Material Safety Data Sheet

Man-Marker Rounds "MMR"

UTM MSDS, 01-0753-57 Man-Marker Rounds	**Revision Date: April 2018**
Revision No. 2	**Supersedes: January 2017**

This SDS has been prepared to GHS formatting, but is not a mandated SDS and provided for information purposes only.

SECTION 1.

Product and Company Identification

UK & ROW Supplier:	**USA Supplier:**	**Customer Service:**
UTM Ltd. Hampstead Avenue Mildenhall Suffolk IP28 7AS United Kingdom www.utmworldwide.com	UTM Inc. 55 Readington Rd. North Branch, NJ 08876 USA	United Kingdom & ROW: +44 (0) 1638 711 003 Unites States Sales Office: 1-877-866-7233 United States Headquarters: 908-725-9000

Product Name:
Cartridges, Small Arms, Man-Marker Rounds. (Non – Lethal Training Ammunition).
Synonyms: Man-Marker Rounds, MMR.

Types: 5.56mm.

Marking Colours: Red, Blue, Green, Yellow.

Technical Support Service:
United Kingdom & Rest of World (ROW): sales@utmworldwide.com
Unites States: us.sales@utmworldwide.com, us.military.sales@utmworldwide.com

Emergency Phone Number:	Emergency Phone Hours:
UK/ Rest of World (ROW): +44 (0)1638 711 003	UK/ Rest of World (ROW) : 9am to 5pm GMT
USA: 1-877-866-7233 or 908-725-9000	USA: 9am to 5pm EST

SECTION 2.

Hazards Identification

Appearance / Odours:
An odourless metallic cylindrical cartridge, having a plastic projectile, filled with a colour marking compound and encapsulated with a 3 legged cruciform plastic dome.

Emergency Overview:

Warning!
Explosive, Keep away from heat.
Do not subject to mechanical shock.
Particles from firing may be harmful if inhaled.
Use (Training) without the appropriate Personal Protective equipment can cause bodily injury.
Do not take internally.

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SECTION 2.

Hazards Identification (continued)

Specific Physical Hazards Arising From Product:
Packaged and Loose cartridges could function (cook-off) if exposed to an external heat source in excess of 135˚C (275˚F) and could produce low velocity fragments which could cause eye injury or superficial skin wounds.

Caution:
When UTM training ammunition is fired, small amounts of particles can be emitted as well as gases. Upon over exposure this can be slightly irritating to the eye and respiratory tract. Emitted particles and or gases may contain trace amounts of harmful substances.

OSHA Regulatory Status:
This product contains material (s) considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

This product contains potential carcinogens as listed by OSHA, IARC or NTP.
(Note: Potential carcinogens as listed by OSHA, IARC or NTP are contained within the spent cartridge case, and do not vent to atmosphere under normal firing or handling conditions.)

United Nations Hazard Classification:	**United Nations Designation:**
Classification 1.4S	UN0012

Potential Health Effects:

Notes: This product unused is composed of various components sealed inside a metallic/plastic cartridge. Normal handling of this product in this condition poses no threat of exposure from harmful materials.

It is unlikely that the concentration of particles one would be exposed to from normal firing of this product would be sufficient to cause any of the effects listed.

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, anaemia, reproductive effects, developmental effects and permanent nervous system damage in humans including changes in cognitive function.

Tetrazene: May be harmful if swallowed or inhaled. Skin and eye irritant.

Pentrite: Is a known coronary vasodilator and ingestion or inhalation may result in a lowering of blood pressure. Skin and eye irritant.

Bismuth Subnitrate: May be harmful if swallowed or inhaled. Skin and eye irritant.

Glass Powder: May be harmful if swallowed or inhaled. Skin and eye irritant.

Boron: May be harmful if swallowed or inhaled. Skin and eye irritant (permeator).

Nitrocellulose: Inhalation may irritate your nose, throat, skin and eyes. Toxic gases, such as oxides of nitrogen, hydrogen cyanide and carbon monoxide, which may be produced during decomposition or combustion of nitrocellulose.

Diphenylamine: Irritation to eyes, skin, mucous membrane; eczema; tachycardia, hypertension; cough, sneezing; methemoglobinemia; increased blood pressure, heart rate; proteinuria, hematuria (blood in the urine), bladder injury; In Animals: teratogenic effects.

Barium Nitrate: Irritation to eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia

Antimony (III) Sulphide: Harmful by inhalation and if swallowed. May be harmful in contact with the skin. Skin, eye and respiratory irritant. Chronic exposure may lead to kidney or liver damage.

Styphnic Acid: Harmful if swallowed, if in contact with skin and if inhaled.

Medical Conditions Aggravated by Exposure:
There are no medical conditions known to be aggravated by exposure to this product in its solid un-fired form.
Exposure to Lead can aggravate Anemia , Cardiovascular and Respiratory Disease.

Potential Environmental Effects:
No Data.
Lead has been shown to be toxic to aquatic species.

SECTION 3.

Components.

Product may contain the components listed below.

Component		Percentage by weight of cartridge	CAS #
CARTRIDGE CASE			
Aluminium Slide	Silicon	<0.5%	7440-21-3
	Iron	<0.4%	7439-89-6
	Copper	1.7%	7440-50-8
	Zinc	<1.0%	7440-66-6
	Lead	<0.2%	7439-92-1
	Bismuth	<0.5%	7440-69-9
	Aluminium	27.1%	7429-90-5
	Magnesium	<1.0%	7439-95-4
	Manganese	<0.5%	7439-96-5
	Chromium	<0.2%	7440-47-3
	Tin	<0.1%	7440-31-5
	Titanium	<0.1%	7440-32-6
Steel Body	Carbon	<0.1%	7440-44-0
	Iron	56.7%	7439-89-6
	Lead	<0.3%	7439-92-1
	Manganese	<1.0%	7439-96-5
	Sulfur	<0.3%	7704-34-9
	Silicon	<0.3%	7440-21-3
	Phosphorous	<0.1%	7723-14-0
Primer Cups	Copper	6.4%	7440-50-8
	Iron	<0.1%	7439-89-6
	Lead	<0.1%	7439-92-1
	Zinc	3.4%	7440-66-6
O Ring	Nitrile	<0.3%	Not Listed
Striker Ball	Polyamide 66	<1.0%	32131-17-2
	Glass Fibre	<0.3%	65997-17-3
PROJECTILE			
Projectile Body	Polycarbonate	3.1%	24936-68-3
Applicator Ball	Carbon	<0.1%	7440-44-0
	Iron	1.4%	7439-89-6
	Manganese	<0.1%	7439-96-5
Marking Compound	Marking Compound	<0.3%	Not Listed
Dome	Polyamide 66	<0.5%	32131-17-2
PRIMERS (FRONT)			
Primary Explosive	Tetrazene	<0.1%	109-27-3
	Penthrite	<0.1%	78-11-5
	Bismuth Subnitrate	<0.1%	1304-85-4
	Glass Powder	<0.1%	65997-17-3
	Boron	<0.1%	7440-42-8
	Nitrocellulose	<0.1%	9004-70-0
	Diphenylamine	<0.1%	122-39-4
	Centralite I	<0.1%	85-98-3
	2,4-Dinitroanisole	<0.1%	119-27-7
PRIMERS (REAR)			
Primary Explosive	Lead Trinitroresorcinate	<0.2%	15245-44-0
	Barium Nitrate	<0.2%	10022-31-8
	Antimony (III) Sulphide	<0.1%	1345-04-6
	Tetrazene	<0.1%	109-27-3
	Lead Dioxide	<0.1%	1309-60-0
	Glass Powder	<0.1%	65997-17-3
	Styphnic Acid	<0.1%	82-71-3
Propellant	Nitrocellulose	<0.3%	9004-70-0
	Diphenylamine	<0.1%	122-39-4
	Centralite I	<0.1%	85-98-3
	Graphite Coating	<0.1%	7782-42-5
	2,4-Dinitroanisole	<0.1%	119-27-7

Percentage of non reduced hazard substance as a percentage of the weight of the finished assembled round is 0.60% but this material is contained within the case of the spent cartridge.

SECTION 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 Immediately.

***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 immediately.

Ingestion:
If ingested, immediately call a physician.

Items marked with an asterisk (*) are conditions associated with the firing or discharge of the product and under normal conditions of transportation and handling of the product would not be a risk.

SECTION 5.

Fire Fighting Measures

Flammable Properties:
May detonate if heated to 135˚C (275˚F).

Suitable Extinguishing Media:
Flood area with water. If no water is available, carbon dioxide, dry chemical or earth may be used.
Cool the containing vessel with a water jet in order to prevent the ammunition from functioning (cook-off).
Use water to cool ordinary surrounding combustibles.
Use flooding quantities of water.
Use wide fog pattern nozzle to stop any low velocity fragments.

Specific Hazards Arising From Product:
Packaged and Loose cartridges could function (cook-off) due to direct exposure to an external heat source and could produce low velocity metallic fragments which could cause eye injury or superficial skin wounds.

Protective Equipment & Precautions for Fire-fighters:
Wear full fire-fighter protective equipment including face shield or SCBA.
Minimum recommended distance for rescue personnel 10 meters (11 yards).
Evacuate the area to a radius of 100 meters (110 yards).

SECTION 6.

Accidental Release Measures

Methods for Containment:
Spills of this material should be handled carefully. Do not subject materials to mechanical shock. A spill of this material will normally not require emergency response team capabilities.

Methods for Clean-up:
If ammunition packing case should rupture, any loose cartridges should be placed into UTM classified packaging and the lid carefully secured.
Damaged/ Defective Ammunition should be quarantined into UTM classified packaging and disposed of in accordance with local instructions for defective ammunition, such as burnt in a standard ammunition incinerator.

SECTION 7.

Handling & Storage

Handling:

Keep out of reach of any unauthorized personnel.

Keep out of reach of children.

Wash hands thoroughly with soap and warm water after handling and before eating or smoking.

Ergonomic lifting techniques to be applied when lifting ammunition cartons.

Storage, including any incompatibilities:

Keep out of reach of any unauthorized personnel.

Keep out of reach of children.

Packaged ammunition should be stored in a cool dry environment in a common ammunition lockup (magazine).

Avoid striking the primer of an unchambered cartridge.

Ammunition should be disposed of as defective ammunition if any of the following conditions occur:

- Storage temperatures exceed 90°C (195°F).
- Evidence of corrosion.
- Physical damage.

SECTION 8.

Exposure Controls / Personal Protection (PPE)

Component		CAS #	OSHA PEL-TWA	ACGIH TLV-TWA
CARTRIDGE CASE				
Aluminium Slide	Silicon	7440-21-3	15mg/m³	10mg/m³
	Iron	7439-89-6	None Listed	No Limit Established
	Copper	7440-50-8	0.1mg/m³	0.2mg/m³
	Zinc	7440-66-6	None Listed	No Limit Established
	Lead	7439-92-1	0.05mg/m³	0.15mg/m³
	Bismuth	7440-69-9	None Listed	No Limit Established
	Aluminium	7429-90-5	15mg/m³	10mg/m³
	Magnesium	7439-95-4	None Listed	No Limit Established
	Manganese	7439-96-5	5mg/m³	0.2mg/m³
	Chromium	7440-47-3	1mg/m³	0.5mg/m³
	Tin	7440-31-5	2mg/m³	No Limit Established
	Titanium	7440-32-6	None Listed	No Limit Established
Steel Body	Carbon	7440-44-0	15mg/m³	2mg/m³
	Iron	7439-89-6	None Listed	No Limit Established
	Lead	7439-92-1	0.05mg/m³	0.15mg/m³
	Manganese	7439-96-5	5mg/m³	5mg/m³
	Sulfur	7704-34-9	None Listed	No Limit Established
	Silicon	7440-21-3	15mg/m³	10mg/m³
	Phosphorous	7723-14-0	0.1mg/m³	0.1mg/m³
Primer Cups	Copper	7440-50-8	0.1mg/m³	0.2mg/m³
	Iron	7439-89-6	None Listed	No Limit Established
	Lead	7439-92-1	0.05mg/m³	0.15mg/m³
	Zinc	7440-66-6	None Listed	No Limit Established
O Ring	Nitrile	Not Listed	None Listed	No Limit Established
Striker Ball	Polyamide 66	32131-17-2	None Listed	No Limit Established
	Glass Fibre	65997-17-3	0	0
PROJECTILE				
Projectile Body	Polycarbonate	24936-68-3	0	0
Applicator Ball	Carbon	7440-44-0	15mg/m³	2mg/m³
	Iron	7439-89-6	None Listed	No Limit Established
	Manganese	7439-96-5	5mg/m³	5mg/m³
Marking Compound	Marking Compound	Not Listed	None Listed	Not Listed
Dome	Polyamide 66	32131-17-2	None Listed	No Limit Established
PRIMERS (FRONT)				
Primary Explosive	Tetrazene	109-27-3	None Listed	No Limit Established
	Penthrite	78-11-5	None Listed	No Limit Established
	Bismuth Subnitrate	1304-85-4	None Listed	No Limit Established
	Glass Powder	65997-17-3	15mg/m³	15mg/m³
	Boron	7440-42-8	10mg/m³	10mg/m³
	Nitrocellulose	9004-70-0	None Listed	No Limit Established
	Diphenylamine	122-39-4	None Listed	No Limit Established
	Centralite I	85-98-3	None Listed	No Limit Established
	2,4-Dinitroanisole	119-27-7	None Listed	No Limit Established
PRIMERS (REAR)				
Primary Explosive	Lead Trinitroresorcinate	15245-44-0	0.05mg/m³	0.15mg/m³
	Barium Nitrate	10022-31-8	0.5mg/m³	No Limit Established
	Antimony (III) Sulphide	1345-04-6	0.5mg/m³	0.5mg/m³
	Tetrazene	109-27-3	None Listed	No Limit Established
	Lead Dioxide	1309-60-0	0.05mg/m³	0.05mg/m³
	Glass Powder	65997-17-3	15mg/m³	15mg/m³
	Styphnic Acid	82-71-3	None Listed	No Limit Established
Propellant	Nitrocellulose	9004-70-0	None Listed	No Limit Established
	Diphenylamine	122-39-4	None Listed	No Limit Established
	Centralite I	85-98-3	None Listed	No Limit Established
	Graphite Coating	7782-42-5	10mg/m³	10mg/m³
	2,4-Dinitroanisole	119-27-7	None Listed	No Limit Established

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Engineering Controls:
Normal handling of this product requires no special controls.
When Firing product local exhaust ventilation is recommended if significant dusting occurs or fumes are generated. Otherwise, use exhaust ventilation with explosion-proof ventilation.

Eye / Face Protection:
Normal handling of this product requires the use safety glasses.
When training with product always wear the appropriate PPE based on the type of training.
Always wear UTM Face Mask and UTM approved Goggles when engaging in Force-on-Force training.

Hand Protection:
Not normally needed for handling this product.
When training with the UTM product always wear the appropriate PPE base on the type of training.
Always wear UTM Protective Gloves when engaging in Force-on-Force training.

Skin Protection:
Not normally needed for handling this product.
When training with product always wear the appropriate PPE base on the type of training.
Always wear a minimum of two layers of loose fitting clothing with no exposed skin when engaging in Force-on-Force training.

Respiratory Protection:
Not normally needed when handling this product.
If when firing the airborne concentrations exceed the above listed exposure limits wear respiratory protection in accordance with local regulations.

Hearing Protection:
When firing cartridges if noise levels exceed maximum regulatory levels it is advised that hearing protection is worn.

General Hygiene:
Do not eat, drink, or smoke while using this product.
When firing, avoid breathing fumes and smoke.
Wash hands thoroughly after use.

Safety Phrases:
For Hazardous Composition substances: S16, S22, S23, S29, S33, S35, S37, S39.

SECTION 9.

Physical & Chemical Properties

Appearance (colour, physical form, shape):
Cylindrical Cartridge – Aluminium/Steel (turned). Having a plastic projectile. The projectile has a black plastic nose encasing a coloured marking compound and two independent energetic compounds.

Property	Value	Property	Value
Odour:	None	**Partition Coefficient: N-Octanol/water:**	Not applicable
Odour Threshold:	Not applicable	**Auto-Ignition Temperature:**	Cartridges could spontaneously function (cook off) at 135 º C (275 º F)
Physical State:	Multi component assembly with water soluble marking paste	**Decomposition Temperature:**	Not Applicable
PH:	Not applicable	**Heat Value:**	Not applicable
Melting/ Freezing Point:	Not applicable	**Particle Size:**	Not applicable
Initial Boiling Point & Boiling Range:	Not applicable	**Volatile Organic Compounds (VOC) Content:**	Not applicable
Flash Point:	Cartridges could spontaneously function (cook off) at 135 º C (275 º F)	**Softening Point:**	Not applicable
Evaporation Rate:	Not applicable	**Pour Point:**	Not applicable
Flammability (solid, gas):	Not applicable	**Viscosity:**	Not applicable
Upper/Lower Flammability or Explosive Limits:	Not applicable	**Bulk Density:**	Not applicable
Vapour Density:	Not applicable	**Percent Volatile:**	Not applicable
Vapour Pressure:		**Saturated Vapour Concentration:**	Not applicable
Specific Gravity or relative Density:	Not applicable	**Molecular Weight:**	Not applicable
Solubility:	Insoluble	**Molecular Formula:**	Not applicable

SECTION 10.

Stability & Reactivity

Stability:
Product stable under normal use.
Normal operating temperature conditions between -5˚C (40˚F) and 40˚C (104˚F).

Conditions to Avoid:
Cartridge may function if the primer is inadvertently struck. Avoid subjecting to mechanical shock.
Product could spontaneously function if heated to 135°C (275°F).

Incompatible Materials:
Acids, Alkalis, Ammonia, Acetylene, Caustics Chlorine, Halogenated Hydrocarbons, corrosive or strong oxidizing substances.

Hazardous Decomposition Products:
Nitrogen Oxides, Carbon and Carbon Oxides.
Other dust and fumes may also be produced.

Possibility of Hazardous reactions:
No reported reactions.

SECTION 11.

Toxicological Information

Oral LD 50:
No Data.

Dermal LD 50:
No Data.

Inhalation LC 50:
No Data.

Risk Phrases:
For hazardous composition substances: R1, R3, R5, R6, R19, R21, R22, R36, R50, R67.

Sub Chronic/ Chronic Toxicity:
No Data

Carcinogenicity:
No Data

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.

SECTION 12.

Ecological Information

Eco-toxicity/ Persistence/ Degradability/ Mobility:

Data Known:

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

Bioaccumulation / Accumulation:

None known or reported.

Other Adverse Effects:

None known or reported.

SECTION 13.

Disposal Information

Disposal :

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements. This information presented below only applies to the material as supplied after firing. The identification based on characteristic (s) or listing may not apply if the material has not been fired or has been otherwise contaminated.

Damaged (Non-functioned) rounds:

Quarantined in classified packaging and disposed in accordance with local instructions for defective small arms ammunition.

Faulty (Non-functioned) ammunition:

Quarantined in classified packaging and disposed in accordance with local instructions for defective small arms ammunition.

Special precautions for landfill or incineration:

Damaged or defective ammunition may contain live explosive compound within the ‘primers’.

Care should be taken when feeding the damaged or defective ammunition into an incinerator.

Personal Protective Equipment suitable to the burning work must be worn at all times.

(Note: Toxicity reports into spent cartridges have been carried out and may, subject to local regulations, be suitable for landfill disposal. Copies of the reports are available on request.)

SECTION 14.

Transportation Information

Basic Shipping Information:

Proper Shipping Name:	Cartridges, Small Arms
Hazard Class:	1.4 S
Subsidiary Hazard Class:	Not Applicable
Identification Number:	UN0012
Packing Group:	Packaging Group II, Substances presenting medium danger. Packaging Group III, Substances presenting low danger.

Special Comments:

UTM Training ammunition is to be afforded the same handling and usage restriction as applied to common live ammunition.

Ammunition shipped domestically in the US can be reclassified as ORM-D or ORM-D Air (within guidelines). See 49 CFR 173.63 for ORM-D reclassification.

SECTION 15.

Regulatory Information

TSCA Inventory Status:
Components of this product are listed on the Toxic Substance Control Act inventory.

CERCLA:

Component		CAS #	RCRA Waste #	Final RQ Pounds (Kg)
CARTRIDGE CASE				
Aluminium Slide	Silicon	7440-21-3	Not Listed	Not Listed
	Iron	7439-89-6	Not Listed	Not Listed
	Copper	7440-50-8	Not Listed	5000 (2270)
	Zinc	7440-66-6	Not Listed	1000 (454)
	Lead	7439-92-1	Not Listed	10 (4.54)
	Bismuth	7440-69-9	Not Listed	Not Listed
	Aluminium	7429-90-5	Not Listed	Not Listed
	Magnesium	7439-95-4	Not Listed	Not Listed
	Manganese	7439-96-5	Not Listed	Not Listed
	Chromium	7440-47-3	Not Listed	5000 (2270)
	Tin	7440-31-5	Not Listed	Not Listed
	Titanium	7440-32-6	Not Listed	Not Listed
Steel Body	Carbon	7440-44-0	Not Listed	Not Listed
	Iron	7439-89-6	Not Listed	Not Listed
	Lead	7439-92-1	Not Listed	10 (4.54)
	Manganese	7439-96-5	Not Listed	Not Listed
	Sulfur	7704-34-9	Not Listed	Not Listed
	Silicon	7440-21-3	Not Listed	Not Listed
	Phosphorous	7723-14-0	Not Listed	1
Primer Cups	Copper	7440-50-8	Not Listed	5000 (2270)
	Iron	7439-89-6	Not Listed	Not Listed
	Lead	7439-92-1	Not Listed	10 (4.54)
	Zinc	7440-66-6	Not Listed	1000 (454)
O Ring	Nitrile	Not Listed	Not Listed	Not Listed
Striker Ball	Polyamide 66	32131-17-2	Not Listed	Not Listed
	Glass Fibre	65997-17-3	0	0
PROJECTILE				
Projectile Body	Polycarbonate	24936-68-3	0	0
Applicator Ball	Carbon	7440-44-0	Not Listed	Not Listed
	Iron	7439-89-6	Not Listed	Not Listed
	Manganese	7439-96-5	Not Listed	Not Listed
Marking Compound	Marking Compound	Not Listed	Not Listed	Not Listed
Dome	Polyamide 66	32131-17-2	Not Listed	Not Listed
PRIMERS (FRONT)				
Primary Explosive	Tetrazene	109-27-3	Not Listed	Not Listed
	Penthrite	78-11-5	Not Listed	Not Listed
	Bismuth Subnitrate	1304-85-4	Not Listed	Not Listed
	Glass Powder	65997-17-3	Not Listed	Not Listed
	Boron	7440-42-8	Not Listed	Not Listed
	Nitrocellulose	9004-70-0	Not Listed	Not Listed
	Diphenylamine	122-39-4	Not Listed	Not Listed
	Centralite I	85-98-3	Not Listed	Not Listed
	2,4-Dinitroanisole	119-27-7	Not Listed	Not Listed
PRIMERS (REAR)				
Primary Explosive	Lead Trinitroresorcinate	15245-44-0	Not Listed	Not Listed
	Barium Nitrate	10022-31-8	Not Listed	Not Listed
	Antimony (III) Sulphide	1345-04-6	Not Listed	5000 (2270)
	Tetrazene	109-27-3	Not Listed	Not Listed
	Lead Dioxide	1309-60-0	Not Listed	10 (4.54)
	Glass Powder	65997-17-3	Not Listed	Not Listed
	Styphnic Acid	82-71-3	Not Listed	Not Listed
Propellant	Nitrocellulose	9004-70-0	Not Listed	Not Listed
	Diphenylamine	122-39-4	Not Listed	Not Listed
	Centralite I	85-98-3	Not Listed	Not Listed
	Graphite Coating	7782-42-5	Not Listed	Not Listed
	2,4-Dinitroanisole	119-27-7	Not Listed	Not Listed

SARA 302:
None of the components in this product are listed.

SECTION 16.

Other Information

References:

- OHSA 29CFR 1910.
- ANSI Z400.1-2004.
- 49 C.F.R. 173.63.
- US Department of Health and Human Services, 11th Report on Carcinogens.
- State of California Environmental Protection Agency office of Environmental Health Hazard assessment safe Drinking Water and toxic enforcement Act 1986, chemicals known to the state to cause cancer or reproductive toxicity
- International Agency for Research on Cancer, Agents reviewed by the IARC Monographs, Volumes 1-100A, SEPTEMBER 11, 2009.
- US Environmental Protection Agency, EPA 550-B-01-003, List of Lists, Consolidated List of Chemicals Subject to the Emergency Planning and Community Right -To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act.
- US Environmental Protection Agency, Substance Registry Services.
- NIOSH, National institute for Occupational Safety &Health, Pocket guide to chemicals hazards.
- ATSDR, Agency for Toxic Substances & Disease Registry, 2007 priority list.
- UN Recommendations on the Transport of Dangerous goods model regulations 14th edition
- Explosives (6th edition) by Rudolf Mayer.
- Chemicals Hazard Information and Packaging supply regulations (CHIP) approved supply list 7th edition
- U.K. competent authority documents.
- European Commission Joint Research Centre
- The physical and Theoretical Chemistry Laboratory, Oxford University

Prepared By:
UTM Ltd.

Additional Contact Info:
Additional information available from: www.utmworldwide.com

Notice:
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