



Emergency and First Aid Procedures:

In the event of contact with eyes or skin, flush with large quantities of water. If ingested, DO NOT INDUCE VOMITING, ASPIRATION COULD OCCUR. Consult with physician immediately.

**Control and Protection Information**

Respiratory Protection Information	Not required.	Eye Protection	Not normally required.
Ventilation	Locally as needed.	Protective gloves	Not required.
Mechanical	As needed.	Other Protective Clothing	Not normally required.

Work & Hygienic Practices:

Avoid contact with eyes. Use in ventilated area. Do not use around flame or hot surface. Do not spray into open flame. Do not puncture aerosol container.

**Safe Handling and Disposal Information**

Steps to Take in Case of Spill:

Wipe up with absorbent rags. Use oil absorbent material. Sweep up and place in container. Wash area with warm water and detergent to eliminate slipperiness.

Waste Disposal Method:

Follow applicable Federal and local regulations.

Handling and Storage:

Store in cool dry place out of sunlight. Do not store in areas exposed to temperatures above 49 °C (120 °F). Store and use in ventilated room. Keep away from hot surfaces. Keep out of reach of children.

**Transportation Data**

	<u>Aerosol</u>	<u>Non-Aerosol</u>
Description:	Aerosols, flammable	Petroleum Distillate n.o.s.
ID Number:	UN1950	UN1268
Hazard Class:	2.1	3
Packaging Group:	NONE	III
Domestic Surface:	Consumer Commodity, ORM-D	Consumer Commodity,ORM-D, for inner containers no more than one gallon.
Air:	Check with Dangerous Goods desk, or call WTC, Inc.	

**Disclaimer**

The information and statements contained in this document have been obtained from the manufacturer and from recognized reference sources as provided to or obtained by the Washington Trading Company, Inc. (WTC). WTC believes the information in this document to be true and reliable but expressly disclaims any liability for providing such information and toxicological data.

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**Acronyms :**

LEL	=	Lower Exposure Limit
UEL	=	Upper Exposure Limit
LD 50	=	Median Lethal Dose. It is the dose at which 50% of a given population will experience fatalities due to a chemical substance.
NTP	=	National Toxicological Program.
IARC	=	International Agency for Research on Cancer.

PEL = Permissible Exposure Limit (as set by OSHA).  
 CAS = Chemical Abstract Service  
 TLV = Threshold Limit Value

# 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:

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

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.

Therefore, Ballistol, in its non-emulsified form, will not interfere with the flow of electric current in electrical networks or devices. It will not normally build electrical bridges or cause creeping currents or short circuits to occur, even if applied directly on electrical equipment while energized. Ballistol should not be applied to electrical or electronic equipment while water or a high degree of moisture are present in the equipment.

Ballistol has been tested by GTE Testmark Laboratories (now Inchcape Laboratory) in 1994 for its compatibility with Alcatel and Siecorm telecommunication cable insulation. It was found to slightly decrease the tensile strength and to significantly increase the elongation of HDPE insulation material. It was also found to improve the DC insulation capability of the HDPE material by factor 5 at 3,000 and 10,000 Volts DC. (See attached).

**Warning: Ballistol should not be applied on electrical installations while they are wet from rain or condensation water or similar, since this may cause a short circuit. When electrical installations, which have been treated with Ballistol, are exposed to direct contact with a significant amount of water, a short circuit may result, since Ballistol is a lubricant, not a water blocker.**

### **Compatibility of Ballistol with Other Materials**

Ballistol is fully compatible with all metals including aluminum. However, Ballistol dissolves traces of copper, zinc, lead and tombac and can, therefore, be used to clean brass, bronze and silver.

Ballistol is compatible with all types of unfinished woods. Ballistol is compatible with paints and varnishes which are chemically resistant to petroleum. Caution is recommended when using Ballistol on antique furniture or antique musical instruments. Paints and varnishes from past centuries may not be resistant to Ballistol.

Ballistol can be used on all smooth leathers. Its use on suede is not recommended, since it will spoil its looks. Ballistol can be emulsified with water and mixed with gasoline, diesel fuel or antifreeze. Ballistol will chemically interact with and partially or fully neutralize substances of an acidic nature such as, but not limited to, human sweat, battery fluid, residues from tannic acid in leather.

### **Ballistol - Alkalinity**

Ballistol has a pH of between 8.5 and 9.5. This variance occurs, because the pH of Ballistol can only be measured, when Ballistol is emulsified with water and because the concentration of Hydronium ions varies with the concentration of Ballistol in the emulsion. With an emulsion of 50 gr. of Ballistol in 1000 gr. of water a pH of 9 should normally result.

### **Ballistol as a Corrosion Inhibitor**

Most corrosion inhibiting lubricants can only protect against normal oxidation. They do so by covering up the surface, which they are supposed to protect, and prevent contact with water and air. Due to its alkalinity Ballistol can also protect against galvanic corrosion, acidic corrosion and salt water corrosion. Ballistol contains oxygen binders. They make the oxygen, contained in water or air, unavailable for oxidation. Due to its low surface tension, Ballistol is capable of creeping into the smallest openings even against gravity. Accordingly, Ballistol provides not only passive but also active protection against corrosion. However, Ballistol is not a permanent coating or paint. Its protective effect will be the stronger the more often it is re-applied.

### Kinematic Viscosity

The following values have been established for the kinematic viscosity of Ballistol Liquid in Centistokes:

<u>Temp. of Ballistol</u>	<u>Centistokes</u>
10 C	73.2
20 C	41.8
30 C	28.0
40 C	19.5
50 C	13.9

Due to anti-oxidants contained in it Ballistol will not easily harden or gum up. It retains its lubricity over extended periods of exposure. Due to its extreme purity the mineral oil contained in Ballistol survives autoclaving and leaves enough of a mineral oil film behind to provide a reasonable measure of lubrication and corrosion prevention even after autoclaving. As an emulsifying oil Ballistol does not lose its capability to lubricate in the presence of water.

### Physical Indicators

<u>Vapor Pressure:</u>	Aerosol:	5 hP
	Non-aerosol:	6.5 mbar at 20 C
		10.0 mbar at 50 C
<u>Flame Point:</u>	51 C	
<u>Self Ignition Point:</u>	400 C (when oxygen present)	
<u>Disintegration Point:</u>	Approx. 500 C (when no oxygen present)	
	Thermic disintegration beginning at approx. 400 C	
<u>Evaporation Rate:</u>	At 20 C:	14% in 40 hours
		28% in 480 hours
	At 107 C:	15% in 0.5 hours
		30% in 12 hours

### Non-Toxicity

In experiments with rats and rabbits the animals' entire intestinal tract and stomachs were filled with Ballistol. The animals showed signs of uneasiness. After the Ballistol had been evacuated from their bodies as provided for by nature, the animals without exception appeared to be in excellent condition and showed no adverse prolonged side effects. It was not possible to establish an LD 50.

Ballistol does not contain ingredients considered hazardous by OSHA. It does not contain any ingredients, which

normally may be considered harmful or fatal if swallowed, BUT DO NOT INDUCE VOMITING, ASPIRATION CAN OCCUR. CONSULT A PHYSICIAN IMMEDIATELY. It does not contain any ingredients which may be toxic for warm-blooded organisms, reptiles or aquatic organisms, **if used as directed**. However, Ballistol may kill small insects such as aphids, mites, chiggers, ants, termites, spiders or wasps etc. by mechanically clogging up their respiratory systems, as most oils will.

Ballistol does not contain any ingredients known to cause cancer such as 1,1,1 Trichloroethane, 1,1,2,2 Tetrachloroethylene, tar, Teflon (Polytetrafluorethylene) or Silicone. Ballistol does not contain chlorine or chlorinated substances. Ballistol aerosols do not contain CFCs. The Isohexane contained in Ballistol aerosols as a thinner contains less than 3% n-Hexane, which make it non-toxic. Ballistol meets the criteria of the Federal Trade Commission for the claim of biodegradability. It has been found to biodegrade and/or photodegrade within a period of approximately 24 months in aerobic decomposition as defined by OECD approved closed bottle tests.

### **Further Information**

For further technical information about Ballistol contact Washington Trading Company, One Cypress Knee Trail, Kitty Hawk, NC 27949, phone: 252- 261-6181 fax: 252-261-0408 email [doug@ballistol.com](mailto:doug@ballistol.com).

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