



St. Marks OEM Propellants
MATERIAL SAFETY DATA SHEET
April 2009

The following OEM smokeless propellants are manufactured by St Marks Powders
and distributed by Hodgdon Powder Company.

SMP[®] 745
SMP[®] 746
WPT[®] 101
OBP[®] 244
OBP[®] 248
SMP[®] 289
WC[®] 297
OBP[®] 513
SMP[®] 735

St. Marks Powder
A GENERAL DYNAMICS COMPANY
P.O. Box 222
St. Marks, FL 32355

TRANSPORTATION EMERGENCIES
CALL CHEMTREC 1-800-424-9300
EMERGENCY PHONE 1-850-925-6111

Material Safety Data Sheet

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD. (REFER TO THE OSHA CLASSIFICATION IN SEC. I.) THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE. THE EXPOSURE TO THE COMMUNITY, IF ANY, IS QUITE DIFFERENT.

I. PRODUCT IDENTIFICATION

REVISION NO: 3
REVISION DATE: 9/10/08
PRODUCT NAME: BALL POWDER® propellant
SYNONYMS: WC, WAA®, WCR®, WMG®, WMR®, WRF®, WPR®, WPT®, WSX®, SPI, SHP,
WCUNI, OBP®, SMP®, M38, M47, M48
CHEMICAL FAMILY: Mixture
FORMULA: Not Applicable/Mixture
DESCRIPTION: Propellant explosive, solid
OSHA HAZARD CLASSIFICATION: Explosive, toxic, blood toxin, skin and eye irritant

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Nitroglycerin
CAS NUMBER: 55-63-0
PERCENTAGE RANGE: 0-42%
HAZARDOUS PER 29 CFR 1910.1200 : Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:	None		0.05	
CEILING:	0.2	2(skin)	None	
STEL:	None		None	

CAS or CHEMICAL NAME: Dibutyl phthalate
CAS NUMBER: 84-74-2
PERCENTAGE RANGE: 0-10%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		5		5
CEILING:		None		None
STEL:		None		None

CAS or CHEMICAL NAME: Polyester adipate
CAS NUMBER: Supplier proprietary
PERCENTAGE RANGE: 0-10%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Akardite II
CAS NUMBER: 13114-72-2
PERCENTAGE RANGE: 0-1.5%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Ethyl Centralite (diethyldipenyhurea)
CAS NUMBER: 85-98-3
PERCENT RANGE: 0-10%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Rosin
CAS NUMBER: 8050-09-7
PERCENTAGE RANGE: 0-5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Ethyl Acetate
CAS NUMBER: 141-78-6
PERCENTAGE RANGE: 0-2%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:	400	1,400	400	
CEILING:		None	None	
STEL:		None	None	

CAS or CHEMICAL NAME: Diphenylamine
CAS NUMBER: 122-39-4
PERCENTAGE RANGE: 0.3-1.5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		None		
CEILING:		None	None	
STEL:		None	None	

CAS or CHEMICAL NAME: N, Nitrosodiphenylamine
CAS NUMBER: 86-30-6
SPECIFIC PERCENTAGE: 0-1.5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Potassium nitrate
CAS NUMBER: 7757-79-1
PERCENTAGE RANGE: 0-1.5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Potassium sulfate
CAS NUMBER: 7778-80-5
PERCENTAGE RANGE: 0-3%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

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CAS or CHEMICAL NAME: Tin dioxide
CAS NUMBER: 18282-10-5
PERCENTAGE RANGE: 0-1.5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		2		2
CEILING:		None		None
STEL:		None		None

CAS or CHEMICAL NAME: Graphite
CAS NUMBER: 7782-42-5

PERCENTAGE RANGE: 0.02-1%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: Respirable dust

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		5		2
CEILING:		None		None
STEL:		None		None

CAS or CHEMICAL NAME: Calcium carbonate
CAS NUMBER: 1317-65-3
PERCENTAGE RANGE: 0-1%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: Total Dust

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		15		10
CEILING:		None		None
STEL:		None		None

CAS or CHEMICAL NAME: Nitrocellulose
CAS NUMBER: 9004-70-0
PERCENTAGE RANGE: Remainder to 100%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.

STORAGE CONDITIONS: Store in a cool, dry well-ventilated place away from all sources of ignition.
DO NOT STORE AT TEMPERATURES ABOVE: 38 Deg.C (100 Deg.F)
DO NOT SUBJECT TO MECHANICAL SHOCK.
DO NOT EXPOSE TO DIRECT LIGHT.
OTHER: Must be stored in original shipping container.

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: Indefinite when kept under 100 degrees F.

INCOMPATIBLE MATERIALS FOR PACKAGING: 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

IV. PHYSICAL DATA

APPEARANCE: Granular solid

FREEZING POINT: Not Applicable

BOILING POINT: Not Applicable

DECOMPOSITION TEMPERATURE: Decomposition becomes measurable above 50 Deg.C (122 Deg.F)

SPECIFIC GRAVITY: 1.2-1.6

BULK DENSITY: 0.5-1 (g/cc)

pH @ 25 DEG.C: Not Applicable

VAPOR PRESSURE @ 25 DEG.C: < 1 mm Hg

SOLUBILITY IN WATER: Negligible

VOLATILES, PERCENT BY VOLUME: < 2

EVAPORATION RATE: Negligible

VAPOR DENSITY: Not Applicable

MOLECULAR WEIGHT: Not Applicable

ODOR: None

COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Respiratory protection not normally needed. If significant dusting occurs, wear a NIOSH approved respirator with organic vapor cartridge and particulate filter.

VENTILATION: Local exhaust ventilation is recommended if significant dusting occurs. Otherwise, use general exhaust ventilation.

SKIN PROTECTIVE EQUIPMENT: Impermeable gloves

OTHER: Safety gasses with side shields

EQUIPMENT SPECIFICATIONS

RESPIRATOR TYPE: NIOSH approved respirator with organic vapor cartridge and particulate filter.

GLOVE TYPE: Impervious

BOOT TYPE: Impervious

APRON TYPE: Impervious

PROTECTIVE SUIT: Impervious

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

EXPLOSIVE: Yes

FLAMMABLE: Not Applicable

COMBUSTIBLE: Not Applicable

PYROPHORIC: No

FLASH POINT: Not Applicable

AUTOIGNITION TEMPERATURE: 190-200 Deg.C

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT

VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NFPA RATINGS: Not Established

HMS RATINGS:

Health: 1

Flammability: 2

Reactivity: 4

EXTINGUISHING MEDIA: Use extinguishing media compatible for surrounding products. If material itself is on fire, deluge with water.

FIRE FIGHTING TECHNIQUES AND COMMENTS: See Section XI for protective equipment for fire fighting.
Fight all fires from a remote location or explosive resistant bunker.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:

TEMPERATURES ABOVE: 120 Deg.C (248 Deg.F)
MECHANICAL SHOCK OR IMPACT: Yes, can ignite due to impact.
ELECTRICAL (STATIC) DISCHARGE: Yes, can ignite due to static discharge.
HAZARDOUS POLYMERIZATION: Will not occur
INCOMPATIBLE MATERIALS: Strong acids, bases, oxidizers, amines
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, oxides of nitrogen
OTHER CONDITIONS TO AVOID: Direct sunlight and open flame

SUMMARY OF REACTIVITY:

OXIDIZER: No
PYROPHORIC: No
ORGANIC PEROXIDE: No
WATER REACTIVE: No
OTHER: EXPLOSIVE

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation develops, call a physician.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. Induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, ingestion and skin and eye contact

WARNING STATEMENTS AND WARNING PROPERTIES

MAY BE HARMFUL IF INHALED OR INGESTED. HARMFUL UPON CONTACT WITH SKIN OR EYES.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: No available data

IRRITATION THRESHOLD: No available data

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: The IDLH concentration has not been established for this product.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Inhalation of this material is irritating to the nose, mouth, throat and lungs. Dilation of blood vessels with drop in blood pressure and headache, cyanosis, and mental confusion may result from the nitroglycerin. The headache may be severe and can remain for a few hours to several days. It typically starts at the forehead preceded by a sensation of warmth and fullness in the head and may extend to the back of the neck. Nausea, vomiting and abdominal pain may also occur.

CHRONIC:

No additional effects are known or have been reported from those described for acute inhalation exposure.

SKIN

ACUTE:

Dermal exposure may cause irritation which would subside rapidly upon removal of material without permanent damage. Additional effects would be similar to those described for acute inhalation exposure.

CHRONIC:

No additional effects are known or have been reported from those described for acute inhalation exposure.

EYE

Irritation may occur with inflammation of the conjunctive. Any effect would not result in permanent impairment of vision.

INGESTION

ACUTE:

Irritation to the gastrointestinal tract. Additional effects would be similar to those described for acute inhalation exposure.

CHRONIC:

No additional effects are known or have been reported from those described for acute inhalation exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Anemia and cardiovascular disease.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:

None known or reported.

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

INHALATION LC 50: No available data

DERMAL LD 50: No available data

ORAL LD 50: Approximately 250 mg/kg (rat) based on acute oral toxicity of nitroglycerin.

IRRITATION: Irritant to skin or eyes.

AQUATIC TOXICITY:

Fish are unaffected by nitrocellulose at concentrations of 1000 mg/l.

ACUTE TARGET ORGAN TOXICITY:

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).

CHRONIC TARGET ORGAN TOXICITY:

Diphenylamine has been shown to induce kidney damage. The low concentration of this material in, and nature of, the product would preclude development of such an effect.

PRODUCTIVE AND DEVELOPMENTAL TOXICITY:

There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY:

This product or any of its ingredients are not known or reported to be a human or animal carcinogen by IARC, OSHA, or NTP.

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MUTAGENICITY:

This product or any of its ingredients are not known or reported to be mutagenic.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:
LAND (U.S. DOT): POWDER, SMOKELESS, 1.3 C, UN0161, PG II

WATER (IMO): POWDER, SMOKELESS, 1.3 C, UN0161, PG II

AIR (IATA/ICAO): FORBIDDEN

HAZARD LABEL/PLACARD: EXPLOSIVE 1.3 C

REPORTABLE QUANTITY: NOT APPLICABLE (Per 49 CFR 172.101, Appendix)

EMERGENCY GUIDE NO: 112

XI. SPILL AND LEAKAGE PROCEDURES

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

REPORTABLE QUANTITY: Per 40 CFR 302.4 and as Nitroglycerin (10 lbs.) Dibutyl phthalate (10 lbs.),
N,Nitrosodiphenyl amine (100 lbs.) and Ethyl acetate (5000 lbs.)

SPILL MITIGATION PROCEDURES:

THIS PRODUCT MAY REPRESENT AN EXPLOSION HAZARD. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel.

AIR RELEASE: Not Applicable

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.

LAND SPILL: Clean up of spill materials may be accomplished using non-sparking or plastic utensils. Wear non-flammable or flame retardant clothing at all times. Wet all spill materials prior to initiating clean up procedure. 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.

SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS: 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: impervious boots, gloves, hard hat and chemically impermeable suit. Wash all clothing prior to reuse.

XII. WASTE DISPOSAL

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D003.

If this product becomes a waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

If this material becomes a waste, it can be disposed by controlled open burning in small quantities.

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.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:

The components of this product are listed on the Toxic Substance Control Act inventory.

SUPERFUND AMENDMENT AND REAUTHORIZATION ACT TITLE III:

HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH: Immediate (Acute)

PHYSICAL: Sudden release of pressure

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A: EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY: 10,000 lbs. (as dibutyl phthalate)

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

This mixture or tradename product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

CHEMICALS LISTED ARE: Dibutyl phthalate, nitroglycerin, N,nitroso diphenyl amine, diphenylamine

XIV. MAJOR REFERENCES

1. Lee, Cheng-Chun, et al., Mammalian Toxicity of Munition Compounds: Phase I. Acute Oral Toxicity, Primary Skin and Eye Irritation, Dermal Sensitization, and Disposition and Metabolism. NTIS Report (ADBO11150), National Technical Information Services, Springfield, VA. Report No. 1, July 22, 1975.

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET 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. WE BELIEVE THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKE NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT St. Marks Powder, Inc. AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

PREPARED BY:

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