AT 1420 - ALPHASHIELD ELITE (MILITARY GRADE)

NANO-CERAMIC COATING

APPLICATION INSTRUCTIONS

1. PRODUCT DESCRIPTION

AT-1420 AlphaShield Elite is a high-performance nanoceramic firearm coating engineered for military small arms and crew-served weapon applications. Formulated to conform to the near-infrared (NIR) reflectance requirements of MIL-DTL-53039E, the AT-1420 supports night-vision signature management on military weapon systems while delivering exceptional thermal protection, durability, and corrosion resistance.

Unlike conventional firearm coatings, the AT-1420 combines NIR signature management with high-temperature insulation performance. Tested to 1,200°F (648°C), AT-1420 maintains coating integrity under sustained high-temperature conditions where conventional firearm coatings fail.

It offers superior wear and corrosion resistance under the wide variety of adverse environmental conditions likely to be encountered in all theaters of operation.

AT-1420 is available exclusively to military and law enforcement agencies.

2. SURFACE PREPARATION

- Coating is generally applied to metal and alloy components (firearms, knife blades, etc.).
- **Always ensure that firearms are unloaded and free of ammunition prior to applying coating.**
- Surfaces must be free from oils and other containments before applying coating.
- Recommend sandblasting the surface to be coated. Use fine 120 grit aluminum oxide, garnet or equivalent abrasives. Do not use glass or natural sand abrasives because this will reduce coating adhesion to the surface. Profile polymer or wood surfaces lightly (around 40 PSI).
- Do not handle blasted parts with bare hands as salts/acids will contaminate the surface and possibly cause a loss of adhesion in those areas that will be exposed to extreme heat or weathering.
- Carefully apply dry air to blow off any dust from the surface before beginning coating.

3. APPLICATION

- As with any new material, always test application and finished properties on a low value test article or panel before working on valuable surfaces.
- Application equipment may be cleaned using acetone or similar solvent once application is complete.
- Mix coating well before applying to ensure that no solids have settled to the bottom of the container. If in doubt, pour the contents into a new container just prior to application to ensure that no solids have settled.
- **Coating interior surfaces**:
    - **Spray Method (Recommended)**
        - Plug all of the openings or threaded holes to prevent coating from entering them.
        - Hang all parts to be coated to enable easy spraying of surfaces. It may be necessary to attach a thin wire on small pieces to prevent swinging while spray coating the part.
        - Use HLVP or similar spray gun fitted with a fine tip (i.e. 0.08). A finer spray mist is better, enabling the

product to flow out easier and help control the final film thickness.
    - Spray tip should be positioned approximately 6-8" from the substrate. This is particularly important if the application environment is above normal room temperature. Spraying from too far away will result in some solvents evaporating prior to contact with the surface and therefore resulting in sub-optimal performance.
    - Spray most difficult area first.
    - Spray all targeted surfaces until coated with a dry film thickness of 5-25 microns. **More is not better**. Exceeding the recommended dry film thickness will decrease overall performance.
    - **Note:** Wipe any runs or drops from the exterior. The outside is now ready to spray. Refer to next section for instructions. If any coating has dried on the outside surface, re-blast the exterior (only) to remove it before full application.
    - **AT 1400 Series Coating does not effectively bond to itself. Do not add additional coats without the use of AT 520 or similar primer. Multiple coats are only recommended in rare circumstances. Contact your ALPHATEK representative to discuss your requirements. Refer to instructions below.**
  - **Dip ("Slosh") Method (Acceptable)**
    - If it is not possible to effectively spray the interior components, a "slosh method" is acceptable
    - Plug one end with a rubber or silicone tapered plug. Pour in a modest amount of coating inside. Plug or cap the other end. Gently tip and roll the component to cover the interior. Remove one plug and drain back into a container.
    - Note: excess coating may be re-used for other interior applications. Recommend avoiding using the excess coating on exterior applications as the coating may have absorbed small grit particles during interior slosh application.
- **Multiple Coats (Interior Only)**
  - One coat of AT 1420 will be optimal for most applications. In rare cases where multiple coats are desired, an intra-coat primer/adhesive **must** be used. In no circumstances should a second coat of AT 1420 be applied directly to an existing layer of AT 1420. AT 520 is recommended as an intra-coat primer in these situations.
  - AT 520 High Temperature Primer may be applied as an intra-coat adhesion agent between multiple coats of AT 1420 (for interior applications only).
  - Coating must be applied thin (approximately 5-25 microns wet film). **More is not better**. Thicker application will reduce performance.
  - Per instructions in the previous section, apply AT 1420 on the inside and allow this to ambient cure until the coating is dry to the touch.
  - Coated part may be placed in an oven at 250°F for 30 minutes or longer to further cross-link the first coat.
  - Once the part is cool to the touch, apply a 5-25 micron wet film of AT 520 onto the cured layer of AT 1420. This needs to lightly wet the surface only.
  - Within **2-5 minutes** apply the 2nd AT 1420 Color Coat **wet-on-wet**.
  - **Do not** allow the AT 520 primer to dry before top coating.
  - Allow the coated part to dry to the touch in a warm air environment (room temperature to 110°F/43°C maximum)
  - For the best coating properties allow the part to cure for 5 days.
  - If time does not allow for a 5 day ambient cure then allow the part to remain at 110°F for as long as possible before elevating the oven temperature to 350°F/176°C for 30 minutes
  - These curing instructions are designed to slowly evaporate the solvents through the uncured film. Heating the coating too quickly will inhibit a proper cure and may also create vapor porosity within the coating that will decrease durability.

Exterior coating:

- If interior has been coating prior to exterior application, wipe any runs or drops from the exterior. If any coating has dried on the outside surface, re-blast the exterior (only) to remove it before full application. AT 1400 Series Coating does not effectively bond to itself.
- Follow instructions for Spray Method in Interior Coating section above.

- Exterior coating may be applied immediately after interior coating.
- Note: Multiple coats of AT 1420 are not recommended for exterior applications. Multiple exterior coats will have negligible impact on performance and will make the exterior coating vulnerable to direct impact.

7. DRYING & CURING TIMES

Drying Time	Dry to the touch in approximately 5-10 minutes at ambient temperatures. Warmer airflow will accelerate dry time. Coated parts may be handled and stored once dry to the touch. Avoid scraping until fully cured.
Curing Time	Full ambient cure properties are obtained approximately 5 days after application at room temperature. Ambient cure will result in the strongest and most durable finish. If necessary, coated parts may be placed in an oven at 350°F for 30 minutes to accelerate curing. Do not oven cure until treated components are dry to the touch under ambient conditions. Ambient curing is always recommended for optimal performance. Coated parts may be shipped after 24 hours.

8. COVERAGE RATE

- Coverage will be approximately 1,250 square feet per gallon (116 square meters per liter) at dry film thickness of 15 microns.

9. STORAGE STABILITY & SHELF LIFE

The shelf life is one year when stored in the original, unopened container. Store containers in a well-ventilated and covered area away from extreme heat and moisture. Contact your ALPHATEK representative if you have any questions about the products or its uses.

10. SAFETY

Wear safety goggles or a face shield for protection. Work in a well-ventilated area. If work area is poorly ventilated, use a respirator. Refer to the Safety Data Sheet for this product prior to use.