

## Introduction

Extreme CMT is a lubricant designed to operate in high temperatures and in areas of excessive friction within the internal combustion engine. Repurposing the lubricant for use within firearms brings the consumer a production that thrives in an environment of unrelenting pressure, temperature, and operating tolerances found in precision engines available today. Firearms are also precision instruments that operate within the tolerances of designed pressure, temperature, and timing. Through real-time topical application or long-term saturation, Extreme CMT effectively fills the gaps within the surface of materials with a coating of microscopic ceramic particles. This provides a reduction in friction, which causes heat and slowdown of materials moving as intended. Below are the details of a couple of range days, one with a pistol using high internal chamber pressures and a rifle firing the popular 5.56mm cartridge at roughly 3000 feet per second. These platforms were chosen to provide some common options for both popular frame designs, calibers, and shooting styles.

### Range Day 1

- Platform
  - Glock 20 - 10MM
    - Aftermarket Trigger Spring (Ghost 3.5# customizable LoP)
    - Aftermarket Extended Takedown Lever
    - Glock OEM Extended Slide Release
    - Aftermarket Titanium Striker Safety (Ghost)
    - OEM Recoil Spring at 17.0 pounds
- Pre-Condition
  - Thoroughly cleaned, full disassembly and re-assembly using Hoppe's Number 9 Cleaner
  - Lubricated with Extreme CMT at factory recommended lube points and amounts
    - Lubricant lingered on lube points for less than 60 minutes before firing
- Number of Rounds Fired
  - 225 10MM (180grain FMJ)
    - LAXAmmo Factory New Reloaded ([Link](#))
    - Loaded to 28000PSI (193.0532 Megapascals (MPa)) Chamber Pressure
  - 30 consecutive magazines at 15 rounds each
    - Fired consistently at one shot per second until next magazine
    - 30-second cool down between magazines for reloading
- Firing Position
  - Sitting and braced in a single-post shooting bench ([Link](#))
- Target Distance
  - 7 yards (21 feet)
- Operating Observations
  - No gumming or excessive spray of lubricant during firing sequence
  - No flames or ignition of lubricant
  - No odor or fumes detected [Operating in an outdoor range]
  - No Failure to Feed or Failure to Fire at any time
    - Known functional platform with no pre-existing FtF/FtE issues
- Firing Characteristics (Measured with Digital Caliper)
  - 75-shot groups per 12x12 Sight-in Target resulted in the following groups
    - 0-75 - 3.2 inches
    - 76-150 - 3.5 inches
    - 151-225 - 3.4 inches
    - Average = 3.36667 inches
      - NON Extreme CMT Lubricant average of 4.1 inches @ 225 rounds

- Same ammo, bench, rest, and platform, sans Extreme CMT
- Post-Conditions
  - No abrasive compounds or increased wear detected at contact points
  - No sticking or difficulty with disassembly
  - Slide Rack pressure measured at 17.1 pounds
    - Lends evidence that the lubrication is still working, as this is the weight prior to firing.
- Duration of Cleaning
  - Cleaning required less abrasion/scrubbing to remove carbon buildup and debris from slide, barrel, and feed ramp within the frame.
  - Most areas were easily cleaned with a microfiber or terry-cloth towel dabbed with Hoppe's 9 cleaner.
  - Barrel feed ramp and sidewalls requires some effort to remove compressed carbon on the barrel face, typical with any cleaner/lubricant.
  - No other defined positives or negatives related to cleaning, but anecdotally, did "feel" smoother with less friction over treated areas.
- Operating Temperatures
  - Ambient temperature at the time of firing - 47 degrees F
  - Barrel Temperature at 225 rounds - 189 degrees (per handheld IR Thermometer)
    - Non Extreme CMT - 211 degrees
  - Slide Temperature at 225 rounds - 123 degrees (per handheld IR Thermometer)
    - Non Extreme CMT - 137 degrees

## Range Day 2

- Platform
  - Bushmaster M4A3 Patrolman's Carbine - 5.56MM
    - 5x Slide to Side Magnifier
    - EOTech Holographic 60 MOA circle with 2 MOA center dot
    - Aluminum 15 inch vented Keymod Hand guard (2.5 inside diameter)
    - Direct Impingement (Gas-Driven)
    - Nickel-Boron Bolt Carrier Group - 5.56MM Mil-spec
    - Aftermarket Trigger (Giselle Drop-In Two-Stage 3.0/1.5)
    - Parkerized Snaked & Fluted 18-inch Chrome Moly Noveske Barrel
    - Adjustable Black Rain Ordinance Low-Profile Gas Block
    - Carbine Length gas rod
    - Magpul Fixed PRS Gen 2 Stock
    - Heavy H3 Buffer counterweight - 5.5 ounces Tungsten
    - Wolff Rifle-length heavy buffer recoil spring
    - SilencerCo Specwar 5.56 Suppressor (direct thread, dry)
- Pre-Condition
  - Thoroughly cleaned, full disassembly and re-assembly using Hoppe's Number 9 Cleaner
  - Lubricated with Extreme CMT at factory recommended lube points and amounts
    - Lubricant lingered on lube points for 24 hours before firing
- Number of Rounds Fired
  - 300 5.56MM (62grain M855 SS109 Penetrator FMJ Boat Tail)
    - IMI ([Link](#))
  - Average 2862 Feet Per Second @ 300 rounds
  - 10 consecutive magazines at 30 rounds each
    - Fired consistently at one shot per second until next magazine
    - 60-second cool down between magazines for reloading

- Firing Position
  - Sitting and braced in a single-post shooting bench ([Link](#))
- Target Distance
  - 50 yards (150 feet)
- Operating Observations
  - No gumming or excessive spray of lubricant during firing sequence
  - No flames or ignition of lubricant
  - No odor or fumes detected [Operating in an outdoor range]
  - No Failure to Fires
  - No timing issues identified or resulting Failure to Feed occurrences
  - Brass ejection within 10 feet to the shooter's 5o'clock position
    - No change with non-Extreme CMT lubrication
- Firing Characteristics (Measured with Digital Caliper)
  - 60-shot groups per 12x12 Sight-in Target resulted in the following groups
    - 0-60 - .73 inches
    - 61-120 - .89 inches
    - 121-180 - 1.05 inches
    - 181-240 - 1.08 inches
    - 241-300 - 1.12 inches
    - Average = .974 inches
      - NON Extreme CMT Lubricant average of 1.19 inches @ 300 rounds
        - Same ammo, bench, rest, and platform, sans Extreme CMT
- Post-Conditions
  - No abrasive compounds or increased wear detected at contact points
  - No sticking or difficulty with disassembly
  - No issues with bolt going into battery from fully-rear position
  - Charging the rifle after shooting and before cleaning remained smooth with only spring tension.
- Duration of Cleaning
  - Cleaning required less abrasion/scrubbing to remove carbon buildup and debris from bore and feed ramps.
  - Most areas were easily cleaned with a microfiber or terry-cloth towel dabbed with Hoppe's 9 cleaner.
  - Barrel feed ramp and sidewalls near gas tube inlet of upper receiver required some effort to remove gas carbon residue on the barrel face and within the M4 barrel star, but typical effort with NON Extreme CMT lubricant.
- Operating Temperatures
  - Ambient temperature at the time of firing - 42 degrees F
  - Barrel Temperature at 300 rounds - 292.1 degrees (per handheld IR Thermometer)
    - Non Extreme CMT - 311.3 degrees
  - Hand guard Temperature at 300 rounds - 109 degrees (per handheld IR Thermometer)
    - Non Extreme CMT - 117 degrees

### Long-Term Saturation

The recommended application of Extreme CMT is to allow the lubricant to soak into the metals requiring lubrication. This author immersed core components of an M4 platform, including the barrel, barrel feed ramps, bolt, extractor, ejector, firing pin, buffer tube, charging handle, and upper receiver charging handle channel into a solution and let sit for 336 hours (14 days) with ambient continuous temperature of 70 degrees. The firearm was reassembled with excess lubricant wiped off during the reassembly process. Upon reassembly,

charging the firearm seems to require considerably less effort. Prior to this application, charging this M4 with the Wolff Heavy Recoil Spring was at 16.9 pounds. After the application of Extreme CMT, charging was captured at 13.7 pounds, a 19% reduction. The spring through the buffer tube during the cycling of a fired round had noticeably less "twang" through the buffer tube. Trigger pull in stage 1 to stage 2 was reduced to 2.2 pounds, with break on stage 2 at .9 pounds, for a total of 3.1 pounds. The trigger was tested at 4.0 (2.5 and 1.5) prior to the application of the lubrication.

- Firing Characteristics (Measured with Digital Caliper)
  - 30-shot groups per 12x12 Sight-in Target resulted in the following groups
    - 0-30 - .62 inches
    - 31-60 - .78 inches
    - 61-90 - .81 inches
    - 91-120 - .89 inches
    - 120-150 - .94 inches
    - Average = .808 inches
      - 24-hours soak with Extreme CMT = .974 inches
      - NON Extreme CMT Lubricant average of 1.19 inches @ 300 rounds
        - Same ammo, bench, rest, and platform for all tests

## Impressions

Overall, there were no specific issues that precludes long-term use of Extreme CMT with either platform. This author has exclusively used Extreme CMT with the Glock 20 for 3500 rounds and the M4 at 2000 suppressed rounds without a failure or any problems with reliability, timing, or functionality. There are no identified areas of excessive wear or rubbing because of the ceramic content of the lubricant, nor any issues with penetration into non-metal material, such as polymers, plastics, or rubber. While relative, this author also feels a smoother and crisper trigger response after continued use of Extreme CMT, even when compared to higher price per ounce firearm lubricants, such as Gun Butter. Cleaning is less scrubbing and more simply rubbing the components with towels or rags.

Safety Caution -- When dealing with microscopic ceramic particles, is essential to ensure eye protection is worn at all times. Minimize touching of the face and eyes while handling this product.

