator clip on threads.
- For other small parts, clamp alligator clip on a no-show surface.
- Heaviest pieces are placed at the bottom of the rack for better part stability.
- Space parts accordingly for even coverage.



Small parts rack shown above.

PHASE 6

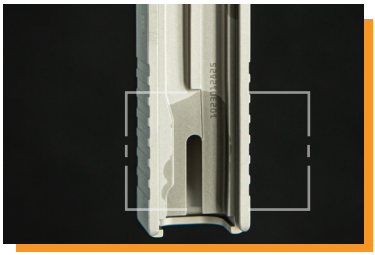
GAS OUT

Gas out will evaporate any remaining solvents from the degreasing phase while also drawing out any possible trapped oils or contaminants. Heat metal parts in a convection style oven at 300°F (149°C) for 60 minutes.

CAUTION

Plastics, polymers, carbon fiber and fiberglass should be gassed out at a lower temperature, generally between 150˚- 180˚F (65˚- 82˚C) for 60 minutes.

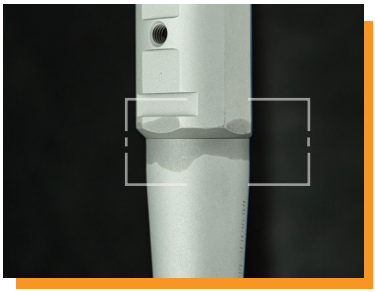
If you're unsure as to the temperature stability of your non-metal parts, contact the manufacturer prior to gassing-out and curing.



Oil on slide shown.

SEE OIL?

If you see any oil residue or other indications that contaminants were drawn to the surface of the part(s); re-clean the part(s) by repeating phases 2, 4, and 6 (degrease, sandblast, gas out).



Oil in seam shown

This step will need to be repeated until no oil residue is visible after gas out. When the part(s) are free of oil following the final gas out process, proceed to Phase 7 Coating Prep.

CAUTION

Allow parts to cool to room temperature prior to re-degreasing.

PHASE 7

COATING PREPARATION

4 STEP PROCESS

Begin by agitating the Cerakote bottle until the coating has been mixed (Testers and Pints: 5-10 minutes, Quarts 15 minutes). We recommend a paint shaker (Item SE-369) for pints, quarts, and gallons. For testers, agitating by hand is sufficient.

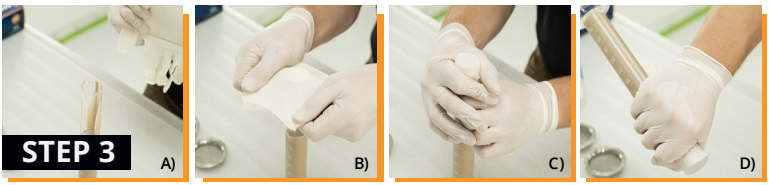
Determine how much Cerakote you intend to use before adding catalyst (see Table 1, Pg. 9) Pot life for mixed F-Series Cerakote is approximately 1 hour in a sealed glass graduated cylinder, beaker, aluminum spray gun cup. Mix only what you intend to use to avoid coating waste.

IMPORTANT!

Do not mix Cerakote and catalyst in noncompatible plastic containers, as this may compromise the integrity of the coating. Compatible plastics for mixing Cerakote: Polypropylene (PP), High-density polyethylene (HDPE) or Low-density polyethylene (LDPE).

1) Pour the desired quantity of Cerakote into a Glass Graduated Cylinder (Item SE-147) or Beaker (Item SE-259).

2) Add the catalyst. See Table 1 Pg. 9 to determine Cerakote to catalyst ratio for finish type.



3) (A) Stretch a clean, powder-free latex glove. (B) Place glove over graduated cylinder. (C) Tightly seal glove over graduated cylinder. (D) Thoroughly mix coating by shaking for thirty seconds to one minute.

TIPS FOR AGITATION & STRAINING:

- Frequent agitation of coating in the spray gun is recommended.
- Colors with a high metallic content or high viscosity will require a 100-mesh strainer.
- Non-metallic and low viscosity colors will require a 150-325 mesh strainer.
- See TDS or bottle label for recommended strainer size.

MIXING PROPORTIONS

If 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.

NOTE

All Cerakote bottle labels list the recommended strainer size.

In-Cup 100 Mesh Strainer (Item SE-275)
In-Cup 150 Mesh Strainer (Item SE-276)
In-Cup 325 Mesh Strainer (Item SE-277)

4) Pour coating through the appropriate mesh strainer into the spray gun cup.

CLEANING EQUIPMENT

Clean all containers and equipment with acetone or a comparable degreasing solvent. A Cerakote Wash Bottle (Item SE-396) and Cylinder Bottle Brush (Item SE-389) are helpful tools for cleaning.

IMPORTANT! To ensure safe and effective cleaning, avoid mixing different coating series or using multiple solvents together. Combining incompatible materials may cause adverse reactions.

TABLE 1: F-SERIES CATALYST RATIOS

Do not exceed catalyst ratios of 12:1 or 6:1, as this will compromise the coating's integrity.

FINISH	CATALYST RATIO
Lower Gloss	12:1
Standard Gloss	9:1
Higher Gloss	6:1

PHASE 8

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 at Cerakote.com.

BEFORE SPRAYING: NOTES & TIPS

- Check that all plugged and masked areas are secure. Remember Cerakote is applied very thin, and most areas do not require masking. 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 mechanical parts that may cause tolerance or functionality issues.
- 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 curing process within 1 hour following the initial application. Letting parts sit uncured or un-flashed for extended periods of time can reduce the performance of the finished product.

SPRAY GUN SETTINGS

Figure 1

1. PATTERN ADJUSTMENT KNOB

- 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 pressure for detailed work.
- Use large pattern for large areas of coverage.

2. FLUID ADJUSTMENT KNOB

- Controls the amount of fluid atomized through the gun.
- Adjust in (Clockwise) for fine or detailed spray areas.
- Adjust out (Counter-Clockwise) for full fluid usage.
- This knob will affect the spray pattern when adjusted in or out.
- Use to adjust desired material flow.

3. AIR ADJUSTMENT KNOB

- Regulates inlet air pressure.
- Too low of air pressure will cause splatter.
- Too high of air pressure will cause dry spray.

TESTING SPRAY GUN SETTINGS

Practice spraying on an easel pad to adjust the spray pattern and to practice your spraying technique. Adjust the spray gun to achieve a 2-3" (5cm to 7.5cm) oval fan pattern, while spraying from a distance of 3-5" (7cm to 13cm). For hard to reach areas, adjust your spray gun settings to achieve a 1" (2.5cm) oval with moderate sized splatter.

A good practice 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. For a more precise measurement of coating thickness, we recommend using a Cerakote Mil Thickness Gauge (Item SE-321).

Testing spray gun settings

2 - 3" (5cm - 7.5cm) oval spray pattern

BEFORE SPRAYING YOUR PART(S)

Blow off the parts with oil free, dry compressed air to make sure there is no trapped media in holes, seams or pockets. Blasting media left behind will cause surface defects. Make sure the parts are at room temperature before application.

Start spraying in the most difficult areas of each part, then progress and finish to the easier areas. This should help avoid runs and thin spots. For best application results, adjust pressure settings at 20-30 PSI.

Before spraying, blow off all parts.

APPLYING CERAKOTE

Strive for even coverage when spraying. The coating should appear wet but not so wet that the coating will run. Cerakote will be wet to the touch until it is oven cured.

When spraying, part should appear wet.

The standard coating thickness for F-Series will be 0.75 mils* (0.00075 inches). This is generally achieved with 2 – 3 coats. The number of coats applied will vary depending on the spray gun settings, and spray gun techniques.

*F-Series colors in lighter tones may require a higher film thickness to reach opacity. Refer to the Technical Data Sheet for the standard film thickness range specific to the color.

PHASE 8

SPRAYING CONTINUED

NOTE

If any coated parts are touched before the curing phase, they will need to be refinished. It is recommended to remove wet Cerakote with a degreasing solvent such as Acetone or brake parts cleaner, followed by drying the parts in an oven until the residual coating has become tack free (dry to the touch). Sandblast to remove any contaminants and re-spray.

WET APPLICATION

TIPS FOR APPLICATION

- Use an HVLP/LVLP spray gun with a 0.8mm tip. Recommended: IWATA LPH-80 (Item SE-138).
- Spray with a 2-3" oval fan pattern from a distance of 3-5".
- F-Series: 20-30 PSI (operating pressure).
- Use proper lighting to assist in seeing the coating wet out.

NOTE

Allow parts to sit ambiently for a minimum of fifteen minutes but not more than 1 hour following the application. Cerakote will still be wet to the touch until it is oven cured.

DRY SPRAY: The most common application error is not getting enough solvent transfer.

Dry spray has a rough, sandpaper like appearance and is typically caused by:

- Spraying too far away from the part
- Too much air pressure
- Not enough material flow on the spray gun
- Spraying in a hot environment

DRY SPRAY EXAMPLE: ROUGH, SANDPAPER LIKE APPEARANCE

CORRECTING DRY SPRAY

TECHNIQUE

- Ensure that you are no further away than 5" from the part.
- Maintain a manageable speed to allow coating solvents to transfer onto the part(s).

SPRAY GUN SETTINGS

- Adjust fluid volume to ensure you have adequate material being applied to "wet out" the part(s) in one coat.
- Check that air pressure is no higher than 30 PSI.

ENVIRONMENT

- Avoid spraying in extreme conditions. For the best results in the spray booth, a room temperature between 68°F – 74°F with 20% - 50% humidity. As temperature and humidity rise, your atomizing air should decrease to combat the conditions.

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 parts cleaner or Acetone, allow the part to dry, re-sandblast, and re-coat.

CLEANING UP

Be sure to clean your tools and spray equipment with a cleaning solvent, such as Acetone. Contact Cerakote with any questions regarding cleaning solvent recommendations. Dispose of any unused catalyzed Cerakote according to local and state regulations.

Dispose of any unused catalyzed Cerakote and clean all parts of your spray gun.

DO NOT RETURN ANY UNUSED CATALYZED CERAKOTE TO THE BOTTLE

Pouring catalyzed Cerakote back into the original bottle will render the remaining coating useless.

PHASE 9

CURE SCHEDULE

RECOMMENDED CURE TEMPERATURES

F-Series Cerakote has a standard curing temperature used for performance testing. For curing temperatures specific to your substrate, please see the cure schedule table listed below. Curing schedules specific to colors can be found at the bottom of the product's description page.

CURE SCHEDULE FOR F-SERIES

Cure schedules are based on Part Temperatures (PT)

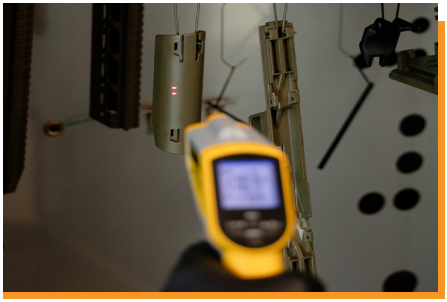
MATERIAL	TEMPERATURE	TIME
Metal	250° F (121° C)	15 Minutes
Plastic and Polymer	180° (82° C)	1 hour

For information on curing alternative substrates contact TechnicalSupport@cerakote.com

TIPS FOR ACHIEVING GLOSS CONSISTENCY ACROSS ALL SUBSTRATES

Place all coated parts (metal, polymer, composites, etc.) into a curing oven preheated to 180°F (82°C). Allow all parts to flash-cure for 15-30 minutes until they become tack-free. Once tack-free, remove only the metal parts from the oven and cure them in a separate oven preheated to 250°F for 15 minutes after part temperature (PT) reaches 250°F. Polymer and composite parts will remain in the 180°F oven until they have cured for the full 60 minutes.

If you are using one oven for curing, place all parts/substrate types into a preheated oven set to 180°F and cure all parts for 1 hour. After the 1 hour batch has been completed, remove the non-metal parts, ramp up the oven to 250°F, and allow the metal parts to cure for an additional 15 minutes, after part temperature (PT) reaches 250°F.



Checking part temperature with Cerakote Infrared Thermometer (Item SE-322).

FINAL ASSEMBLY

After curing is completed, remove the parts from the oven and allow them to cool. Parts are ready for reassembly and use once they are cool enough to handle.

After curing is completed allow parts from the oven to cool, then assemble.

IWATA SPRAY GUN Item: SE-138
SPRAY GUN STAND Item: SE-301

LPH80 .8 FLUID NOZZLE & NEEDLE Item: SE-142

IWATA SPRAY GUN CLEANING KIT
Item: SE-258

CERAKOTE 15" VINYL CUTTER
Item: SE-349

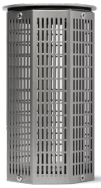
ANTI-STATIC TWEEZER 7 PIECE SET Item: SE-366

HIGH BAKE VINYL FILM
Item: SE-354 or SE-345

PLASTIC RAZOR BLADES - 10 PACK
Item: SE-367

PRICING & COMPLETE LINEUP AVAILABLE AT
WWW.CERAKOTE.COM > SHOP > EQUIPMENT

We recommend the following products for the best results during the Cerakote prep and application process, available at Cerakote.com.



SHAKE N BLAST CANISTER

Item: SE-3115

AIR PAINT SHAKER 1 GAL

Item: SE-369

CERAKOTE DEGREASING TANK

Item: SE-518 (Degreasing Tank)

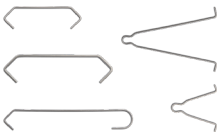
Item: SE-519 (Large Degreasing Basket)

PRO SERIES SWATCH SET

Item: SE-2401

CERAKOTE MIL THICKNESS GAUGE *Item: SE-321*

CERAKOTE INFRARED THERMOMETER Item: SE-322

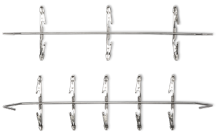


CERAKOTE HOOK KIT

Item: SE-195

HEAVY DUTY SWIVEL HOOK

Item: SE-387



SMALL PARTS RACK - 6 CLIP

Item: SE-346

SMALL PARTS RACK - 10 CLIP

Item: SE-347

TRAINING PROGRAM

Cerakote is a professional-level OEM finish. NIC Industries offers a one-on-one training and certification program. Training is available at our state-of-the-art Headquarters in White City, Oregon, or with our industry partners in Walker, MI, Burlington, NC, and Calgary, Alberta, Canada as well as our distributors in Australia, Germany and the United Kingdom. Our expert trainers provide training for your industry with a two-day class tailored to fit your needs. We provide world-class training to manufacturers, OEMs, and custom shops worldwide.

WHAT WILL I LEARN?

- **Metal preparation**
- **Gas out**
- **Racking techniques**
- **Coating selection for various applications**
- **Basic to Advanced coating application**
- **Proper curing techniques and schedules**
- **Medium-high volume coating processes**
- **Stenciling & camo techniques**
- **Proper equipment and operation**
- **Re-works**
- **Cost analysis**
- **Marketing strategies**
- **Problem solving and troubleshooting defects**

*For more information about the Cerakote Training Program give us a call at **1-866-774-7628**, or email **Certifiedapplicators@cerakote.com**.*

CLASS LOCATIONS

- Cerakote Headquarters: White City, Oregon
- West Michigan Cerakote: Walker, Michigan
- Weapon Works: Burlington, North Carolina
- Black Box Customs: Calgary, Alberta, Canada

CERAKOTE DISTRIBUTORS

- SLR Coatings: Australia
- PBN Coatings: Germany
- Cerakote UK: United Kingdom
- Cerakote Hong Kong

CONTACT INFORMATION

If at any point during the Cerakote application you have a question, please contact us at ***Certifiedapplicators@cerakote.com***, or call us toll free at ***1-866-774-7628.***

STAY CONNECTED! **Subscribe to Cerakote's emails at Cerakote.com to receive the latest news, information, and specials. Make sure to check out the links below for more information!**

Additional Training Videos - YouTube.com/Cerakote

Web address - www.Cerakote.com

Facebook - Facebook.com/cerakote

Instagram - Instagram.com/cerakote

x - x.com/cerakotefinish

SDS Sheets - Downloads section at Cerakote.com > Resources > Documents > Safety Data Sheets

Email - Technicalsupport@cerakote.com

NOTES

CERAKOTE®

F-SERIES

TRAINING MANUAL

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