1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: CARTRIDGES – CENTERFIRE
CAS Number: Mixture – Metal Alloy
Synonyms: Centerfire Rifle Brands: BXR Rapid Expansion, BXC Controlled Expansion, BXV Varmint Expansion

Centerfire Rifle Bullet Names: Matrix Tip, Terminal Tip
Centerfire Rifle Calibers: 243 WIN, 30-30 WIN, 270 WIN, 223 Rem, 270 WSM, 7mm Rem Mag, 308 WIN, 30-06 SPRG, 300 WIN Mag, 300 WSM, 338 Lapua, 6.5 Creedmoor, 6.5x55mm, 7x64mm, 8x57mm, 9.3x62mm, 9.3x74mm R, 22 Hornet, 22-250 Remington, 204 Ruger, 7mm-08
Centerfire Pistol/Revolver Brands: BXP Personal Defense, BPT Performance Target
Centerfire Pistol/Revolver Bullet Names: X Point, Full Metal Jacket
Centerfire Pistol/Revolver Calibers: 380 Auto, 9mm Luger, 40 S&W, 45 Automatic, 25 Automatic, 32 Automatic, 38 Special

Product Use: Centerfire Rifle and Pistol/Revolver Loaded Ammunition
U.N. Number: UN 0012
U.N. Dangerous Goods Class: Explosive, 1.4S
Manufacturer: Olin Corporation d/b/a Browning Ammunition

Manufacturers’ Address: PO Box 699, Arnold, MO 63010-0699  www.browningammo.com

Emergency Telephone Number: US/Canada: 1-800-424-9300
Outside US/Canada: 703-527-3887

SDS Control Group: 636-548-7200 (Technical Information Only)

Olin SDS No.: 10050.0001  Issue Date: 12/01/2015
Revision Date: 1/20/2017
Revision No.: 2

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: EXPLOSIVE. KEEP AWAY FROM HEAT. DO NOT SUBJECT TO MECHANICAL SHOCK. PARTICLES FROM FIRING MAY BE HARMFUL IF INHALED. DO NOT TAKE INTERNALLY.
This Product is not subject to WHMIS
Class 6 Explosive

GHS Classifications:
- Explosive Division 1.4
- STOT RE Category 1
- Reproductive Toxicity Category 1A
- Aquatic Environment, Chronic II

Signal Word:
Danger

Hazard Statements:
- H204: Fire or projection hazard
- H372: Causes damage to nervous system, kidney, and hematopoietic system through prolonged or repeated exposure
- H360: May damage fertility or the unborn child
- H411: Toxic to aquatic life with long lasting effects

Target organs:
Nervous, renal and hematopoietic systems

Precautionary Statements:
- P102: Keep out of reach of children
- P210: Keep away from heat/sparks/open flame/hot surfaces
- P250: Do not subject to shock/friction
- P260: Do not breathe fumes
- P264: Wash hands thoroughly after handling
- P270: Do not eat, drink or smoke when using this product
- P271: Use only outdoors or in a well-ventilated area
- P273: Avoid release to the environment
- P280: Wear protective clothing/eye protection/face protection
- P370+P380: In case of fire: Evacuate area
- P374: Fight fire with normal precautions from a reasonable distance
- P410: Store in accordance with local regulations
- P501: Dispose of contents in accordance with local regulations

GHS Pictograms:
- Explosive; Pictogram: exploding bomb
- Specific Target Organ Toxicity; Pictogram Code: GHS08
- Environment; Pictogram Code: GHS09

EU Classifications:
### Hazard Symbols

E, T, N

### Risk Phrases

R2: Risk of explosion by shock, friction, fire or other sources of ignition
R48: Danger of serious damage to health by prolonged exposure
R60: May impair fertility
R63: Possible risk of harm to the unborn child
R51/53: Toxic to aquatic organisms and many cause long-term adverse effects in the aquatic environment

### Safety Phrases

S2: Keep out of reach of children
S15: Keep away from heat
S20/21: When using do not eat, drink or smoke
S23: Do not breathe fumes
S39: Wear eye/face protection
S43: In case of fire, use Class A equipment
S51: Use only in well-ventilated areas
S61: Avoid release to the environment

### Health Hazards or Risks From Exposure

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.

### COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>% By Weight</th>
<th>CAS Number</th>
<th>EINECS/ ELINCS #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>0.5 - 60</td>
<td>7439-92-1</td>
<td>231-100-4</td>
</tr>
<tr>
<td>Copper</td>
<td>25 - 60</td>
<td>7440-50-8</td>
<td>231-159-6</td>
</tr>
<tr>
<td>Zinc</td>
<td>4 - 20</td>
<td>7440-66-6</td>
<td>231-175-3</td>
</tr>
<tr>
<td>Nitrocellulose</td>
<td>10 - 20</td>
<td>9004-70-0</td>
<td>Not listed</td>
</tr>
<tr>
<td>Nitroglycerin</td>
<td>1 - 2</td>
<td>55-63-0</td>
<td>200-240-8</td>
</tr>
<tr>
<td>Lead Styphnate</td>
<td>0-1</td>
<td>15245-44-0</td>
<td>239-290-0</td>
</tr>
</tbody>
</table>

### 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.

**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.

**Recommendations To Physicians**: Remove from exposure, if possible, and treat symptoms
5. **FIRE FIGHTING MEASURES**

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosive</td>
<td>Yes</td>
<td>Flammable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Combustible</td>
<td>Not applicable</td>
<td>Pyrophoric</td>
<td>No</td>
</tr>
<tr>
<td>Flash Point (°C):</td>
<td>Not applicable</td>
<td>Burning Rate of Material:</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Autoignition Temp.:</td>
<td>No data</td>
</tr>
<tr>
<td>Lower Explosive Limit:</td>
<td>Not applicable</td>
<td>Flammability Classification: (defined by 29 CFR 1910.1200)</td>
<td>Explosive</td>
</tr>
<tr>
<td>Upper Explosive Limit:</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Unusual Fire and Explosion Hazards:**

- Possible projection hazard.

**Extinguishing Media:**

- Flood area with water. If no water is available, carbon dioxide, dry chemical or earth may be used.

**Special Firefighting Procedures:**

- Do not fight fire when fire reaches cargo. Cargo may explode.

- Firefighters must wear self-contained breathing apparatus (SCBA) and full protective equipment. Structural firefighters’ protective clothing will only provide limited protection.

- Isolate materials not yet involved in the fire. Move containers from fire area if possible; otherwise, cool with carefully applied water spray.

- Prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas, if practical.

---

**NFPA RATING SYSTEM**

- **Flammability:**
  - 1: Moderate
  - 2: Slight

- **Health:**
  - 0: Minimal
  - 1: Slight
  - 2: Moderate
  - 3: Serious

- **Reactivity:**
  - 1: Moderate

---

**HMIS RATING SYSTEM**

- **HEALTH HAZARD (BLUE):** 0*
- **FLAMMABILITY HAZARD (RED):** 1
- **PHYSICAL HAZARD (YELLOW):** 2

<table>
<thead>
<tr>
<th>PROTECTIVE EQUIPMENT</th>
<th>EYES</th>
<th>PPE CODE</th>
<th>RESPIRATORY</th>
<th>HEARING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>A</td>
<td>See Sect 8</td>
<td>See Sect 8</td>
</tr>
</tbody>
</table>

**Hazard Scale:**

- 0 = Minimal
- 1 = Slight
- 2 = Moderate
- 3 = Serious
- 4 = Severe
- * = Chronic hazard
6. ACCIDENTAL RELEASE MEASURES

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

Spill Response: 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.

Accidental Release Procedures: Spills of this material should be handled carefully. Do not subject materials to mechanical shock. Collect material and place in a designated, labeled waste container. See Section 13 for waste disposal.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Use appropriate personal protective equipment (see Section 8). Workers should wash thoroughly after handling. Eating, drinking and smoking should be prohibited in areas where this material is handled and stored.

Conditions for Safe Storage: Store in accordance with local regulations. Store in original containers in a cool, dry location away from Acids, Class A & B explosives, strong oxidizers, and caustics. Avoid mechanical impact or shock and electrical discharge.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>CHEMICAL NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-50-8</td>
<td>Copper</td>
<td>7439-92-1</td>
<td>Lead</td>
</tr>
<tr>
<td>7440-66-6</td>
<td>Zinc</td>
<td>9004-70-0</td>
<td>Nitrocellulose</td>
</tr>
<tr>
<td>55-63-0</td>
<td>Nitroglycerin</td>
<td>55-63-0</td>
<td>Lead Styphnate</td>
</tr>
</tbody>
</table>

Engineering Controls: Local exhaust ventilation is recommended if significant dusting occurs or fumes are generated. Otherwise, use general exhaust ventilation.

Respiratory Protection: Not normally needed. Maintain airborne contaminant concentrations below guidelines listed above. Use an appropriate approved air-purifying respirator equipped with HEPA cartridges/canisters where there is the potential for exceeding established occupational exposure limits.

Eye/Face Protection: Use safety glasses.
Hand Protection: Not normally needed
Skin Protection: Not normally needed
Hearing Protection: Not normally needed. During firing use hearing protection.
General Hygiene: Do not eat, drink, or smoke while using this product. Wash hands thoroughly after use.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Cylindrical brass cartridge</td>
<td>Physical State:</td>
<td>Solid</td>
</tr>
<tr>
<td>Odor:</td>
<td>None</td>
<td>Odor Threshold:</td>
<td>None</td>
</tr>
<tr>
<td>Boiling Point (°F):</td>
<td>Not applicable</td>
<td>Melting point:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure (mm Hg):</td>
<td>Not applicable</td>
<td>Freezing point:</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

SDS No.: 100050.0001
PROPERTY | VALUE | PROPERTY | VALUE
--- | --- | --- | ---
Vapor Density (air = 1): | Not applicable | Bulk Density | Not applicable
Specific gravity (g/cc): | Not applicable | Viscosity (cPs): | Not applicable
pH: | 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

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressure.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur
Incompatible Materials: Acids, Class A & B explosives, strong oxidizers, and caustics
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, lead oxides, carbon dioxide, lead dust/fume
Conditions to Avoid: Contact with incompatible materials. Physical damage to containers; cartridges may detonate if case is punctured.

11. TOXICOLOGICAL INFORMATION

Potential Routes of Entry: Inhalation, Skin, and by Ingestion.

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

Effects Of Acute Exposure:

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation LD₅₀</td>
<td>Copper</td>
</tr>
<tr>
<td>Particles generated from firing may be slightly toxic</td>
<td>No data</td>
</tr>
<tr>
<td>Skin Contact LD₅₀</td>
<td>Skin absorption unlikely</td>
</tr>
<tr>
<td>Ingestion LD₅₀</td>
<td>Ingestion unlikely</td>
</tr>
<tr>
<td>Irritation</td>
<td>Particles generated from firing may be slightly irritating to the eyes</td>
</tr>
<tr>
<td>Sensitization</td>
<td>Sensitization to this Product has not been reported</td>
</tr>
</tbody>
</table>

Other Adverse Effects:

Target Organ Toxicity: No reported target organ toxicity from this product. Lead has caused nervous system, kidney and hematopoietic system damage in humans and laboratory animals.
Reproductive Toxicity: This product is not known or reported to cause reproductive effects. Lead has been shown to reduce male reproductive function in humans and laboratory animals.
Teratogenicity (Birth Defects): This product is not known or reported to cause developmental toxicity. Lead has been shown to affect fetal development including birth defects.
Mutagenicity: This product is not known or reported to be mutagenic. Lead has been shown to be mutagenic in several in vitro assays.
Carcinogenicity: This product is not listed as a carcinogen by OSHA, NTP or IARC. IARC lists lead as possibly carcinogenic to humans, group 2B.

12. ECOLOGICAL INFORMATION

Environmental Effects:

PRODUCT: Product has not been tested for environmental properties. Lead shot has been shown to be toxic to aquatic species.
COMPONENTS:

**Copper:** Copper concentrations from 0.1 to 1.0 mg/l have been found 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.

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

**Nitrocellulose:** LC50 > 1000 mg/l to fish, invertebrates, and algae.

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

**Zinc:** The following concentrations of zinc have been reported as lethal to fish: 0.13 mg/l, for 12 – 24 hours to Rainbow trout fingerlings; 1.9 – 3.6 mg/l, 6 hr TLM (soft water, 30°C) to Bluegill Sunfish; 4 mg/l, 3 days (hard water) to Rainbow trout; 1 mg/l, 24 hours (soft water) to Sticklebacks. The presence of copper appears to have a synergistic effect on the toxicity of zinc towards fish.

Environmental Fate:

**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 the treatment, storage and disposal for hazardous and nonhazardous wastes.

14. TRANSPORT INFORMATION

**Regulatory Information for US DOT, IATA, IMO, and ADR:**

**Proper Shipping Name:** Cartridges, small arms (other than blanks)

**Hazard Class Number and Description:** Explosive 1.4S

**UN Identification Number:** UN 0012

**Packing Group:** PGII

**DOT Label(s) Required:** Label Not Required for ground shipment.

**Marine Pollutant:** None of the ingredients are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

Additional Information:

North American Emergency Response Guidebook Number: 114 Most Current Version is 2012

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING REGULATIONS: This product is classified as dangerous goods under 49 CFR 172.101. Note: May be reclassified domestically as an ORM-D or Limited Quantity if packaged in accordance with 49 CFR 173.63.

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This product is classified as Dangerous Goods (If packaged appropriately this product may ship as a Limited Quantity).

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA): This product is classified as Dangerous Goods.

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION: This product is classified as Dangerous Goods (If packaged appropriately this product may ship as a Limited Quantity).
EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): This product is classified by the United Nations Economic Commission for Europe to be dangerous goods. (If packaged appropriately this product may ship as a Limited Quantity).

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.; Lead, R.Q. = 10 lbs.; Zinc, R.Q. = 1000 lbs.; Nitroglycerin, R.Q. = 10 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, Lead and Lead compounds, Zinc (fume or dust), Nitroglycerin

CERCLA:
Copper, R.Q. = 5000 lbs.; Lead, R.Q. = 10 lbs.; Zinc, R.Q. = 1000 lbs.; Nitroglycerin, R.Q. = 10 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, Lead and Lead compounds, Zinc (fume or dust), Nitroglycerin

SARA 311/312:
Health: Acute – No Chronic - No
Fire: No Reactivity: None Release of Pressure: Yes

SARA 302 EHS List: None of the components of this product are listed.

*RQ = Reportable Quantity

STATE RIGHT-TO-KNOW STATUS

<table>
<thead>
<tr>
<th>Component</th>
<th>California</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Massachusetts</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>Not listed</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Lead</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Zinc</td>
<td>Not listed</td>
<td>X</td>
<td>Not listed</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Nitrocellulose</td>
<td>Not listed</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Not listed</td>
</tr>
<tr>
<td>Nitroglycerin</td>
<td>Not listed</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Not listed</td>
</tr>
<tr>
<td>Lead Styphnate</td>
<td>X</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>X</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65)

Warning! This product contains detectable amounts of a chemical known to the State of California to cause cancer and/or birth defects or other reproductive harm.

GHS CLASSIFICATION

Explosive Division 1.4
STOT RE Category 1
Reproductive Toxicity Category 1A
Aquatic Environment, Chronic II

EUROPEAN REGULATIONS

Hazard Classification
Danger Symbols: E, T, N
Risk Phrases: R2, R48, R60, R63, R51/53
Safety Phrases: S2, S15, S20/21, S22, S39, S51, S61
German WGK Classification: Not known.

CANADIAN REGULATIONS

DSL/NDSL Inventory: The components of this product are on the DSL

IDL: Lead, Copper

CEPA PRIORITIES LIST: None of the components of this product are on the CEPA First Priorities Substances List.

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

Existing National Inventory of Chemical Substances (ENCS): The components of this product are Listed

Japanese MITI Status: Product components are not listed as Class I or II Specified Chemical Substances

OTHER INTERNATIONAL CHEMICAL INVENTORIES

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swiss Giftliste List of Toxic Substances</td>
<td>All Components Listed</td>
</tr>
<tr>
<td>Australian Inventory (AICS)</td>
<td>All Components Listed</td>
</tr>
<tr>
<td>Asia – Pac Inventory</td>
<td>All Components Listed</td>
</tr>
<tr>
<td>Korean Existing Chemicals List (ECL)</td>
<td>All Components Listed</td>
</tr>
<tr>
<td>Philippines Inventory of Chemicals (PICCS)</td>
<td>All Components Listed</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

REVISIONS:

PREPARED BY: Olin Corporation d/b/a Browning Ammunition

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

NOTICE: THE INFORMATION IN THIS SDS 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.