




1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Shotgun Slug Ammunition
CAS Number:	Mixture – Metal Alloy
Synonyms:	Brands: Kaviar Slug, Kaviar 26L Calibers: 12/70 (12 Ga 2 3/4"), 12/76 (12 Ga 3")
Product Use:	Shotgun Slug Ammunition
U.N. Number:	UN 0012
U.N. Dangerous Goods Class:	Explosive, 1.4S
Shipping name:	Cartridges, small arms
Manufacturer:	D Dupleks Ltd.
Manufacturers' Address:	Brivibas gatve 197F, Riga, LV-1039, Latvia
Emergency Telephone Number:	+371 67042473

2. HAZARD IDENTIFICATION

GHS Hazard Symbol (Pictogram):	 (Explosive; Pictogram: exploding bomb)
GHS Classifications:	Explosive Division 1.4 STOT RE Category 1 Reproductive Toxicity Category 1A
Signal Word:	Danger
Hazard Statements:	H204: Fire or projection hazard
Target organs:	Nervous, renal and hematopoietic systems
Precautionary Statements:	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/hearing 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
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
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



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.

Health Hazards or Risks From Exposure

This product is composed of a plastic tube, propellant and projectile completely sealed. 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.

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).

Dibutyl phthalate: May cause harm to the unborn child based on animal experiments. Possible risk of impaired fertility.

Nickel: Repeated exposure may cause an allergic skin reaction consisting of itching, redness, swelling, and rash or urticaria (hives) in sensitized individuals. Epidemiological studies in humans have shown an association between lung and nasal cancers and prolonged occupational exposures to high concentrations of nickel.

Chromium: Exposure to high concentrations of chromium dusts or fumes can cause severe respiratory and nasal irritation. Prolonged or repeated exposures to chromium dusts or fumes may cause perforation of the nasal septum, bloody nose and other symptoms of severe nasal irritation.

Arsenic: Epidemiological studies in humans have shown an association between increased incidences of lung and skin cancer and prolonged exposures to high concentrations of arsenic. Arsenic is classified as a known human carcinogen.

Manganese: Chronic exposure to very high concentrations of manganese dust has caused nervous system effects including muscle weakness, tremors, and behavioral changes.

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.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	% By Weight	CAS Number	EINECS/ ELINCS #
Lead	60 - 75	7439-92-1	231-100-4
Steel	2 - 4	7439-89-6	231-096-4
Copper	0.1 - 4	7440-50-8	231-159-6
Manganese	< 1%	7439-96-5	231-105-1
Nickel	< 1%	7440-02-0	231-111-4
Chromium (non-hexavalent)	< 1%	7440-47-3	231-157-5
Silicon	0.1 - 30	7440-21-3	231-130-8
Polyethylene	17 - 25	9002-88-4	Polymer
Copper	7 - 12	7440-50-8	231-159-6
Zinc	1 - 4	7440-66-6	231-175-3
Nitrocellulose	5 - 10	9004-70-0	Polymer
Nitroglycerin	0.5 - 2	55-63-0	200-240-8
Dibutyl phthalate	0.5 - 2	84-74-2	201-55-74
Lead styphnate	< 1%	15245-44-0	239-290-0
Baryum nitrate	< 1%	10022-31-8	233-020-5
Antimony sulfide	< 1%	1345-04-6	215-713-4
Aluminum powder	< 1%	7429-90-5	231-072-3
Tetrazen	< 1%	109-27-3	203-659-4
Diphenylamine	< 1%	122-39-4	204-539-4
3-Nitrobenzaldehyde	< 1%	99-61-6	202-772-6



This MSDS covers a number of different products consisting of the following components:

- A) Lead shot encased in polyethylene
- B) Plastic shotshell case with brass-plated steel base
- C) Wad
- D) Propellant
- E) Primer

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. If skin irritation develops, call a physician at once.
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

5.1. 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. Keep a 25 meters safety distance.

5.2. Special hazards arising from the substance or mixture:

Generation of vapours and toxic fumes from the pyrolysis and/or the vaporization of the substances contained inside the shotshell.

5.3. Firefighting procedures:

Use normal firefighting equipment.

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:	Explosive

6. ACCIDENTAL RELEASE MEASURES

Spill Response:	A spill of this material will normally not require emergency response team capabilities. If, however, a large spill occurs, call police or other authorities for technical and legal 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 container. Follow the local legislation.



6.1. Individual protection:	Use gloves for handling the released components. Keep products away from any flame or heat source. Ventilate in case of accidental discharge in closed area.
6.2. Environmental precautions:	Do not throw any fired or unfired product on ground
6.3. Cleaning and collecting methods:	Repack the products in their original packing after checking their integrity. In case of accidental spreading, do not use water (increase of dispersion of dangerous substances for environment).

7. HANDLING AND STORAGE

Precautions for Safe Handling:	Use appropriate personal protective equipment (see Section 8). Workers should wash hands thoroughly after handling. Eating, drinking and smoking should be prohibited in areas where this material is handled and stored. While manipulating manually the bottom of the case mustn't be over 1.60m of ground floor. Refer to basic safety rules of shooting and hunting.
Conditions for Safe Storage:	Store in accordance with local regulations. Store in original packing inside a dry and controlled room (T° range not to exceed : -10 to + 60 °C, hyg.<80%). away from Acids, Class A & B explosives, strong oxidizers, and caustics. Avoid mechanical impact or shock and electrical discharge. Products must be stacked correctly and stable.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters: CAS #	CHEMICAL NAME	OELS
7440-50-8	Copper	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)
7439-92-1	Lead	Austria, Denmark, Germany, Sweden, Switzerland: 0.1 mg/m ³ Norway, Poland: 0.05 mg/m ³
7440-66-6	Zinc	None established
9004-70-0	Nitrocellulose	None established
55-63-0	Nitroglycerin	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	Belgium, Denmark, France, Netherlands, Switzerland, U.K.: 5 mg/m ³ , Sweden: 3 mg/m ³
7440-02-0	Nickel	Germany, MAK = 1 mg/m ³ Canada (B.C.), Czechoslovakia, Denmark, Norway – 0.05 mg/m ³ , K1, sensitizer Poland = 0.25 mg/m ³ Ireland, Sweden, Switzerland, U.K. = 0.5 mg/m ³ Belgium, Canada (Alberta & others), Finland, Japan, Mexico, Netherlands – 1 mg/m ³ Portugal = 1.5 mg/m ³



7440-36-0	Antimony	Austria, Belgium, Denmark, France, Finland, Germany, Hungary, Netherlands, Norway, Poland, Sweden, UK: 0.5 mg/m ³
7439-89-6	Steel	None established
7440-47-3	Chromium	Belgium, Denmark, France, Japan, Netherlands, Sweden, U.K. – 0.5 mg/m ³ , Finland – 0.1 mg/m ³
7440-38-8	Arsenic	Germany, MAK – 1 mg/m ³ Austria, Belgium, Finland, Japan, Holland, Czechoslovakia, Hungary and Poland - 0.5 mg/m ³ Italy – 0.25 mg/m ³ Switzerland, Canada (Alberta & others) – 0.2 mg/m ³ Sweden – 0.05 mg/m ³ Canada (B.C.), Denmark = 0.01 mg/m ³ , K1
7440-21-3	Silicon	Belgium, Denmark, France, Netherlands, U.K. – 10 mg/m ³ , Switzerland – 4 mg/m ³
7439-96-5	Manganese	Belgium, Denmark, Finland, France, Switzerland, U.K. – 1 mg/m ³ , Sweden – 2.5 mg/m ³ , Germany (MAK) – 0.5 mg/m ³
9002-88-4	Polyethylene	None established
55-63-0	Lead Styphnate	None established

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. After shooting, smokes containing metallic oxides are generated which are recommended not to inhale.
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

9.1 General information:

Appearance: Cylindrical plastic cartridge with metal base

Odor : None

Physical aspect: Solid

9.2 important information concerning health and safety and environment:

Auto-ignition temperature : 130 °C

Primer sensitivity: Minimum function height on drop test apparatus (steel ball of 56grams) = 70mm



10. STABILITY AND REACTIVITY

Stability:	Stable under normal temperatures and pressure, recommended storage conditions.
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:	<p>Contact with incompatible materials. Physical damage to containers; cartridges may detonate if case is punctured. Primer sensitivity: Minimum function height on drop test apparatus (steel ball of 56grams) = 70mm A temperature rise of the product may conduct to an increase of pressure while firing.</p> <p>A long exposure to a temperature over 80°C or a immersion conduct to a permanent and irreversible degradation of the shotshells components and by extension of its performances.</p> <p>An exposure to a temperature over 130°C may conduct to the cooking-off of the shotshells.</p>

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 and ingestible particles may be created when cartridge is fired.

PRODUCT		SELECTED COMPONENTS								
		Lead	Nickel	Arsenic	Nitro-glycerin	Dibutyl phthalate	Copper	Manganese	Antimony	Chromium
Inhalation LC50	Particles generated from firing may be slightly toxic	No data	>12 mg/kg, it (rat)	No data	No data	4250 mg/m ³ (rat)	No data	No data	No data	87 mg/m ³ (rat)
Skin Contact LD50	Skin absorption unlikely	No data	>7.5 g/kg, sc (rabbit)	No data	>280 mg/kg (rabbit)	>20 ml/kg (rabbit)	375 mg/kg, sc (rabbit)	No data	No data	No data
Ingestion LD50	Ingestion unlikely	No data	>5 g/kg (rat)	763 mg/kg (rat)	105 mg/kg (rat)	8 g/kg (rat)	3.5 mg/kg, ip (mouse)	9 g/kg (rat)	7 g/kg (rat)	27.5 mg/kg (rat)
Irritation	Particles generated from firing may be slightly irritating to the eyes	Not irritating	Respiratory irritant	No data	Mild eye & skin irritant	No data	Respiratory irritant	Mild eye & skin irritant	No data	Nasal & respiratory irritant
Sensitization	Sensitization to this Product has not been reported	No data	Skin sensitizer	No data	No data	No data	No data	No data	No data	No data



12. ECOLOGICAL INFORMATION

Environmental Effects:

PRODUCT: Product has not been tested for environmental properties.

COMPONENTS:

Arsenic:	<i>Daphnia magna</i> , 48 hr. LC50 = 3.8 mg/L; Fathead minnow, 96 hr LC50 = 9.9 mg/L
Chromium:	<i>Daphnia magna</i> , 48 hr. LC50 = 0.022 mg/L; Fathead minnow, 96 hr LC50 = 39 mg/L
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:	Bluegill sunfish, 48 hr. LC50 = 2-5 mg/l. Lead is toxic to waterfowl.
Nickel:	Freshwater algae (4 species), 72 hr. EC50 = 0.1 mg/L; <i>Daphnia magna</i> , 96 hr LC50 = 0.51 mg/L; Rainbow trout, 96 hr LC50 = 31.7 mg/L; Fathead minnow, 96 hr LC50 = 3.1 mg/L
Nitroglycerin:	Bluegill sunfish, 96 hour LC50 = 1.228 mg/l (static)
Nitrocellulose:	LC50 > 1000 mg/l to fish, invertebrates, and algae.
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.

Environmental Fate:

PERSISTANCE/DEGRADABILITY: Not biodegradable. Slugs 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 weapons and hazardous and non-hazardous wastes.

14. TRANSPORT INFORMATION

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

Proper Shipping Name: Cartridges, small arms

Hazard Class Number and Description: Explosive 1.4S

UN Identification Number: UN 0012

Packing Group: PGII

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

GHS CLASSIFICATION

Explosive Division 1.4

STOT RE Category 1

Reproductive Toxicity Category 1A

Aquatic Environment, Chronic II

EUROPEAN REGULATIONS

All chemical components listed on EINECS except polyethylene and nitrocellulose (considered polymers)

Hazard Classification

Danger Symbols: E, T, N

Risk Phrases: R2, R48, R60, R63

Safety Phrases: S2, S15, S20/21, S22, S39, S51, S61

16. OTHER INFORMATION

PREPARED BY: D Dupleks Ltd.

OTHER: Additional information available from: www.ddupleks.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.