MATERIAL SAFETY DATA SHEET

Olin MSDS No.: 00087.0001	**Revision Date:** 1/1/11
Revision No.: 11	**Supercedes:** 1/1/10

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: **FRANGIBLE BULLETS - DF**
Chemical Name: Mixture – Metal Alloy
Synonyms: DF
Chemical Family: Metal mixture
Formula: Not applicable - mixture
Product Use/ Description: Centerfire Ammunition Projectile

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
7440-33-7	Tungsten	Proprietary	231-143-9	None	None
7440-50-8	Copper	Proprietary	231-159-6	None	None
557-05-1	Zinc stearate	0.5 – 1.5	209-151-9	None	None

*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: Dust or fume is an irritant

In solid form, this material is not hazardous. Dust and fumes are hazardous materials.

3. HAZARDS IDENTIFICATION

WARNING!
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) for dust or fume: Health: 0* Flammability: 0 Physical Hazard: None

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 is 100 mg/m^3.

POTENTIAL HEALTH EFFECTS

This product is composed of a finished metal alloy solid. Therefore, under normal handling of this product, no exposure to any harmful materials will occur.

When the product 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.
Zinc stearate: Inhalation of high concentrations of zinc stearate powder can cause a chemical pneumonitis.

t is unlikely that the amount of particles that someone would be exposed to from firing 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.

POTENTIAL ENVIRONMENTAL EFFECTS: Product has not been tested for environmental properties.

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	No	Flammable	No
Combustible	No	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)	Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS: None
EXTINGUISHING MEDIA: Not Applicable - Choose extinguishing media suitable for surrounding materials.
SPECIAL FIREFIGHTING PROCEDURES: In case of fire, use normal fire fighting equipment. Response to this material requires the use of a self-contained breathing apparatus (SCBA).

6. ACCIDENTAL RELEASE MEASURES

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

This material is heavier than and insoluble in water. Do not place spill materials back in their original containers. Containerize and label all spill materials properly. Decontaminate all clothing and the spill area using soap solution and flush with large amounts of water. Use clean shovel or broom to pick up and place in clean container for disposal.

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 and caustics
CONDITIONS TO AVOID: None known.

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)
7440-33-7	Tungsten	5 mg/m^3 STEL: 10 mg/m^3	Not established	Denmark, Netherlands, Norway, Poland, U.K.: 5 mg/m^3 Canada: Manitoba and New Brunswick: 5 mg/m^3; STEL: 10 mg/m^3
557-05-1	Zinc stearate	10 mg/m^3	15 mg/m^{3*}	Finland, France, Netherlands: 10 mg/m^3 Switzerland: 6 mg/m^3 U.K.: 5 mg/m^3 (respirable dust); 10 mg/m^3 (total dust)

*This substance is regulated by OSHA as a Particulate Not Otherwise Regulated (PNOR). The exposure limits listed for OSHA refers to total dust; the OSHA PEL for the respirable fraction is 5 mg/m^3.

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: Not normally needed.
SKIN PROTECTION: Not normally needed
RESPIRATORY PROTECTION: Respiratory protection not normally needed.
GENERAL HYGIENE: Wash hands thoroughly after use.

9. PHYSICAL AND CHEMICAL PROPERTIES

PROPERTY	*VALUE*	*PROPERTY*	*VALUE*
Appearance:	Cylindrical projectile – silver colored if nickel plated, copper colored if copper plated, gray if not plated	*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

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal temperatures and pressure.
MATERIALS TO AVOID: Acids and caustics
HAZARDOUS DECOMPOSITION PRODUCTS: Metals may liberate hydrogen gas from reaction with acids. Metal oxides
HAZARDOUS POLYMERIZATION: Will not occur.
OTHER: None

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	Zinc Stearate	Tungsten
Oral LD_{50}	Not applicable for product	3.5 mg/kg (mouse, intraperitoneal)	> 10 g/kg (rat)	> 2 g/kg (rat, intraperitoneal)
Dermal LD_{50}	Not applicable for product	375 mg/kg (rabbit, subcutaneous)	No data	> 2 g/kg (rabbit)
Inhalation LC_{50}	Not applicable for product. Particles generated from firing may be slightly toxic.	No data	250 mg/kg (rat, intratracheal)	> 5 mg/l (4 hour, rat)
Irritation	Not a skin or eye irritant as a loaded round.	Respiratory irritant	No data	Mild eye and skin irritant

SUBCHRONIC/ CHRONIC TOXICITY: None known or reported.

CARCINOGENICITY:	This product or its components are not classified as carcinogenic by IARC, NTP, OSHA, ACGIH, or EPA.
MUTAGENICITY:	This product is not known or reported to be mutagenic.
REPRODUCTIVE, TERATOGENICITY, OR DEVELOPMENTAL EFFECTS:	This product is not known or reported to cause reproductive or developmental effects.
NEUROLOGICAL EFFECTS:	This product is not known or reported to cause neurological effects
INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:	None known or reported.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

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.

MOBILITY: No data
PERSISTANCE/DEGRADABILITY: Not biodegradable.
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:	Not regulated					
HAZARD CLASS:						
UN NO.:						
PACKING GROUP:						
HAZARD LABEL/PLACARD:						
REPORTABLE QUANTITY:						
SPECIAL COMMENTS:						

15. REGULATORY INFORMATION

US FEDERAL

TSCA	The components of this product are listed on the Toxic Substance Control Act inventory.				
.	Copper, R.Q.= 5000 lbs.; Zinc compounds, R.Q = 1000 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				
SARA 313 Hazard Class:	*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

Component	CA Prop. 65	New Jersey	Pennsylvania	Massachusetts	Michigan
Copper	Not listed	X	X	X	X
Tungsten	Not listed	Not listed	X	X	Not listed
Zinc stearate	Not listed	Not listed	X	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
This material in its solid form is not required to be labeled under EC regulations.

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, Tungsten, Zinc stearate
WHMIS: This product is not subject to WHMIS. It is considered to be a manufactured article.

16. OTHER INFORMATION

REVISIONS: 7/1/09 – changed emergency contract number and mailing 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.