

The use of Ballistol-Lube on Firearms and Related Equipment

History

Ballistol was invented in 1904 in response to a German Army requirement. The name 'Ballistol' is a Greco-Latinism meaning 'Ballistic Oil'. It was engineered to be usable on all metals, leather and wood and as a wound disinfectant for the treatment of minor cuts and infections. After testing it for one year Ballistol was type classified and fielded by the Wehrmacht and remained in use until 1945. In today's German Army, the Bundeswehr, Ballistol is used by several Special Forces units, such as the "Kampfschwimmer", a unit similar to the Navy Seals. In Europe Ballistol remains a favorite of hunters and sportsmen.

In 1913 Messrs. Kolb, a Philadelphia corporation submitted Ballistol to the "War Department's" Springfield Armory for T&E. Ballistol was tested on several firearms and Ordnance Captain Ramsey notified Messrs. Kolb by the end of April 1914 that Ballistol had been found to be far superior to the Cosmoline used at the time by the US Army for firearms maintenance. Kolb was encouraged to submit a proposal in response to the Army's next RFP. However, in the Fall of 1914 the Austrian Army marched into Serbia and WWI began.

In the 1980's Ballistol was distributed in the United States by H&K Firearms. Since January 01, 1993 Ballistol has been marketed in the United States exclusively by Ballistol USA. In 1994 the Navy's Seal Team 6 and the US Coast Guard began using Ballistol. In 1995, Ballistol was manufactured here in the United States for the first time. Today Ballistol is used by numerous state and local law enforcement departments throughout the US. For Federal Agencies Ballistol is available through the Defense General Supply Center (DGSC) of the Defense Logistics Agency. The CAGE Code for Ballistol is "OZKM2". Inquire about the NSNs for Ballistol sizes.

Cleaning

Another problem found with many gun oils is that they are not good cleaners. The gun owner has to use a cleaner first and then a lubricant. And then there is no guarantee that the lubricant is a good corrosion inhibitor. Ballistol fulfills all three functions: it cleans, lubricates and protects against corrosion!

Ballistol has the capability to dissolve traces of copper, zinc, tombac and lead. It can actively eliminate residues of these metals from the chambers and bores of firearms. Test it by placing a dispensed and slightly corroded brass shell into Ballistol so that the Ballistol covers approximately half of the shell. Leave the shell in the Ballistol for approximately 30 minutes and wipe the part exposed to Ballistol with a dry cotton cloth. You will see it has become shiny again. Ballistol neutralizes acidic residues and dissolves the inorganic residues from black powder in black powder guns. A 50% / 50% mixture of Ballistol/water, called "Moosemilk" by blackpowder shooters and muzzleloaders, is extremely effective for this purpose.

Barrel

Clean your firearm from the chamber end whenever possible. Make sure that the cleaning rod is of the proper length (long enough to reach all the way through the barrel), and that your bore brush is the same caliber size as your weapon. Saturate a clean patch with Ballistol and pass it through the barrel, allow sufficient time for the chemical action of Ballistol to dissolve the fouling. Saturate the bore brush with Ballistol and pass through the barrel at least 10 times to remove carbon, fouling and leading. Emphasis should be placed on the chamber shoulder area and cartridge seat. Replace the bore brush with a slotted patch holder or jag. Run it slowly through the barrel. Repeat this procedure until patch comes out clean. After thoroughly cleaning the barrel, introduce a clean patch lightly moistened with Ballistol to apply a thin coat to protect the barrel from rust while stored.

Frame

Use **Ballistol** and a nylon brush to remove any fouling on the frame. Brush the inside of the frame, being careful to remove lead, powder and carbon residue from the magazine well. Clean the interior and exterior of the frame with a cloth or patch moistened with **Ballistol**. Pay particular attention to cleaning in and around the frame rails as well as the surface that interlock with the barrel during firing.

Magazine

Disassemble the magazine and clean with a nylon brush and a lint free cloth. In addition, the exterior and metal parts may be treated with a cloth lightly moistened with **Ballistol**. This will protect the metal surfaces from the environment.

Polymer frames and stocks

Use a cloth moistened with **Ballistol** to protect your polymer frames, grips, magazines and stocks. **Ballistol** will also restore their original luster.

Slide

Clean the interior and exterior of the slide with **Ballistol** and a nylon brush. Special attention should be paid to cleaning the extractor. Dirt and residue around the extractor and the breech face can cause extraction related toppages as well as failures to feed.

Corrosion Inhibition

There is more than one type of corrosion. Common corrosion is oxidation, a chemical reaction between ferrous metals and the oxygen contained in air and water. Rust is the best example for this type of corrosion. But there are also other types of corrosion, such as acidic corrosion, galvanic corrosion and stress corrosion. Salt water corrosion is a combination of oxidation and acidic and galvanic corrosion. It is virtually impossible to stop corrosion completely. Corrosion happens, albeit very

slowly. It is, therefore, more honest to speak about inhibiting corrosion rather than stopping or preventing it. **Ballistol** is mildly alkaline (pH between 8.5 and 9.5). Therefore, it is capable of neutralizing mild acids and acidic residues such as hand sweat (no fingerprints etched into the soft Damascus steel of the old collector gun) or residues from black powder (which are acidic). **Ballistol** does not only protect against normal corrosion (i.e. oxidation) but also against acidic and galvanic corrosion, against which non-alkaline corrosion inhibitors are completely useless. Due to its low surface tension **Ballistol** creeps and penetrates. It will actively propel itself and reach areas inaccessible for the applicator. It will even creep upwards against gravity. **Ballistol** neutralizes blueing salts and flux bleeding out around soldering seams thus preventing damage to and discoloration of the blueing of your gun.

Emulsification

Most general lubricants and gun oils claim to be so-called water displacement oils. WD-40 is the typical example. The principle of water displacement works fine - but only under certain circumstances: the surface must be smooth and flat or convex and there must be an area to where the water can be displaced. By contrast, in a confined space such as a bolt hole or a countersunk hole or an area with a concave or cylindrical configuration the principle of water displacement does not work. Convince yourself: fill a test tube or small glass half an inch high with WD-40 or with the gun oil of your choice. Then add water about half an inch high. You will see that the water displaces the WD-40 or other gun oil, which will end-up floating on top of the water. The area which you wanted to protect, will no longer be protected. But the oil on top of the water will prevent it from dissipating and so corrosion will set in underneath the oil. Now do the same experiment with **Ballistol**. When you pour water into the **Ballistol** you will see the **Ballistol** actively emulsify with it. Test the lubricity of this mix. Stick your index finger into it and rub it against your thumb. You will feel that **Ballistol** still lubricates. You will also see that the area where the water was, will now be protected by a mix out of **Ballistol** and water. Just as this mix can still lubricate it can also still inhibit corrosion. The fact that **Ballistol**

BALLISTOL

MATERIAL SAFETY DATA SHEET (cont.)

TECHNICAL DATA SHEETS FOR BALLISTOL

Contents

Ballistol contains medicinal grade mineral oil, alkaline salts of oleic acid, several alcohols, Benzyl Acetate and an oil from vegetal seeds. The mineral oil is unchlorinated and conforms to the specifications of US Pharmacopeia XX.

Volatile Organic Components (VOCs)

As an aerosol Ballistol contains 33.8% VOCs. As a non-aerosol it contains 5.3% VOCs.

Propellants

Ballistol aerosols contain A-70 (a Butane, Propane blend) as propellants. The pressure inside the full can is 7-7.5 bars. Ballistol aerosols contain 14% Isohexane as a thinner.

Risk of Explosion

Theoretically a risk of explosion exists with the use of Butane and Propane as propellants for Ballistol aerosols. However, the actual risk is quite negligible, as the following information illustrates:

<i>Explosion Limit / Propellant</i>	<i>Butane</i>	<i>Propane</i>
Lower Explosion Limit (LEL)	1.5 vol.% (37 gr. / cm ³)	2.1 vol.% (39 gr. / cm ³)
Upper Explosion Limit (UEL)	8.5 vol.% (210 gr. / cm ³)	9.5 vol.% (180 gr. / cm ³)

In order to produce an explosive mix of Propane or Butane with air an entire 11 oz. aerosol can of Ballistol would have to be emptied into one cubic meter of air and retained in this space. If any leakage occurred, the LEL would not be reached. It is obvious that for practical purposes the risk of explosion using Ballistol aerosols is fairly insubstantial.

Electrical Properties of Ballistol

Ballistol has a comparatively high dielectric strength. Its electric conductivity is 0.005 Micro-Siemens / cm. This is 1/60 of the electric conductivity of water (0.3 Micro-Siemens / cm). Undiluted and unemulsified Ballistol has an Ohmic resistance of approx. 800 Kilo-Ohms. For most practical purposes Ballistol can be considered a non-conductor. However, Ballistol does have the characteristic of a weak electrolyte due to the free ions contained in it. This characteristic diminishes with age and with extended exposure to an acidic environment. It increases, when Ballistol is emulsified with water.

User Safety and the Environment

Most general lubricants and corrosion inhibitors and most gun oils and gun cleaners contain rather aggressive chemicals. Paraffin-based lubricants contain a dirty or even chlorinated paraffin, which is toxic and has a tendency to gum up and harden, if it decomposes it releases chlorine into nature... Most other products contain substances such as Teflon (PTFE), silicone, tar, trichloroethane or tetrachloroethylene, which are all listed as cancer causing agents. Or they contain petroleum, kerosene, benzene or chlorinated paraffins, all of which are toxic ("harmful or fatal if swallowed") for warm blooded organisms and fish. Some are "skin and eye irritants". Others emit toxic vapors. Very few are biodegradable. **Ballistol** does not contain anything known to cause cancer. **Ballistol** is non-toxic for warm-blooded and aquatic organisms. **Ballistol** meets the criteria of the Federal Trade Commission for the claim of biodegradability and **Ballistol** sprays do not contain any CFCs.

Wood

Most common gun oils, solvents, cleaners or corrosion inhibitors are not good for your gun's wooden stocks. Some attack high gloss varnish, some will bleach the wood, some will wash the oil out of your oil stocks. **Ballistol** is good for wood and wooden stocks. It was designed to protect even untreated gun stocks against humidity, insects and fungus and to be compatible with all sorts of paints and varnishes, even those on most antique guns. **Ballistol** can be used to re-treat oil stocks. It penetrates into the wood and inhibits the growth of fungus and mildew in the wood.

Caution: It is sometimes uncertain which type of paint, lacquer or varnish was used on antique guns or furniture. Test **Ballistol** on a small spot first!

CAUTION: Be sure your weapon has been safely unloaded before attempting to clean it. *Check twice!* Rifles, if magazine type, remove magazine; Bolt type, remove bolt; Tubular type check to see that there are no cartridges at the end of the tube or on the carrier. Check the chamber to be sure that there is no cartridge inside. Shotguns, open breech and check that there are no shells. Be sure that the magazine is clear of shells. Remove the barrel on automatic and pumps when possible. Pistols, remove magazine and check to make sure there is no cartridge inside. Revolvers, open cylinder and check that there is no cartridge in the chamber.

WARNING: Individual manufacturer's instruction on the care, cleaning and lubricating of your firearm should be strictly adhered to. Please, refer to the owner's or Armorer manual specific to the weapon being maintained for manufacturer's recommendations.

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