MATERIAL
SAFETY DATA SHEETS

T1 Ammunition MSDS NO: 0001 **Revision Date: 06.01.2015**
Revision No: 0000 **Supercedes:**

SECTION 1- PRODUCT AND COMPANY IDENTIFICATION

Product Name : Centerfire loaded Rounds

Chemical Name : Mixture – Metal Alloy

Synonyms : Cartridges, small arms ammunition 9mm Luger, .40 S&W, .45 AUTO, .223 Remington

Chemical Family : Metal mixture

Formula : Not applicable - mixture

Product Use : Centerfire Rifle and Pistol Loaded Ammunition

Company Adres : T1 Ammunition, LLC 1226 Zacchini Ave, Sarasota FL, 34237 USA

Technical Information : 941.366.6794

Emergency Telephone Number : 941.366.6794

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS Number	Components	Components % By Weight	EINECS/ ELINCS #	EU Classification	
				Symbol	R-Phrase
7439-92-1	Lead	0.5 - 10	231-100-4	T, N*	R1-33-50/53-62
7440-50-8	Copper	30 - 55	231-159-6	None	None
7440-66-6	Zinc	5 - 15	231-175-3	F (as dust or powder)	R 15-17
9004-70-0	Nitrocellulose	10 - 20	Not listed	E*	R 2
55-63-0	Nitroglycerin	1 - 2	200-240-8	E, T+, N	R 3-26/27/28-33-51-53

SECTION 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) Degree of hazard (0 = low, 4 = extreme)
Hazardous Materials Identification System (HMIS)
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 copper and lead is 100 mg/m3. The IDLH for nitroglycerin is 75 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:
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.
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).
Copper: Inhalation of high concentrations of metallic copper dusts or fumes may cause nasal irritation and/or nausea, vomiting
and stomach pain. 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 shot has been shown to be toxic to aquatic species.

SECTION 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.

SECTION 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.

SECTION 6- ACCIDENTAL RELEASE MEASURES

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 the National Response Center 1-800-424-8802 or CHEMTREC 1-800-424-930 for technical assistance.

SECTION 7- HANDLING AND STORAGE

HANDLING	: No special requirements
STORAGE	: No special requirements
Shelf Life Limitations	: Not known
Incompatible Materials for Packaging	: None known
Incompatible Materials for Storage or Transport	: Acids, Class A & B explosives, strong oxidizers, and caustics
CONDITIONS TO AVOID	: Mechanical impact or shock and electrical discharge

SECTION - 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

CAS #	CHEMICAL NAME	ACGIH TLV	OSHA PEL	INTERNATIONAL OELS
7440-50-8	Copper	0.2 mg/m3 (fume), 1 mg/m3 (dusts and mists)	0.1 mg/m3 (fume) 1 mg/m3 (dusts and mists)	Austria, Belgium, Canada: 0.2 mg/m3 (fumes), 1 mg/m3 (dusts) Denmark: 1.0 mg/m3 (dust and powder) Germany (MAK): 0.1 mg/m3 (fume), 1 mg/m3 (dusts and mists)
7439-92-1	Lead	0.05 mg/m3	0.05 mg/m3	Austria, Denmark, Germany, Sweden, Switzerland:0.1 mg/m3 Norway, Poland: 0.05 mg/m3
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/m3) Skin	Ceiling – 0.2 ppm (2 mg/m3) Skin	Denmark: 0.02 ppm (0.2 mg/m3) Norway, Sweden: 0.03 ppm (0.3 mg/m3) Austria, Belgium, Germany, The Netherlands,Poland, Switzerland: 0.05 ppm (0.47 mg/m3), skin Finland, France: 0.1 ppm (0.9 mg/m3), skin U.K.: 0.2 ppm (2 mg/m3), skin

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

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

PROPERTY	VALUE	PROPERTY	VALUE
Appearance:	Cylindrical brass cartridge	Vapor Density (air = 1):	Not applicable
Odor:	None	Boiling Point (˚F):	Not applicable
Molecular Weight:	Not applicable - Mixture	Melting point	Not applicable
Physical State:	Solid	Specific gravity (g/cc):	Not applicable
pH:	Not applicable	Bulk Density	Not applicable
Vapor Pressure (mm Hg):	Not applicable	Viscosity (cps):	Not applicable
Vapor Density	Not applicable	Decomposition Temperature:	Not applicable
Solubility in Water (20˚C):	Insoluble	Evaporation Rate:	Not applicable
Volatiles, Percent by volume:	Not applicable	Octanol/water partition coefficient:	Not applicable

SECTION 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, and lead dust/fume
HAZARDOUS POLYMERIZATION : Will not occur.
OTHER : Cartridge may detonate if case is punctured or severely damaged.

SECTION 11 - TOXICOLOGICAL INFORMATION

For Product:		For Components				
		Copper	Lead	Nitrocellulose	Zinc	Nitroglycerin
Oral LD50	Not applicable for product	3.5 mg/kg (mouse, intraperitoneal)	No data	> 5 g/kg (rat)	No data	105 mg/kg (rat)
Dermal LD50	Not applicable for product	375 mg/kg (rabbit, subcutaneous)	No data	No data	No data	> 280 mg/kg (rabbit)
Inhalation LC50	Not applicable for product. Particles generated from firing may be slightly toxic.	No data	No data	No data	No data	No data
Irritation	Not a skin or eye irritant as a loaded round.	Respiratory irritant	Not irritating	No data	Eye irritant	Mild eye and skin irritant

SUBCHRONIC/ CHRONIC TOXICITY: Lead has caused blood, kidney and nervous system damage in laboratory animals

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. 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.

SECTION 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, crustacean, mollusks, insects, and plankton.

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

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

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

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.

SECTION 12 - ECOLOGICAL INFORMATION

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

SECTION 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.

SECTION 14 - TRANSPORT INFORMATION

	U.S. DOT	RID/ADR	IMDG	IATA	IMO	Canada TDG
PROPER SHIPPING NAME:	Cartridges, small arms (other than blanks)					
HAZARD CLASS:	Explosive, 1.4S					
UN NO.:	UN 0012					
PACKING GROUP:	II					
HAZARD LABEL/PLACARD:	None required					
REPORTABLE QUANTITY:	Not applicable					
LABEL STATEMENTS:	None for highway, water, rail. - Air requires 1.4s label					

SECTION 15 - REGULATORY INFORMATION

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.

DSL LIST	The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.
IDL :	Lead, Copper
WHMIS :	This product is not subject to WHMIS. It is regulated as a Class 6 Explosive in Canada.

SECTION 16 -OTHER INFORMATION

REVISIONS :
PREPARED BY : T1 Ammunition, LLC
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. T1 AMMUNITION BELIEVES THIS INFORMATION TO BE RELIABLE AND CURRENT AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS.