1. PRODUCT AND COMPANY IDENTIFICATION

This MSDS covers boxed Black Powder Shotgun Ammunition listed below:

Product Name: Shotshell Loaded Rounds, Black Powder

Trade Names: **Black Dawge 12 Ga. Shotgun Ammunition, #6 shot, Black Powder**
Black Dawge 12 Ga. Shotgun Ammunition, #7-1/2 shot, Black Powder
GOEX 12 Ga. Shotgun Ammunition, Black Powder (limited time)

Synonyms: **Black Powder Loaded Shotshell Rounds**
Boxed Black Powder Shotshells
Boxed Shotgun Loads, Black Powder

Manufactured and Distributed By:

POWDER INC.
1861 North College Ave.
Clarksville AR 72830
Telephone: (479) 705-0005
Toll Free: (877) 833-1799
Fax : (479) 754-6281
email: jerry@powderinc.com

TRANSPORTATION EMERGENCIES – TELEPHONE TOLL FREE1-800-255-3924 – CHEM-TEL

Product Description/Uses - Consumer Commodity. Boxed shotgun ammunition rounds loaded with black powder propellant. These products are intended solely for use by adult persons experienced in the safe use of firearms and black powder ammunition. Typically sold in 25-round cardboard containers.

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Caution!

Explosive. Keep away from heat, mechanical shock, electrical discharge or impact. Handle individual rounds with care. Smoke, dust or particles from the firing of these shotshells may be harmful if inhaled.

OSHA REGULATORY STATUS - These products may be considered to be hazardous chemicals under OSHA Hazard Communication Standard 29 CFR 1910.1200 Applicable OSHA Classifications – Explosive

HAZARD RATINGS *(for dust. smoke or fume)* Hazardous Materials Identification System (HMIS)
Health: 0 Flammability: 2 Physical Hazard - Explosive: 2

Exposure Ratings:
IDLH (Immediately Dangerous to Life or Health)
Not established for this product. IDLH for hazardous components of this product:

Copper, Tin and Lead :	100 mg/m3.
Antimony	50 mg/m3.
Arsenic	5 mg/m3.

POTENTIAL HEALTH EFFECTS

A single round of black powder shotshell ammunition consists of a crimp-sealed polyethylene tube with a brass cap (containing the primer) on one end. Sealed inside this tube is compressing wadding, the lead shot charge, and the black powder propellant. Because of this sealed construction, users or handlers of this product are not likely to be exposed to hazardous components of the product under normal exposure situations. When a round of this ammunition is fired, small amounts of emitted dust and smoke may contain hazardous byproduct particles at low levels which could cause eye and respiratory tract irritation. The particles may contain trace amounts of these harmful substances:

Section 2 - continued

Tin – May cause irritation to skin, eyes and respiratory tract. Suspected cardiovascular or blood toxicant.
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. Lead can be absorbed through the skin and is a possible human carcinogen.
Copper: Inhalation of high concentrations of metallic copper dusts or fumes may cause nasal irritation and/or nausea, vomiting and stomach pain.
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..
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.
Antimony: Chronic exposure to antimony has the potential to result in adverse human health impacts, including liver, kidney and cardiac effects.
Barium: Small amounts of water-soluble barium may cause a person to experience breathing difficulties, increased blood pressures, heart rhythm changes, stomach irritation, muscle weakness, changes in nerve reflexes, swelling of brains and liver, kidney and heart damage

Brief exposure to smoke or dust from the firing of a single round would be unlikely to cause the above effects.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Exposure to dust or fume may aggravate an existing dermatitis, asthma, emphysema, or other respiratory disease or neurological condition. Exposure to lead can aggravate anemia, cardiovascular and respiratory disease.

Carcinogenic Potential – The International Agency for Research on Cancer (IARC) lists lead as possibly carcinogenic to humans, group 2B. Nickel at high concentrations has been found to cause an increase in lung and nasal tumors in chronic exposure tests of animals, and it is classified by IARC as possibly carcinogenic to humans, group 2B. Arsenic is listed as a known human carcinogen by IARC (Group 1), OSHA, NTP and EPA.
Routes of Exposure - Inhalation, Skin absorption, Skin contact, Eye Contact, Ingestion

POTENTIAL ENVIRONMENTAL EFFECTS

Components of this product are toxic or harmful to aquatic organisms.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Each black powder loaded shotshell is an assembly of 4 main components – 1) a polyethylene tubular shell and wadding with a brass cap at one end of the tube (approx. 14 – 23 wt. %); 2) a load of lead shot (approx. 60 – 70 wt. %); 3) a charge of black powder propellant (approx. 8 – 11%); and 4) a 209 shotgun primer (approx 2- 4 wt.%).

Materials and hazardous materials contained in the above components include:

HAZARDOUS COMPONENTS	CAS #	wt. %
in tubular shell:		
Polyethylene tube and wadding	9002-88-4	15 - 21
Copper*	7440-50-8	3.5 4.8
Zinc	7440-66-6	0.5-2.1
In lead shot:		
Lead	7439-92-1	60-70
Antimony *	7440-36-0	0-2
Arsenic *	7440-38-2	0-1
Tin	7440-31-5	0-1
in black powder propellant:		
Charcoal		1.3-1.5
Sulfur	7704-34-9	0.8-1.1
Potassium nitrate	7757-79-1	6.5-7.5

Section 3 - continued

Table cont'd

HAZARDOUS COMPONENTS	CAS #	wt. %
In 209M Primer: (from supplier MSDS)		2-4
Lead styphnate *	12403-82-6	
Barium nitrate *	10022-31-8	
Antimony sulfide *	7440-36-0	
Aluminum	7429-90-5	
Tetracene	109-27-3	
Copper (Primer cup/Batt. Cup) *	7440-50-8	
Nickel (plating components)	7440-02-2	
Zinc (as Zinc oxide)	1314-13-2	
Zinc compounds (primer cup component) *	7440-66-6	

*** Indicates component is reportable under EPA SARA 313**

4. FIRST AID MEASURES

Eye and skin irritation, and inhalation distress not likely to occur from handling or exposure to boxed ammunition, or to an undamaged loaded round. In case of exposure to smoke, fume or dust from the firing of shotshells, or from handling of a damaged and leaking round, follow First Aid Measures listed below.

Eyes - 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 – Wipe off excess material. Wash exposed skin with mild soap and water. Seek medical attention if tissue appears damaged or if pain or irritation persists. Thoroughly clean contaminated clothing before reuse.

Ingestion – If components of this product (e.g. black powder, lead shot) are ingested, call a physician immediately.

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.

5. FIRE FIGHTING MEASURES

NFPA RATING: solid mixture, not rated by NFPA. Cardboard containers are combustible, shotshells are explosive
Flammability Classification – 29CFR1910.1200: Explosive
FLASH POINT: Not applicable.
EXPLOSIVE LIMITS: Not determined for mixture.
AUTOIGNITION TEMPERATURE: Not determined for mixture. Black powder propellant autoignition at ~427^{o}C
Primer may explode if heated to ~200^{o}C
EXTINGUISHING MEDIA: Flood area containing ammunition with water. If water not available, use carbon dioxide, dry chemical or cover with sand or earth. If fire reaches proximity to boxed or loose rounds of this ammunition or boxed ammunition, immediately evacuate the area of all personnel for a distance of 1500 feet in all directions. Ammunition fires are often rapidly controlled by firefighters with standard fog nozzles.
PERSONAL PROTECTION FOR FIREFIGHTING
Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). Consider physical barrier and shield protection needed for firefighting involving explosive ammunition. If fire has approached this explosive product, evacuate as below.
UNUSUAL FIRE AND EXPLOSION HAZARDS: If fire reaches proximity to this explosive product as transport cargo or warehouse or storage situations, evacuate all personnel, including emergency responders, from the area for a distance of 1,500 feet in all directions.

Section 5 - continued

HAZARDOUS PRODUCTS OF COMBUSTION. Combustion products vary depending on fire conditions and other combustibles present in the fire. Product loaded rounds may be broken and expose product components. Smoke and gases may contain carbon dioxide, carbon monoxide, nitrogen and sulfur oxides, and various hydrocarbons.

6. ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES: Handle all spills of this explosive product carefully.
Because of small package size and typical limited quantity of material expected to be in places of use, spills will likely be small in size. Handling small spills will normally not require emergency response team assistance.

Small Spill -. Eliminate all ignition sources. Wear protective equipment (safety goggles, impermeable gloves as minimum). Exclude non-critical personnel from the spill area. Prevent spreading of the spill. Carefully and gently scoop or sweep spilled materials and any contaminated materials into small piles for transfer to DOT approved explosives hazardous waste containers. Use non-sparking tools.
Large Spill - Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading-. If runoff occurs, notify authorities as required. Using non-sparking tools (brooms, shovels, scoops, brushes, etc.) carefully transfer spilled product to DOT-approved explosive containers for recovery or disposal as hazardous waste.. Disposal as hazardous waste must be made under all applicable local, state and federal hazardous waste disposal regulations. Spill responders trained and experienced in explosives spills should be utilized for large spills.

If this product becomes waste, it meets the criteria of a hazardous waste as defined in 40 CFR 261, and is assigned the following EPA Hazardous Waste code: D003.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THESE MATERIALS. THE USER 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.

7. HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS:

- Fired rounds of this product may be hazardous when emptied. Since emptied rounds retain product residues, all hazard precautions given in the data sheet must be observed.
- Keep away from heat, sparks, electrical discharges (AC,DC, static) and flames. Store in a cool, dry, well ventilated place away from incompatible materials. Avoid storing product in direct sunlight for extended periods of time. Store at temperature of 70°F or lower if possible. Do not allow to freeze, as primer initiator may become highly sensitive when frozen.
- **CAUTION!** Never attempt to disassemble individual cartridges to retrieve black powder or lead shot. Inadvertent firing of the round may occur.
- **KEEP THESE PRODUCTS OUT OF THE REACH OF CHILDREN AT ALL TIMES**

CONDITIONS TO AVOID: Electrical discharge, shock or impact, dropping of individual loaded rounds, elevated or freezing temperature.
MATERIALS TO AVOID: Acids and bases, other explosives, strong oxidizers.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

ESTABLISHED EXPOSURE LIMITS

NE = not established

COMPONENT	CAS #	OSHA (PEL)	ACGIH (TLV)
Lead	7439-92-1	0.05 mg/m^3	0.05 mg/m^3
Copper	7440-50-8	0.01 mg/m^3 (fume) 1 mg/m^3 (dusts and mists)	0.02 mg/m^3 (fume) 1 mg/m^3 (dusts and mists)
Zinc	7440-66-6	NE	NE
Potassium nitrate	7757-79-1	NE	NE
Nickel	7440-02-2	1 mg/m^3	1.5 mg/m^3 (inhalable)
Antimony	7440-36-0	0.05 mg/m^3	0.05 mg/m^3
Lead styphnate	12403-82-6	0.05 mg/m^3	
Tin	7440-31-5	2 mg/m^3	2 mg/m^3
Barium nitrate	10022-31-8	0.5 mg/m^3	
Antimony sulfide	7440-36-0	0.5 mg/m^3	
Zinc oxide	1314-13-2	0.2 mg/m^3	
Tetracene	109-27-3	NE	

PERSONAL PROTECTIVE EQUIPMENT

Safety glasses or goggles with side shields are recommended. To prevent repeated or prolonged skin contact, wear impervious clothing and gloves for spill cleanups where broken ammunition may be present. . Provide respiratory protection if Section 8 Exposure Limits above are exceeded.

Eye Protection- Safety glasses or goggles in compliance with OSHA regulations are advised.
Hand Protection – Use resistant gloves (such as: natural rubber, neoprene, nitrile rubber) in handling spills or spent rounds..
Respiratory Protection - If workplace exposure limit(s) of products or any component are exceeded (see exposure guidelines above), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions. Engineering or administrative controls should be implemented to reduce exposure.

ENGINEERING CONTROLS – If needed, provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colored plastic tube with brass head containing a primer
Odor	none
Odor threshold	NA
Physical state	solid
pH 25 Deg. C	NA
Boiling Point	NA
Freezing Point	NA
Initial boiling point	NA
Boiling Range	NA
Flash Point	NA

Evaporation rate	NA
Flammability/Explosive Limits	NA
Vapor Pressure	NA
Vapor Density	NA
Density – g/cc - @65°F	NA
Bulk Density #/gal	NA
Solubility in Water	Product Insoluble; black powder propellant contained in tube is water soluble
Partition coefficient Oil/water distribution	NA
Autoignition/Decomposition Temperature	Not determined. Black powder propellant autoignition temperature ~467° C, primer may explode at ~200° C
Volatiles, Percent By Volume	NA

NA = not applicable

10. STABILITY AND REACTIVITY

INSTABILITY: Stable under normal use conditions of temperature and pressure
INCOMPATIBILITY: Heat, acids, bases, oxidizers, other explosives
HAZARDOUS POLYMERIZATION: Will not occur.
DECOMPOSITION PRODUCTS: Hazardous byproducts of firing, burning or thermal decomposition may include product components, carbon dioxide, carbon monoxide, nitrogen and sulfur oxides. various hydrocarbons, smoke and fumes containing particulate matter of component metals. Combustion products vary depending on fire conditions and other combustibles present in the fire. Product loaded rounds may be broken in fires or accidents and expose hazardous product components.
OTHER CONDITIONS TO AVOID: Direct sunlight; temperatures of use or storage below freezing and above approximately 50° C.

11. TOXICOLOGICAL INFORMATION

ROUTES OF ABSORPTION: **Product -** Little, if any, exposure to hazardous materials by any route is likely to occur in normal handling of this product, because of the contained design of the individual rounds. Smoke or fume from firing of single or multiple rounds may carry small amounts of hazardous particulate or gases, and if absorbed in the body by routes of eyes, inhalation, skin contact or ingestion; can have toxic effects. Symptoms of such exposure of humans to possible hazardous particulate from fired or damaged rounds include the following:

POSSIBLE HUMAN EFFECTS:

Eye – Dust, smoke or fume containing fine particulate lead can cause irritation, redness and in extreme cases cause discharges from the eyes.

Inhalation – Irritation to nose, throat, upper respiratory tract and lung can result from inhalation of lead particulate and fume. Extended exposure to lead fume and particulate can cause headaches, bronchitis, lowered blood pressure, weakness and collapse. In extreme cases vision impairment is possible due to damage to optic nerve. Chronic inhalation of lead fume may damage central and peripheral nervous systems, resulting in reduction of motor nerve and muscle functions. Anemia may occur from lead interference with hemoglobin generation. Lead is a possible human carcinogen, may affect reproductive systems, and extreme exposure can cause a condition known as "lead poisoning".

Skin contact – Lead can be absorbed through the skin, with possible acute and chronic effects as described above.

Ingestion – Ingested lead may produce effects similar to effects of inhalation.

Section 11 – continued

CARCINOGENICITY: Product not tested for or known or reported to be carcinogenic by IARC, OSHA, NTP and EPA. Lead, Arsenic, Nickel and its compounds – content of this product - are classified as carcinogenic by two or more of the agencies OSHA, IARC, NTP and EPA.

MUTAGENICITY: Product not tested or known to be mutagenic. Nickel and its salts have been reported to be mutagenic in several test series.

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY: Lead can affect fetal development and male reproductive functions. Trans-placental passage of lead can affect the fetus and cause birth defects, mental retardation and behavioral disorders.

12. ECOLOGICAL INFORMATION

AQUATIC TOXICITY: **Lead:** 48 hour LC_{50} = 2.5 mg/liter for bluegill. Lead is toxic to waterfowl**.**

Copper shows variable toxicity for many aquatic species depending on such factors as the specific aquatic species; hardness, turbidity, temperature and other water properties**.**

Nickel: 96 hr LC50, rainbow trout =31.7 mg/L; 96 hr LC50, fathead minnow = 3.1 mg/L; 72 hr EC50, freshwater algae(4 species): = 0.1 mg/L; 96 hr LC50, *Daphnia* = 0. 51 mg/L

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.

Arsenic: *Daphnia* magna, 48 hr. LC50 = 3.8 mg/L; Fathead minnow, 96 hr LC50 = 9.9 mg/L

GENERAL - Due care should be taken to avoid accidental releases of these products or byproducts to aquatic or terrestrial systems.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: User has responsibility for the safe and legal disposal of any waste that is generated from this Product or its decomposition products. Follow all local, state and federal laws concerning treatment, storage and disposal for hazardous and non-hazardous wastes generated from this product. As a hazardous waste this material is to be identified as EPA hazardous waste D003.

14. TRANSPORT INFORMATION

Proper Shipping Name – U.S DOT, IATA, IMO Cartridges, Small Arms
Hazard Class: 1.4S
UN No.: UN0012
Packing Group: II
Hazard Label – Placard: No label Land or Water, 1.4S Label Air, 1.4S Placard shipments over 1000 pounds

Product may be reclassified for shipment within the U.S. to ORM-D when packaged as Consumer Commodity per 49 CFR 172.316. ORM-D shipment requires ORM-D markings on container.

15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) : all components of these products are listed in the TSCA Inventory.

SARA Title III, Sections 311/312 : Hazard Categories for this product per 40 CFR 370.21 :

Acute (health) - No **Reactive (physical) - No**
Chronic (health) – No **Sudden Release of Pressure (physical) – Yes**
Fire - Yes

Section 15 - continued

CERCLA Sections 102a/103 – Hazardous Substances – RQ: Arsenic – 1 1b,: Copper – 5000 lbs.; Lead – 10lbs.; Nickel – 100 lbs.; Antimony – 5000 lbs..

SARA Title III, Section 313 covered components: Lead and Lead compounds, Copper, Zinc as fume or dust, Nickel, Antimony, Arsenic.

California Proposition 65 - These products contains a chemical(s) known in the State of California to cause cancer, birth defects, or other reproductive harm. Included: Lead, Arsenic, Lead styphnate.

16. OTHER INFORMATION

Revision 1 – 6/29/2009.. Compiled from MSDS documents for components and for similar products; OSHA, DOT, NIOSH and EPA regulations and documents; and Engineering and Hazardous Materials Handbooks. Please report any errors found or suggested corrections/additions to jerry@powderinc.com .

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