

Olin MSDS No.: **00064.0001**
Revision No.: **17**

Revision Date: 1/1/11
Supercedes: 1/1/10

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: BALL POWDER® PROPELLANT
Chemical Name: Mixture
Synonyms: Smokeless Powder, Double Base Propellant
Chemical Family: Mixture
Formula: Not applicable - mixture
Product Use: Propellant explosive, solid

COMPANY ADDRESS	MSDS Control Group Olin Corporation – Winchester Division, Inc. 600 Powder Mill Road East Alton, IL 62024 www.winchester.com	TECHNICAL INFORMATION:	EMERGENCY TELEPHONE NUMBER:
		618-258-3507	618-258-2111

2. COMPOSITION/INFORMATION ON INGREDIENTS

CAS Number	Components	% By Weight	EINECS/ ELINCS #	EU Classification	
				Symbol	R-Phrase
55-63-0	Nitroglycerin	10 – 30 or 30 - 60	200-240-8	E, T+, N	R 3-26/27/28-33-51-53
84-74-2	Dibutyl phthalate	1 - 5	201-55-74	None	None
Proprietary	Polyester adipate	1 - 5	N.A.	N.A.	N.A.
85-98-3	Ethyl centralite (diethyl-diphenylurea)	3 - 7	291-645-2	Xi*	R36/37/38
8050-09-7	Rosin	1 - 5	232-475-7	Xi	R 43
141-78-6	Ethyl acetate	0.5 – 1.5	205-500-4	F, Xi	R11-36-66-67
122-39-4	Diphenylamine	0.5 – 1.5	204-539-4	T, N	R23/24/25-33-50/53
86-30-6	N-nitrosodiphenyl amine	0.1 - 1	201-663-0	T, Xi	R 36/38-40
7757-79-1	Potassium nitrate	0.5 – 1.5	231-818-8	O*, Xi	R8-36/38
7778-80-5	Potassium sulfate	0.5 – 1.5	231-915-5	None	None
9004-70-0	Nitrocellulose	40 - 70	Not listed	E*	R 2

N.A. = not applicable; *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: Explosive, toxic by ingestion and inhalation, irritant, sensitizer, kidney, liver and blood toxin

3. HAZARDS IDENTIFICATION

DANGER!

EXPLOSIVE. DO NOT SUBJECT TO MECHANICAL SHOCK OR IMPACT OR STATIC DISCHARGE. DO NOT USE NEAR OPEN FLAME. EXPOSURE TO DUST CAN CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION. HARMFUL OR FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. EXPOSURE TO DUST CAN CAUSE RESPIRATORY SYSTEM DAMAGE. MAY CAUSE KIDNEY, LIVER AND BLOOD DAMAGE BASED ON ANIMAL DATA. CAN CAUSE AN ALLERGIC SKIN REACTION. DO NOT TAKE INTERNALLY. USE ONLY WITH ADEQUATE VENTILATION. AVOID BREATHING DUST. KEEP CONTAINER CLOSED. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.

HAZARD RATINGS (for dust or fume)

Degree of hazard (0 = low, 4 = extreme)

<u>Hazardous Materials Identification System (HMIS)</u>	Health: 2*	Flammability: 3	Physical Hazard: Explosive: 2 Unstable Reactive: 3
<u>National Fire Protection Association (NFPA)</u>	Mixture. Not rated.		

HUMAN THRESHOLD RESPONSE DATA

<u>Odor Threshold:</u>	Unknown
<u>Irritation Threshold:</u>	Unknown
<u>Immediately Dangerous to Life or Health (IDLH) Value(s):</u>	The IDLH for this product is not known. The IDLH for dibutyl phthalate is 4000 mg/m ³ . The IDLH for nitroglycerin is 75 mg/m ³ .

POTENTIAL HEALTH EFFECTS

ACUTE EFFECTS

Eye: Can cause irritation consisting of redness, swelling, and pain. May cause conjunctivitis with repeated exposures.

Skin: May be harmful or fatal if absorbed through skin. Contact with dust may cause irritation consisting of redness and/or swelling.

Inhalation: Harmful or fatal if inhaled. Inhalation of high concentrations of powder, dust, or fume may cause respiratory and nasal irritation, coughing, and difficulty breathing.

Ingestion: Harmful or fatal if swallowed. Ingestion of dust may cause nausea, vomiting, constipation, cramps, and or stomach pain. Ingestion of large doses of potassium nitrate can lead to the development of methemoglobinemia (inability of the blood to carry sufficient oxygen). It is not anticipated that exposure from this product would cause this effect.

CHRONIC EFFECTS: Prolonged or repeated skin contact with dust may cause more severe irritation or dermatitis. Prolonged or repeated inhalation of dust or fume may cause more severe irritation and possibly lung damage. Repeated exposure may cause an allergic skin reaction consisting of itching, redness, swelling, and rash or urticaria (hives) in sensitized individuals. 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). Diphenylamine has been shown to induce kidney damage. Chronic exposure to high levels of ethyl acetate can cause liver damage.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: : Exposure to dust may aggravate an existing dermatitis, kidney, liver, blood or cardiovascular disease, asthma, emphysema, or other respiratory disease.

POTENTIAL ENVIRONMENTAL EFFECTS: May be toxic to aquatic organisms and cause long-term adverse effects in the aquatic environment.

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush out dust 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: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse and thoroughly clean shoes before reuse. Get medical attention.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

INGESTION: Poison. Get medical attention immediately. If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

NOTE TO PHYSICIANS: There is no specific antidote to the active ingredients in this product; use symptomatic treatment.

5. FIRE FIGHTING MEASURES

PROPERTY	VALUE	PROPERTY	VALUE
Explosive	Yes	Flammable	Not applicable
Combustible	Not applicable	Pyrophoric	No
Flash Point (°C):	Not applicable	Burning Rate of Material:	No data
Lower Explosive Limit:	Not applicable	Autoignition Temp.:	190 - 200°C
Upper Explosive Limit:	Not applicable	Flammability Classification: (defined by 29 CFR 1910.1200)	Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS: Dust may cause an ignitable and/or an explosive atmosphere.

EXTINGUISHING MEDIA: For localized powder fires, smother with dry sand, dry dolomite, sodium chloride or soda ash. Use fire-extinguishing media appropriate to fight surrounding fire.

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). Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to: boots, gloves (neoprene, chlorinated polyethylene, butyl rubber), hard hat and impervious clothing, i.e., chemically impermeable suit. Wash all clothing prior to reuse.

6. ACCIDENTAL RELEASE MEASURES

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

SPILLS OF THIS MATERIAL MAY REPRESENT AN EXPLOSION HAZARD and should be handled carefully. This product may explode if subjected to heat, shock, friction, static discharge, or impact. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel. A spill of this material may require emergency response team capabilities; call 1-888-289-1911 for technical assistance.

Wet all spill materials prior to initiating clean up procedure. Use non-sparking or plastic equipment to clean up spill. Wear non-flammable or flame retardant clothing at all times. Material may best be destroyed if burned in an open flame burn if permissible by all regulatory functions. Spread material in thin layers and ignite from a remote location using a slow burning train.

Water Release: This material is heavier than water. Create an overflow dam with filtration capabilities to retain material. Divert water flow or stop if possible. Gather wet material using non-sparking or plastic utensils. Keep material damp until ready for disposal.

7. HANDLING AND STORAGE

HANDLING:

Avoid dispersion of dust in air. Do not expose to direct light. Do not subject to mechanical shock.

STORAGE:

Store in a cool, dry, well ventilated place away from all sources of ignition. Do not store at temperatures above 38°C (100°F).

Shelf Life Limitations:
Incompatible Materials for Packaging:

Indefinite if kept under 100°F.
Must be stored in original shipping container for explosion venting purposes. No incompatible packaging materials known.

Incompatible Materials for Storage or Transport:

Oxidizers, acids or alkalis.

OTHER PRECAUTIONS:

Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or HEPA vacuuming.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CAS #	CHEMICAL NAME	ACGIH TLV	OSHA PEL	INTERNATIONAL OELS
9004-70-0	Nitrocellulose	None established	None established	None established
55-63-0	Nitroglycerin	0.05 ppm (0.46 mg/m ³) Skin	Ceiling – 0.2 ppm (2 mg/m ³) Skin	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	5 mg/m ³	5 mg/m ³	Belgium, Denmark, France, Netherlands, Switzerland, U.K.: 5 mg/m ³ Sweden: 3 mg/m ³
7757-79-1	Potassium nitrate	None established	None established	None established
Proprietary	Polyester adipate	None established	None established	None established
85-98-3	Ethyl centralite (diethyl-diphenylurea)	None established	None established	None established
8050-09-7	Rosin	Sensitizer – reduce to as low as possible	None established	None established
141-78-6	Ethyl acetate	400 ppm (1400 mg/m ³)	400 ppm (1400 mg/m ³)	Austria, Belgium, France, Germany, Switzerland, Turkey, U.K.: 400 ppm Denmark, Norway, Sweden: 150 ppm Finland: 300 ppm
122-39-4	Diphenylamine	10 mg/m ³	10 mg/m ³	Austria, Belgium, Netherlands, Switzerland, U.K.:

				10 mg/m ³ Denmark, Norway: 5 mg/m ³
86-30-6	N-nitrosodiphenyl amine	None established	None established	None established
7778-80-5	Potassium sulfate	None established	None established	None established

ENGINEERING CONTROLS:

Local explosion-proof exhaust ventilation is recommended if significant dusting occurs or fumes are generated. Otherwise, use general explosion-proof exhaust ventilation.

EYE / FACE PROTECTION:

Use safety glasses.

SKIN PROTECTION:

Wear impervious (cut-resistant) gloves and other protective clothing (aprons, coveralls) as appropriate to prevent skin contact when using this product. If generating a dust, wash thoroughly after handling, especially before eating, drinking, or smoking.

RESPIRATORY PROTECTION:

Respiratory protection not normally needed. If dusting occurs or fumes are generated above the PEL/TLV, use a NIOSH-approved respirator equipped with organic vapor cartridge and High Efficiency Particulate (HEPA) dust pre-filter.

GENERAL HYGIENE CONSIDERATIONS:

Do not eat, drink, or smoke while using this product in dust form.

9. PHYSICAL AND CHEMICAL PROPERTIES

PROPERTY	VALUE	PROPERTY	VALUE
<i>Appearance:</i> <i>Odor:</i> <i>Molecular Weight:</i> <i>Physical State:</i> <i>pH:</i> <i>Vapor Pressure (mm Hg):</i> <i>Vapor Density</i>	Granular solid None Not applicable - Mixture Solid Not applicable < 1 mm Hg Not applicable	<i>Vapor Density (air = 1):</i> <i>Boiling Point (°F):</i> <i>Melting point:</i> <i>Specific gravity (g/cc):</i> <i>Bulk Density</i> <i>Viscosity (cps):</i> <i>Decomposition Temperature:</i>	Not applicable Not applicable No data 1.2 – 1.6 0.5 – 1 (g/cc) Not applicable Decomposition becomes measurable above 50°C (122°F)
<i>Solubility in Water (20 °C):</i> <i>Volatiles, Percent by volume:</i>	Negligible < 2	<i>Evaporation Rate:</i> <i>Octanol/water partition coefficient:</i>	Negligible Unknown

10. STABILITY AND REACTIVITY
STABILITY:

CAN IGNITE DUE TO IMPACT OR STATIC DISCHARGE.

CONDITIONS TO AVOID:

Avoid direct sunlight and open flame

MATERIALS TO AVOID:

Acetylene, chlorine

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic fumes from diphenylamine composition

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION
POTENTIAL EXPOSURE ROUTES: Ingestion, inhalation, dermal exposure, and eye contact

ACUTE ANIMAL TOXICITY DATA:

For Product:		For Components										
		Nitroglycerin	Dibutyl phthalate	Polyester adipate	Diethyl diphenyl urea	Rosin	Ethyl acetate	Diphenyl amine	N-nitrosodiphenyl amine	Potassium nitrate	Potassium sulfate	Nitrocellulose
Oral LD ₅₀	Believed to be toxic	0.1105 g/kg (rat)	8 g/kg (rat)	No data	2.5 g/kg (rat)	No data	5.62 g/kg (rat)	1.12 g/kg (rat)	1.825 g/kg (rat)	3.75 g/kg (rat)	6.6 g/kg (rat)	> 5 g/kg (rat)
Dermal LD ₅₀	Believed to be toxic	> 280 mg/kg (rabbit)	> 20 ml/kg (rabbit)	No data	No data	No data	> 20 ml/kg (rabbit)	No data	> 7.94 gg/kg (rabbit)	No data	3 g/kg (guinea pig, subcutaneous)	No data
Inhalation LC ₅₀	Believed to be toxic	No data	4250 mg/m ³ (rat)	No data	No data	No data	200 mg/m ³	No data	No data	No data	No data	No data

For Product:		For Components										
		Nitroglycerin	Dibutyl phthalate	Polyester adipate	Diethyl diphenyl urea	Rosin	Ethyl acetate	Diphenyl amine	N-nitrosodiphenyl amine	Potassium nitrate	Potassium sulfate	Nitrocellulose
Irritation/Sensitization	Eye and respiratory irritant, sensitizer	Mild eye and skin irritant	No data	No data	No data	Skin sensitizer	No data	No data	Corrosive to the eye	No data	No data	No data

SUBCHRONIC/ CHRONIC TOXICITY: Diphenylamine has been shown to induce kidney damage in laboratory animals. When fed to dogs for a period of 2 years, the rate of growth was depressed and anemia and liver damage developed.

CARCINOGENICITY: N-nitroso-diphenylamine caused an increase in bladder and kidney tumors during chronic administration to laboratory animals. EPA classifies n-nitrosodiphenylamine as a probable human carcinogen, B2. IARC classifies it as a Group 3 carcinogen (unclassifiable as to human carcinogenicity). The European Union classifies n-nitrosodiphenylamine as a Category 3 carcinogen.

MUTAGENICITY: This product is not known or reported to be mutagenic. N-nitrosodiphenylamine has tested positive in a variety of *in vitro* and *in vivo* mutagenicity assays.

REPRODUCTIVE, TERATOGENICITY, OR DEVELOPMENTAL EFFECTS: This product is not known or reported to cause reproductive or developmental effects. Diphenylamine administered via the diet to pregnant rats caused teratogenic effects in the offspring.

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: No data is available on this product. Individual constituents are as follows:

Nitrocellulose: LC₅₀ > 1000 mg/l (fish, invertebrates, algae)

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

MOBILITY: No data

PERSISTANCE/DEGRADABILITY: No data

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 non-hazardous wastes. This product may be a candidate for metal reclamation.

14. TRANSPORT INFORMATION

	U.S. DOT	RID/ADR	IMDG	IATA	IMO	Canada TDG
PROPER SHIPPING NAME:	Powder, Smokeless	Unknown	Same as land	FORBIDDEN	Same as land	Powder, Smokeless
HAZARD CLASS:	1.3 C					1.3 C
UN NO.:	UN0161					UN0161
PACKING GROUP:	II					II
LABEL:	EXPLOSIVE 1.3C					EXPLOSIVE 1.3C
REPORTABLE QUANTITY:	Not applicable					

SPECIAL COMMENTS						Marine pollutant; forbidden by transport on passenger carrying roadways or railways
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15. REGULATORY INFORMATION

US FEDERAL

TSCA	The components of this product are listed on the Toxic Substance Control Act inventory.				
CERCLA:	Ethyl acetate, R.Q.= 5000 lbs.; Nitroglycerin, R.Q. = 10 lbs; Dibutyl phthalate, R.Q. = 10 lbs.; N-Nitrosodiphenyl amine, R.Q. = 100 lbs				
SARA 313:	Nitroglycerin, Dibutyl phthalate,				
SARA 313 Hazard Class:	<u>Health:</u>	Acute – Yes, Chronic - Yes	<u>Fire:</u> Yes	<u>Reactivity:</u> Yes	<u>Release of Pressure:</u> 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
Nitrocellulose	Not listed	X	X	X	Not listed
Nitroglycerin	Not listed	X	X	X	Not listed
Dibutyl phthalate	Not listed	X	X	X	X
Polyester adipate	Not listed	Not listed	Not listed	Not listed	Not listed
Ethyl centralite (diethyl-diphenylurea)	Not listed	Not listed	Not listed	Not listed	Not listed
Rosin	Not listed	Not listed	Not listed	Not listed	Not listed
Ethyl acetate	Not listed	Not listed	X	X	Not listed
Diphenylamine	Not listed	X	X	X	Not listed
N-nitrosodiphenyl amine	X	X	X	X	X
Potassium nitrate	Not listed	Not listed	X	X	Not listed
Potassium sulfate	Not listed	Not listed	Not listed	Not listed	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

Hazard Classification

Danger Symbol: E Explosive
 T+ Very Toxic
 Xi Irritant
 N Dangerous to the environment

Risk Phrases: R 3 Extreme risk of explosion by shock, friction, fire or other sources of ignition
 R 26/27/28 Very toxic by inhalation, in contact with skin and if swallowed
 R 36/37/38 Irritating to eyes, respiratory system and skin
 R 43 May cause sensitization by skin contact
 R 51/53 Toxic to aquatic organisms; may cause long-term adverse effects in the environment

Safety Phrases: S 1 Keep locked up
 S 45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)
 S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
 S 27/28 After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of soap and water.
 S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection

S 29/56 Do not empty into drains, dispose of this material and its container to hazardous or special waste collection point.

German WGK Classification: 3

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: Dibutyl phthalate, Ethyl acetate, Diphenylamine, N-nitrosodiphenyl amine

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

16. OTHER INFORMATION

REVISIONS: New international format, toxicology review – 1/1/03; 7/1/09 - changed emergency contact number and mailing address; 1/1/11 - review

PREPARED BY: Olin Corporation

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.