Cool Barrel™ (1187)

If your goal is to keep your gun barrels cooler, Cool Barrel™ is the product you want. The purpose of this thin-film, exterior nano-ceramic coating, is to wick heat out of the metal of a gun barrel at a very rapid pace in order to lower the temperature of the metal. Heat that is loading into the barrel coming from the ignition & explosion of the gun powder, and the frictional heat coming from the rub of the metal of the bullet traveling through the barrel are the two primary sources of heat. The physical aspects of the coating grab the heat off of the substrate and expels it out into the surrounding air, which then quickly and naturally dissipates. The end result is lower barrel temperature that is less prone to the problems associated with heat overload.

Technical Data Sheet

Cool Barrel™ is a high performance, single component, thermal transfer nano-ceramic Matte Black coating that is designed to be applied to the exterior of the barrel at a thickness of 2-5 microns. It can be ambient or oven cured. The coating creates a covalent bond to the surface, letting thermal energy rapidly migrate away to the coolar air surrounding the barrel. It also protects and helps to prevent the development of oxidation and corrosion.

Properties

- Color Matte Black
- Viscosity 16-18 sec. #2 Zahn
- Percent of Solids 28
- Odor (liquid) Slight Solvent
- Odor (cured) None
- V.O.C. Exempt per CFR 51.1 / regulation 8

- RoHS_____Compliant
- REACH_____Compliant
- Halogens _____None
- Thermal Stability (cured)_____1800°F + (648.8°C)
- Conical Bond (⅛ inch mandrel)_____Passed (ASTM D522-93a)
- Cross cut adhesion_____5B (ASTM D3359)
- Coefficient of Friction _____0.03μ (ASTM D2047)
- Specific Gravity_____0.889 (ASTM D891-09)
- Pencil Hardness _____9h (ASTM D3363)
- Average applied dry film thickness_____3 to 5 microns
- Estimated Coverage Rate (3 microns)__4,200 sq./ft. per gallon
- Dry to Touch (time @ambient)_____15 – 25 minutes* (average)
  (*a warm airflow will reduce time required to reach “Dry to the Touch”)
- Ambient cure (full properties) _____5 days
- Cure Time (time @ 350°F)_____30 – 40 minutes PT

Application

For proper application: the intended surface, metals or composite, must be clean and free from oils, dirt and any other previous contaminants that may have been on the surface.

Application on metals and/or alloy barrel or components

- It is always best to create a blast profile by a fine 120 grit aluminum oxide, garnet or equal, on the surfaces that will be coated.
- Do not use Glass or natural Sand as this will impede the adhesion or the coating to the surface.
- After blasting, blow-off the parts with clean dry air, then wipe the surface with denatured alcohol or acetone to remove any remaining oil or oil film. 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 see extreme heat or extreme weathering.
- Masking of threads is highly suggested if they are present.
- Shake contents well before applying to ensure that the coating is well mixed and uniform. To ensure that no solids are present in the bottom of the container, use a paint stick to check for product components that have settled and clumped. If no clumps are exist, and the contents have been shake thoroughly, you are ready to spray.

- Again with clean dry air blow off any dust from the surfaces, preventing contaminating the coating.

- Apply the coating at a dry film thickness of approxiamatly 3-5 microns using a HLVP or similar spray gun fitted with a fine tip (i.e. 0.8). A finer spray mist is better, enabling the product to flow out easier and help control the products thickness. Do not exceed the 5 micron thickness.

- Spray the hardest areas to coat first. Then start to spray the remaining areas until the entire surface is coated.

- The coating can be ambient air cured or oven cured. Either way, allow the surface to achieve a dry-to-touch status. This happens between 15-25 minutes depending on temperature, humidity, and air flow. A warm 110°F (max) air flow will accelerate the DTT.

- Once it acheives the DTT level, is can either continue to air-cure and will be fully cured in 5 days, or it can be oven cured.

- An ambient 5 day cure will result in a tougher more durable finish than oven curing, as the solvents leave slowly vs. being thermally forced out through the coating, opening micro-pores. If an oven cure is required; once the coating has reached a DTT state, it can be placed into a convection type oven, ramping the temperature to the max of the substrate's capacity or 350°F for 35 minutes (substrate temperature). The slower the ramp up the better, as forcing the retained solvents out through the coatings surface, potentially creates micro-pin-holes as the gases expand and escape through the partially cured surface film of the coating.

- To clean tools or application equipment, use acetone, MEK or similar solvents.

- Handling and storage: Store in cool dry location with adequate ventilation. Do not store in direct sunlight. Keep containers tightly sealed when not in use. Avoid leaving open containers during use. Store in termperatures between 55°F and 80°F.

- Shelf life if unopened, and stored properly, the coating should last for one year. Once opened, the coating can be stored properly and last for up to 6 months.

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