

PRODUCT AND PROCESS ENGINEERING

<b>MATERIAL SAFETY DATA SHEET</b>  <b>MATERIAL: Bullets (Projectiles), Inert</b>	<b>MSDS N.º: 020</b>	<b>Rev. 00</b>
	Date : September 29, 2005	
	Supersedes:	Page 1 of 8 Pages
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## 1- PRODUCT AND COMPANY IDENTIFICATION

Product Name : Inert Bullets (Projectiles) for Small Arms Cartridges  
Synonyms : Lead Bullets, Soft Points Bullets, Full Metal Jacket Bullets, Full Metal Case Bullets, Jacketed Hollow-Point Bullets, Full Encapsulated Bullets, Solid Copper Hollow Point Bullets, Ball Projectiles, Armor Piercing Projectiles.

Proper Shipping Name : See Item 13 – Shipping Data  
Chemical Family : Metal mixture  
Formula : Not Applicable  
Trade Name : Not Applicable  
Product Use : In Small Arms Cartridges  
Company Address : Companhia Brasileira de Cartuchos  
Product Engineering  
Av. Humberto de Campos, 3220  
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## 2- CHEMICAL COMPONENTS

### 2.1- Lead Bullets

COMPONENTS	CAS	% IN METAL MIXTURE	TLV/TWA
Lead	7439-92-1	90 – 100	0.05 mg/cm as fumes
Antimony	7440-38-2	10 – 0	0.5 mg/cm
Tin	7440-31-5	5 – 0	2 mg/cm

*mg/cm – milligramme per cubic meter*

### 2.2- Soft Point, Full Metal Jacket (Case), Jacketed Hollow Point and Full Encapsulated Bullets

COMPONENTS		CAS	% IN METAL MIXTURE	TLV/TWA
Jacket	Copper	7440-50-8	70 – 95	1 mg/cm as dust 0.2 mg/cm as fumes
	Zinc	7440-66-6	30 – 5	None established
Lead Core	Lead	7439-92-1	90 – 100	0.05 mg/cm as fumes
	Antimony	7440-38-2	10 – 0	0.5 mg/cm

*mg/cm – milligramme per cubic meter*

### 2.3- Solid Copper Hollow Point Bullets

COMPONENTS	CAS	% IN METAL MIXTURE	TLV/TWA
Copper	7440-50-8	100	1 mg/cm as dust 0.2 mg/cm as fumes

*mg/cm – milligramme per cubic meter*

### 2.4- Ball and Armor Piercing Projectiles

COMPONENTS		CAS	% IN METAL MIXTURE	TLV/TWA
Jacket	Copper	7440-50-8	70 – 95	1 mg/cm as dust 0.2 mg/cm as fumes
	Zinc	7440-66-6	30 – 5	None established
Core	Lead	7439-92-1	90 – 100	0.05 mg/cm as fumes
	Antimony	7440-38-2	10 – 0	0.5 mg/cm
	Steel	— x —	— x —	— x —

*mg/cm – milligramme per cubic meter*

IN SOLID FORM, THE BULLETS (PROJECTILES) ARE NOT HAZARDOUS. DUST AND FUMES AFTER FIRING ARE HAZARDOUS MATERIALS.

**3- PHYSICAL AND CHEMICAL DATA**

<b>PROPERTY</b>		<b>VALUE</b>
Physical State		Solid
Appearance		Cilindrical body, with round, ogival or flat front part and cilindrical or boattail posterior part
Color	Lead bullets Soft point bullets  Full Metal Jacket (Case) bullets, Jacketed Hollow Point and Full Encapsulated bullets  Ball projectiles  Armour Piercing projectiles	Gray, red/gold metallic  Red/gold metallic or Silver colored if nickel plated  Red/gold metallic  Red/gold metallic with black varnished point
Odor		None
Molecular weight		Not Applicable
Auto ignition temperature		Not Applicable
Freezing point / Melting point		Not Applicable
Boiling point		Not Applicable
Flash point		Not Applicable
pH		Not Applicable
Vapor density (air = 1)		Not Applicable
Vapor pressure (mm Hg at 25°C (77° F))		Not Applicable
Specific gravity (water = 1 at 20° C / 68°F – g/cc)		Not Applicable
Bulk density (g/cc)		Not Applicable
Solubility in water – 20°C (68° F)		Not Applicable
Hygroscopicity		Not Applicable
Viscosity (cps)		Not Applicable
Decomposition temperature		Not Applicable
Evaporation rate		Not Applicable
Volatiles, percent by volume		Not Applicable
Explosive		No
Detonation temperature		Not Applicable

<b>PROPERTY</b>	<b>VALUE</b>
Detonation velocity	Not Applicable
Upper Explosive Limit	Not Applicable
Lower Explosive Limit	Not Applicable
Combustible	No
Flammable	No
Pyrophoric	No
Burning rate of material	Not Applicable
Flamability classification (29 CFR 1910 – 1200)	Not Applicable

#### **4- HAZARDOUS IDENTIFICATION**

##### **4.1- Health Effects**

The Inert Bullets (Projectiles) are manufactured with lead / antimony / tin alloys, copper / zinc alloys, copper, and copper / zinc, alloys / steel / lead and antimony alloys. Therefore under normal handling of the bullets (projectiles), no exposure to any harmful materials will occur.

DUSTS FROM FIRING MAY BE HARMFUL IF INHALED. DO NOT TAKE INTERNALLY.

##### **4.2- Physical and Chemical Hazards Fire Fighting and Explosions Hazards**

None know.

#### **5- HEALTH HAZARD DATA**

The bullets (projectiles) are composed of a finished solid metals alloys. Under normal handling of the bullets (projectiles), no exposure to any harmful materials will occur.

When the bullets (projectiles) are assembled in cartridges and fired, a small amount of dusts and fumes may be generated which may be slightly irritating to the eyes and respiratory tract. The dusts and fumes may contain trace amounts of the harmful substances.

##### **5.1- Eyes**

Immediately flush out fumes or particles with large quantity of water for at least 15 minutes. If eye irritation develops call a physician.

##### **5.2- Skin**

Wash with large quantity of soap and water.

**5.3- Inhalation**

If symptoms of lung irritation occur (coughing, or breathing difficulty), remove the person from area to fresh air. If breathing has stopped administer artificial respiration. If breathing is difficult, apply oxygen. Call a physician.

**5.4- Ingestion**

Call a physician. Never induce vomiting in unconscious person.

**6- FIRE FIGHTING MEASURES****6.1- Unusual Fire and Explosion Hazards**

None know.

**6.2- Extinguishing Media**

Choose extinguishing media for surrounding materials.

**6.3- Special Firefighting Procedures**

In case a fire, use normal fire fighting equipment. Response to this material requires the use of a self-contained breathing apparatus.

**7- SPILLS, LEAKS, HANDLING AND WASTE DISPOSAL**

A spill of bullets (projectiles) will normally not require emergency response teams capabilities. If, however, a large spill occurs call for technical assistance in each specific community.

The material is heavier and insoluble in water.

Do not place spill materials back in their original containers. Containerize and label all spill materials properly.

**8- HANDLING AND STORAGE****8.1- Handling**

No special requirements.

**8.2- Storage**

No special requirements.

- Shelf life Limitations : Not know
- Incompatible Materials for Packaging : Not know
- Incompatible Materials for Storage or Transport : Acids, alkalies, ammonia and other corrosive materials.

### 8.3- Protective Equipment

When ammunitions containing these bullets (projectiles) are fired:

- Ventilation : Local exhaust ventilation is recommended if significant dusting occurs or fumes are generated. Otherwise, use general exhaust ventilation
- Eye/Face protection : Use safety glasses
- Skin protection : Not normally needed
- Respirators : Appropriate respiratory protection is required when exposed to airborne dust, fumes, smoke, etc.
- Ears protection : Appropriate hearing protection is required
- General Hygiene : Do not smoke, drink or eat while assembling bullets (projectiles) during the loading of centerfire/ rimfire cartridges. Wash hands thoroughly after the loading.

## 9- REACTIVITY AND POLYMERIZATION

### 9.1- Stability

Stable under normal temperatures and pressure

### 9.2- Materials to avoid

See item 8.2.

### 9.3- Hazardous decomposition products

Metal oxides, lead dust/fumes during firing. Metals from reaction with acids, may liberate hydrogen gas.

### 9.4- Polymerization

Not occurs.

## 10- TOXICOLOGICAL INFORMATIONS

### 10.1- Potential exposure

When ammunition is fired inhalable particles may be created by bullets (projectiles)

### 10.2- Animal toxicity data

Not applicable for the product

### 10.3- Subchronic / Chronic Toxicity

Lead has caused blood, kidney and nervous system damage in laboratory animals.

**10.4- Mutagenicity**

The product is not known or reported to be mutagenic. Lead has been shown to be mutagenic in several vitro assays.

**10.5- Reproductive, Teratogenicity or Development effects**

The 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.

**10.6- Neurological effects**

The product is not known to cause neurological effects. Lead has caused peripheral and central nervous system damage and behavioral effects in laboratory animals.

**10.7- Carcinogenicity**

The International Agency for Research on Cancer (IARC) lists lead as possibly carcinogenic to humans. In laboratory animals studies, chronic exposure to high concentrations of nickel has caused an increase in lung and nasal tumors. Arsenic is listed as a known human carcinogen by IARC and OSHA.

**10.8- Interactions with other chemicals which increase toxicity**

None know or reported

**11- ECOLOGICAL INFORMATIONS****11.1- Ecotoxicity**

No data is available. For the individual constituents are as follows:

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

Copper: The copper toxicity to aquatic organisms varies not only with the species, but also with characteristics chemical and physical of the water.

Zinc: Concentrations of zinc between 0,13mg/l up to 4 mg/l have been reported as lethal, to fishes in accordance with the characteristics chemical and physical of the water (hard or soft water, temperature, time of exposure).

**11.2- Mobility**

Dissolved lead from degraded bullets (projectiles) may migrate through soil.

**11.3- Persistence / Degradability**

No biodegradable. Bullets (projectiles) may fragment and decompose in soil leading to accumulation of lead.

**11.4- Bioaccumulation**

No data

## 12- DISPOSAL CONSIDERATIONS

Care must be taken to prevent environmental contamination from use of this material. The user of the material is responsible to dispose residues, unused materials and containers in accordance with the Local, State and Federal laws and regulations regarding storage, treatment and disposal for hazardous and non hazardous wastes.

## 13- SHIPPING DATA

IATA – DGR – Via Air, IMDG – CODE – Via – Sea , U. S. DOT – Via Land:

- Proper Shipping Name : Projectiles, Inert  
Not Classified by UN as Dangerous for Transport
- UN N.º : Not Applicable
- Packing Group : Not Applicable
- Hazardous Label : Not Applicable
- Reportable Quantity : Not Regulated
- Special Comments : None

## 14- NOTES

- 14.1- The information in this MSDS should be provided to all who will use, handle, store, transport or otherwise be exposed to this material. The information were been prepared for the guidance of Plant Engineering Operations and Management and for persons working with or handling this material.
- 14.2- CBC has compiled the informations and recommendations contained in this MSDS from sources believed to be reliable. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of the material must decide what measures are necessary to safety use of this material, either alone or in combination with other products and determine its environmental regulatory compliance obligations under any applicable Federal, State or Local laws and regulations.
- 14.3- The conditions or methods of handling, storage or use and disposal of the material are beyond CBC's knowledge. For these reasons, CBC does not assume responsibility and expressly disclaim liability for last, damage or expense arising out of or in way connected with the handling, storage, use or disposal of the product.
- 14.4- The statements and recommendatorions contained in this MSDS do not supersede Federal, State or Local Laws or Regulations. Proper authorities should be consulted on laws and regulations in storage, handling or transportation and use of the material in each specific community.