



MATERIAL SAFETY DATA SHEET

Olin MSDS No.: 00058.0001
Revision No.: 13

Revision Date: 1/1/11
Supercedes: 1/1/10

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: TRACER ROUNDS
Chemical Name: Mixture – Metal Alloy
Synonyms: Caliber .50 Tracer M17, Cartridge 7.62 Tracer M62, Cartridge 5.56 MM Tracer M196, 5.56 MM M856 Tracer Round
Chemical Family: Metal mixture
Formula: Not applicable - mixture
Product Use/ Description: Loaded Round

COMPANY ADDRESS MSDS Control Group
Olin Corporation – Winchester
Division, Inc.
600 Powder Mill Road
East Alton, IL 62024
www.winchester.com

TECHNICAL INFORMATION:
618-258-3507

EMERGENCY TELEPHONE NUMBER:
618-258-2111

2. COMPOSITION / INFORMATION ON INGREDIENTS

CAS Number	Components	% By Weight	EINECS/ ELINCS #	EU Classification	
				Symbol	R-Phrase
7440-50-8	Copper	25 - 65	231-159-6	None	None
7440-66-6	Zinc	1 - 35	231-175-3	F (as dust or powder)	R 15-17
7439-92-1	Lead	7 - 20	231-100-4	T, N*	R1-33-50/53-62
7439-89-6	Iron	0.1 - 15	231-096-4	None	None
10042-76-9	Strontium nitrate	0.1 - 2	233-131-9	None	None
1314-18-7	Strontium peroxide	0.1 - 5	215-224-6	None	None
7439-95-4	Magnesium	0.1 - 1	231-104-6	None	None
7440-36-0	Antimony	0.1 - 5	231-146-5	None	None
9004-70-0	Nitrocellulose	5 - 15	Not listed	E*	R 2
55-63-0	Nitroglycerin	1 - 5	200-240-8	E, T+, N	R 3-26/27/28-33-51-53
84-74-2	Dibutyl phthalate	0.5 – 5	201-55-74	None	None
15245-44-0	Normal Lead styphnate	0.1 - 1	239-290-0	E, T, N	R61-3-20/22-33-50/53-62

*This material is not listed in Annex 1 of Directive 88/379/EEC. Olin has classified the material according to the conventional method based upon information from similar materials.

OSHA REGULATORY STATUS: Explosive

3. HAZARDS IDENTIFICATION

CAUTION!

EXPLOSIVE. KEEP AWAY FROM HEAT. DO NOT SUBJECT TO MECHANICAL SHOCK. PARTICLES FROM FIRING MAY BE HARMFUL IF INHALED. DO NOT TAKE INTERNALLY.

HAZARD RATINGS (for dust or fume)
Hazardous Materials Identification System (HMIS)

Degree of hazard (0 = low, 4 = extreme)
Health: 0 Flammability: 0

Physical Hazard:
Explosive: 2

National Fire Protection Association (NFPA)

Mixture. Not rated.

HUMAN THRESHOLD RESPONSE DATA

Odor Threshold: Unknown
Irritation Threshold: Unknown
Immediately Dangerous to Life or Health (IDLH) Value(s): The IDLH for this product is not known. The IDLH for dibutyl phthalate is 4000 mg/m³. The IDLH for copper and lead is 100 mg/m³. The IDLH for nitroglycerin is 75 mg/m³. The IDLH for antimony is 50 mg/m³.

POTENTIAL HEALTH EFFECTS

This product is composed of a finished metal alloy cartridge which contains the various components completely sealed within. Therefore, under normal handling of this product, no exposure to any harmful materials will occur.

When the ammunition is fired, a small amount of particles may be generated which may be slightly irritating to the eyes and the respiratory tract. The particles may contain trace amounts of these harmful substances:

Copper: Inhalation of high concentrations of metallic copper dusts or fumes may cause nasal irritation and/or nausea, vomiting and stomach pain.

Nitroglycerin: Will produce dilation of blood vessels and drop in blood pressure which may affect the heart. It has also been shown to cause methemoglobinemia (cyanosis).

Lead: Ingestion of large amounts of lead can cause abdominal pain, constipation, cramps, nausea and/or vomiting. Chronic exposure to lead can cause kidney damage, anemia, reproductive effects, developmental effects and permanent nervous system damage in humans including changes in cognitive function.

It is unlikely that the amount of particles that someone would be exposed to from firing a loaded round would be sufficient to cause any of these effects.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: There are no medical conditions known to be aggravated by exposure to this product in its solid form. Exposure to lead can aggravate anemia, cardiovascular and respiratory disease.

POTENTIAL ENVIRONMENTAL EFFECTS: Product has not been tested for environmental properties. Lead has been shown to be toxic to aquatic species.

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush out fume or particles with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation develops, call a physician at once.
SKIN CONTACT: Wash skin with plenty of soap and water.
INHALATION: If symptoms of lung irritation occur (coughing, wheezing or breathing difficulty), remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep affected person warm and at rest. Get medical attention.
INGESTION: If ingested, immediately call a physician.

5. FIRE FIGHTING MEASURES

PROPERTY	VALUE	PROPERTY	VALUE
Explosive	Yes	Flammable	Not applicable
Combustible	Not applicable	Pyrophoric	No
Flash Point (°C):	Not applicable	Burning Rate of Material:	Not applicable
Lower Explosive Limit:	Not applicable	Autoignition Temp.:	No data
Upper Explosive Limit:	Not applicable	Flammability Classification: (defined by 29 CFR 1910.1200)	Explosive

UNUSUAL FIRE AND EXPLOSION HAZARDS: If fire reaches cargo, do not fight. Evacuate all person, including emergency responders from the area for 1500 feet (1/3 mile) in all directions.
EXTINGUISHING MEDIA: Flood area with water. If no water is available, carbon dioxide, dry chemical or earth may be used. If the fire reaches the cargo, withdraw and let fire burn.
SPECIAL FIREFIGHTING PROCEDURES: In case of fire, use normal fire fighting equipment. Protection concerns must also address the potential of the physical characteristic of this product as explosive.

6. ACCIDENTAL RELEASE MEASURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

Spills of this material should be handled carefully. Do not subject materials to mechanical shock. A spill of this material will normally not require emergency response team capabilities. If, however, a large spill occurs, call 1-888-289-1911 for technical assistance.

7. HANDLING AND STORAGE

HANDLING:	Cartridge may detonate if case is punctured or severely damaged.
STORAGE:	No special requirements
<i>Shelf Life Limitations:</i>	Not known
<i>Incompatible Materials for Packaging:</i>	None known
<i>Incompatible Materials for Storage or Transport:</i>	Acids, Class A & B explosives, strong oxidizers, and caustics
CONDITIONS TO AVOID:	Mechanical impact or shock and electrical discharge. Cartridges placed in a high radio frequency energy field (radar stations).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CAS #	CHEMICAL NAME	ACGIH TLV	OSHA PEL	INTERNATIONAL OELS
7440-50-8	Copper	0.2 mg/m ³ (fume), 1 mg/m ³ (dusts and mists)	0.1 mg/m ³ (fume) 1 mg/m ³ (dusts and mists)	Austria, Belgium, Canada: 0.2 mg/m ³ (fumes), 1 mg/m ³ (dusts) Denmark: 1.0 mg/m ³ (dust and powder) Germany (MAK): 0.1 mg/m ³ (fume), 1 mg/m ³ (dusts and mists)
7440-66-6	Zinc	None established	None established	None established
9004-70-0	Nitrocellulose	None established	None established	None established
55-63-0	Nitroglycerin	0.05 ppm (0.46 mg/m ³) Skin	Ceiling – 0.2 ppm (2 mg/m ³) Skin	Denmark: 0.02 ppm (0.2 mg/m ³) Norway, Sweden: 0.03 ppm (0.3 mg/m ³) Austria, Belgium, Germany, The Netherlands, Poland, Switzerland: 0.05 ppm (0.47 mg/m ³), skin Finland, France: 0.1 ppm (0.9 mg/m ³), skin U.K.: 0.2 ppm (2 mg/m ³), skin
84-74-2	Dibutyl phthalate	5 mg/m ³	5 mg/m ³	Belgium, Denmark, France, Netherlands, Switzerland, U.K.: 5 mg/m ³ Sweden: 3 mg/m ³
7439-92-1	Lead	0.05 mg/m ³	0.05 mg/m ³	Austria, Denmark, Germany, Sweden, Switzerland: 0.1 mg/m ³ Norway, Poland: 0.05 mg/m ³
7439-89-6	Iron	None established	None established	None established
10042-76-9	Strontium nitrate	None established	None established	None established
1314-18-7	Strontium peroxide	None established	None established	None established
7439-95-4	Magnesium	None established	None established	None established
7440-36-0	Antimony	0.5 mg/m ³	0.5 mg/m ³	Austria, Belgium, Denmark, France, Finland, Germany, Hungary, Netherlands, Norway, Poland, Sweden, UK: 0.5 mg/m ³
15245-44-0	Lead styphnate	None established	None established	None established

ENGINEERING CONTROLS: Local exhaust ventilation is recommended if significant dusting occurs or fumes are generated. Otherwise, use general exhaust ventilation. Use hearing protection.

EYE / FACE PROTECTION: Use safety glasses.

SKIN PROTECTION: Not normally needed

RESPIRATORY PROTECTION: Respiratory protection not normally needed.

GENERAL HYGIENE: Do not eat, drink, or smoke while using this product. Wash hands thoroughly after use.

9. PHYSICAL AND CHEMICAL PROPERTIES

PROPERTY	VALUE	PROPERTY	VALUE
Appearance:	Finished cartridge	Vapor Density (air = 1):	Not applicable
Odor:	None	Boiling Point (°F):	Not applicable
Molecular Weight:	Not applicable - Mixture	Melting point:	Not applicable

PROPERTY	VALUE	PROPERTY	VALUE
<i>Physical State:</i>	Solid	<i>Specific gravity (g/cc):</i>	Not applicable
<i>pH:</i>	Not applicable	<i>Bulk Density</i>	Not applicable
<i>Vapor Pressure (mm Hg):</i>	Not applicable	<i>Viscosity (cps):</i>	Not applicable
<i>Vapor Density</i>	Not applicable	<i>Decomposition Temperature:</i>	Not applicable
<i>Solubility in Water (20 °C):</i>	Insoluble	<i>Evaporation Rate:</i>	Not applicable
<i>Volatiles, Percent by volume:</i>	Not applicable	<i>Octanol/water partition coefficient:</i>	Not applicable

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal temperatures and pressure.
 MATERIALS TO AVOID: Acids, Class A & B explosives, strong oxidizers, and caustics
 HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen oxides, carbon monoxide, lead oxides, carbon dioxide, lead dust/fume
 HAZARDOUS POLYMERIZATION: Will not occur.
 OTHER: **Cartridge may detonate if case is punctured or severely damaged.**

11. TOXICOLOGICAL INFORMATION

POTENTIAL EXPOSURE ROUTES: The physical nature of this product makes absorption from any route unlikely. A small amount of inhalable particles may be created when projectile is fired.

ACUTE ANIMAL TOXICITY DATA:

For Product:		For Components											
		Copper	Lead	Lead styph-nate	Nitrocell-ulose	Iron	Nitrogly-cerin	Magne-sium	Zinc	Stron-tium nitrate	Stron-tium peroxide	Dibutyl phtha-late	Anti-mony
Oral LD ₅₀	Not applicable for product	No data	No data	No data	> 5 g/kg (rat)	30 g/kg (rat)	> 2 g/kg (rat)	No data	No data	2.75 g/kg (rat)	No data	8 g/kg (rat)	7 g/kg (rat)
Dermal LD ₅₀	Not applicable for product	No data	No data	No data	No data	No data	> 2 g/kg (rabbit)	No data	No data	No data	No data	> 20 ml/kg (rabbit)	No data
Inhalation LC ₅₀	Not applicable for product. Particles generated from firing may be slightly toxic.	> 1000 mg/m ³ (4 hr, rat)	No data	No data	No data	No data	> 5 mg/l (4 hours, rat)	No data	No data	No data	No data	4250 mg/m ³ (rat)	No data
Irritation	Not a skin or eye irritant as a loaded round.	Mild eye and skin irritant	Not irritating	No data	No data	Eye irritant	Mild eye and skin irritant	No data	Eye irritant	Severe skin irritant, mild eye irritant	Severe eye and skin irritant	No data	No data

SUBCHRONIC/ CHRONIC TOXICITY: Lead has caused blood, kidney and nervous system damage in laboratory animals. Strontium peroxide has produced effects in laboratory animals on the lungs, heart, kidneys and skeletal muscles from inhalation and ingestion.

CARCINOGENICITY: The International Agency for Research on Cancer (IARC) lists lead as possibly carcinogenic to humans, group 2B.

MUTAGENICITY: This product is not known or reported to be mutagenic. Lead has been shown to be mutagenic in several *in vitro* assays.

REPRODUCTIVE, TERATOGENICITY, OR DEVELOPMENTAL EFFECTS: This product is not known or reported to cause reproductive or developmental effects. Dibutyl phthalate has caused reproductive and developmental effects in animal studies. Lead has been shown to affect fetal development including birth defects and reduce male reproductive function in laboratory animals.

NEUROLOGICAL EFFECTS: This product is not known or reported to cause neurological effects. Lead has caused peripheral and central nervous system damage and behavioral effects in laboratory animals.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY: None known or reported.

12. ECOLOGICAL INFORMATION

ECOTOXICITY: No data is available on this product. Individual constituents are as follows:

Copper: The toxicity of copper to aquatic organisms varies significantly not only with the species, but also with the physical and chemical characteristics of the water, such as its temperature, hardness, turbidity and carbon dioxide content. Copper concentration varying from 0.1 to 1.0 mg/l have been found by various investigators to be not toxic for most fish. However, concentrations of 0.015 to 3.0 mg/l have been reported as toxic, particularly in soft water to many kinds of fish, crustacea, mollusks, insects, and plankton.

Nitrocellulose: LC₅₀ > 1000 mg/l (fish, invertebrates, algae)

Nitroglycerin: Bluegill, 96 hour LC₅₀ = 1.228 mg/l (static)

Lead: LC 50 (48 hrs.) to bluegill (*Lepomis macrochirus*) is reported to be 2-5 mg/l. Lead is toxic to waterfowl.

Zinc: The following concentrations of zinc have been reported as lethal to fish:

- Rainbow trout fingerlings: 0.13 mg/l, 12 – 24 hours
- Bluegill sunfish: 6 hr TLM = 1.9 – 3.6 mg/l (soft water, 30°C)
- Rainbow trout: 4 mg/l (hard water) 3 days
- Sticklebacks: 1 mg/l (soft water) 24 hrs

The presence of copper appears to have a synergistic effect on the toxicity of zinc towards fish.

MOBILITY: Dissolved lead from degraded bullets may migrate through soil.

PERSISTANCE/DEGRADABILITY: Not biodegradable. Bullets may fragment and decompose in soil leading to accumulation of lead.

BIOACCUMULATION: No data

13. DISPOSAL CONSIDERATIONS

Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

14. TRANSPORT INFORMATION

	U.S. DOT	RID/ADR	IMDG	IATA	IMO	Canada TDG
PROPER SHIPPING NAME:	Cartridges for weapons, inert projectile					
HAZARD CLASS:	1.4 C					
UN NO.:	UN 0339,					
PACKING GROUP:	II					
HAZARD LABEL/PLACARD:	1.4 C Cargo Aircraft/1.4 Placard over 1001 lbs. (454 kg)					
REPORTABLE QUANTITY:	Not applicable					
SPECIAL COMMENTS:	Cargo aircraft 75 kg max per package					
	The material described above is subject to the U.S. Dot Hazardous Materials Regulations if packaged in non-bulk packaging and shipped by rail, motor, water or air.					

15. REGULATORY INFORMATION

US FEDERAL

TSCA	The components of this product are listed on the Toxic Substance Control Act inventory.				
CERCLA:	Copper, R.Q.= 5000 lbs.; Zinc, R.Q. = 1000 lbs.; Nitroglycerin, R.Q. = 10 lbs.; Dibutyl phthalate, R.Q. = 10 lbs.; Lead, R.Q. = 10 lbs.; Antimony, R.Q. = 5000 lbs. (No reporting is required if diameter of the pieces of metal is equal to or exceeds 100 micrometers (0.004 inches).				
SARA 313:	Copper, Zinc (fume or dust), Nitroglycerin, Dibutyl phthalate, Lead, Antimony				
SARA 313 Hazard Class:	<u>Health:</u>	Acute – No Chronic - No	<u>Fire:</u> No	<u>Reactivity:</u> None	<u>Release of Pressure:</u> Yes
SARA 302 EHS List:	None of the components of this product are listed.				

RQ = Reportable Quantity

STATE RIGHT-TO-KNOW STATUS

Component	*CA Prop. 65	New Jersey	Pennsylvania	Massachusetts	Michigan
Copper	Not listed	X	X	X	X
Zinc	Not listed	X	Not listed	X	X

Component	*CA Prop. 65	New Jersey	Pennsylvania	Massachusetts	Michigan
Nitrocellulose	Not listed	X	X	X	Not listed
Nitroglycerin	Not listed	X	X	X	Not listed
Dibutyl phthalate	Not listed	X	X	X	X
Lead	X	X	X	X	X
Iron	Not listed	Not listed	Not listed	Not listed	Not listed
Strontium nitrate	Not listed	Not listed	X	X	Not listed
Strontium peroxide	Not listed	Not listed	X	X	Not listed
Magnesium	Not listed	Not listed	X	Not listed	Not listed
Antimony	Not listed	X	X	X	X
Lead styphnate	X	Not listed	Not listed	X	Not listed

* "WARNING: This product contains detectable amounts of a chemical(s) known to the State of California to cause cancer and/or birth defects or other reproductive harm."

EUROPEAN REGULATIONS

Hazard Classification

Danger Symbol: E Explosive

Risk Phrases: R2 Risk of explosion by shock, friction, fire or other sources of ignition

Safety Phrases: S2 Keep out of reach of children.

German WGK Classification: Not known

CANADIAN REGULATIONS

DSL LIST: The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.

IDL: Copper, Dibutyl phthalate, Antimony, Lead

WHMIS: This product is not subject to WHMIS. It is regulated as a Class 6 Explosive in Canada.

16. OTHER INFORMATION

REVISIONS: New International format, toxicology review – 1/1/03; 7/1/09 – changed emergency contact number and address; 1/1/11 - review

PREPARED BY: Olin Corporation

OTHER: Additional information available from: www.winchester.com

NOTICE: THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND CURRENT AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS.