



MATERIAL SAFETY DATA SHEET

NASA Standard 6001 Igniter

Last Updated June 23, 2009

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **NASA Standard 6001 Igniter**
Synonyms: None

CAS Number: Mixture

Company Identification: **NASA White Sands Test Facility**
12600 NASA Road
Las Cruces, NM 88012 USA
1-575-525-7634 (For product information) 1-800-424-9300 (For emergencies - CHEMTREC)

2. COMPOSITION / INFORMATION ON INGREDIENTS

CONTAINING: HAZARDOUS AND/OR REGULATED COMPONENTS

<u>Chemical Name</u>	<u>Amount</u>	<u>CAS Number</u>	<u>Hazardous</u>	<u>OSHA PEL (ppm)</u>	<u>ACGIH TWA (ppm)</u>
Hexamethylenetetramine	72%	100-97-0	YES	NE	NE
Sodium Metasilicate	26%	6834-92-0	YES	NE	NE
Acacia Powder	<4%	9000-01-5	YES	NE	NE
Water	10%	7732-18-5	No	NA	NA

California Prop 65: This product does not contain an ingredient(s), above the safe harbor limits, which are known to the state of California to cause cancer, birth defects, or other reproductive harm.

HAZARDS DISCLOSURE: This product does contain known hazardous materials in reportable levels as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200 except as listed above. As defined under Sara 311 and 312, this product contains known hazardous materials.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING! KEEP AWAY FROM HEAT AND IGNITION SOURCES. HARMFUL IF SWALLOWED. AVOID BREATHING VAPORS. USE WITH ADEQATE VENTILATION. AVOID CONTACT WITH EYS, SKIN AND CLOTHES. WASH THOROUGHLY AFTER HANDLING. KEEP CONTAINER CLOSED.

HMIS/NFPA Rating: See Section 16

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Skin. Eye. Inhalation. Ingestion.

TARGET ORGANS: Skin. Eyes. Respiratory System

INHALATION: May be harmful if inhaled. Inhalation of vapor or mist may cause irritation to the respiratory tract.

INGESTION: May be harmful if swallowed



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SKIN CONTACT: Contact may cause skin sensitization or irritation.

EYE CONTACT: Contact may cause eye irritation and redness.

AGGRAVATION OF PRE-EXISTING CONDITIONS: Persons with pre-existing eye, skin or respiratory conditions may be more susceptible.

POTENTIAL CHRONIC HEALTH EFFECTS: No known chronic hazards, however exposure to this material could produce general deterioration of health by an accumulation in one or many human organs.

4. FIRST AID MEASURES

INHALATION FIRST AID: Remove victim to fresh air and provide oxygen if breathing is difficult. If not breathing, give artificial respiration, preferably mouth to mouth. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT FIRST AID: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. GET MEDICAL ATTENTION IMMEDIATELY. Wash clothing before reuse. Thoroughly clean shoes before reuse.

EYE CONTACT FIRST AID: If contact with eyes, immediately flush eyes with plenty of water for at least 15 minutes, while holding eyelids open. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION FIRST AID: If swallowed, wash out mouth with water provided the person is conscious. Do not induce vomiting. Never give anything by mouth to an unconscious person. GET MEDICAL ATTENTION IMMEDIATELY.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: Combustible Material

AUTO IGNITION TEMPERATURE: NA

FLASH POINT: Closed Cup: 250°C.

FLAMMABLE LIMITS IN AIR, % by Volume: lel: NA uel: NA

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, Foam.

FIRE & EXPLOSION HAZARDS: Combustible material

SPECIAL INFORMATION:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Do not approach containers suspected to be hot.



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6. ACCIDENTAL RELEASE MEASURES

SPILL CLEAN-UP PROCEDURES: Evacuate unprotected personnel from the area. Maintain adequate ventilation. Follow personal protective equipment recommendations found in section 8. Never exceed any occupational exposure limits. Pickup spilled materials using non-sparking tools and place in a steel drum for disposal. Keep drum closed and properly label.

Always dispose of waste materials in accordance with all State, Federal and Local Regulations.

7. HANDLING AND STORAGE

RECOMMENDED STORAGE CONDITIONS: Protect against physical damage. Store in a cool, dry well-ventilated location, out of direct sunlight. Separate from incompatibles. Keep containers tightly closed. Do not store in unlabeled or mislabeled containers. Avoid any possible ignition sources.

SHELF LIFE: See Label on packaging.

HANDLING (PERSONNEL): Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Do not swallow. Avoid breathing vapors, mists, or dust. Do not eat, drink or smoke in work area. Wash thoroughly after handling.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

AIRBORNE EXPOSURE LIMITS: See Section 2 above.

Hexamethylnetetramine:

-OSHA Permissible Exposure Limit (PEL): NE

-ACGIH Threshold Limit Value (TLV): NE

Sodium Metaillcate:

-OSHA Permissible Exposure Limit (PEL): NE

-ACGIH Threshold Limit Value (TLV): NE

Acacia Powder :

-OSHA Permissible Exposure Limit (PEL): NE

-ACGIH Threshold Limit Value (TLV): NE

VENTILATION SYSTEM: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

PERSONAL RESPIRATORS (NIOSH APPROVED): If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airtight hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

RESPIRATORY PROTECTION: For unknown vapor concentrations use a positive-pressure, pressure-demand, self-contained breathing apparatus (SCBA). For known vapor concentrations above the occupational



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exposure guidelines (see below), use a NIOSH-approved organic vapor respirator if adequate protection is provided. Protection factors vary depending upon the type of respirator used. Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134).

SKIN PROTECTION: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

EYE PROTECTION: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area. Contact lenses pose a special hazard; Do not wear contact lenses since Sodium Metasilicate is a corrosive material.

GOOD HYGIENE CONDITIONS: Wash with soap and water before meals and at the end of each work shift. Good manufacturing practices require amounts of any chemical be removed from the skin as soon as practical, especially before eating or smoking.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Solid	COLOR: White to off white
ODOR: Amine like odor	BOILING POINT: NA
SOLUBILITY IN WATER: Complete	SPECIFIC GRAVITY: NA at 20 °C (Water =1)
MELTING POINT: NA	Evaporation Rate (BuAc=1):
AUTO IGNITION TEMPERATURE: NA	FLASH POINT: 210°C
pH: NA (1% soln/water)	VAPOR PRESSURE: NA (@20°C)
% VOLATILES BY VOLUME @ 21C (70F): N/A	VAPOR DENSITY: NA (air = 1)

10. STABILITY AND REACTIVITY

STABILITY: Stable under ordinary conditions of use and storage.

CONDITIONS TO AVOID: Heat and ignition sources

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur under normal conditions.

INCOMPATIBILITY WITH OTHER MATERIALS: Strong oxidizing materials, Strong acids.

HAZARDOUS DECOMPOSITION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:

Acute oral toxicity: Hexaethylenetetramine – LD50 mouse: 569 mg/kg



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Acute inhalation toxicity: Hexaethylenetetramine - No Data
Acute dermal toxicity: Hexaethylenetetramine - No Data

Acute oral toxicity: Sodium Metasilicate – No Data
Acute inhalation toxicity: Sodium Metasilicate - No Data
Acute dermal toxicity: Sodium Metasilicate - No Data

Acute oral toxicity: Acacia Powder – No Data
Acute inhalation toxicity: Acacia Powder - No Data
Acute dermal toxicity: Acacia Powder - No Data

Carcinogenic effects: IARC Carcinogen List – Not Listed
NTP Carcinogen List – Not Listed
ACGIH Carcinogenic List – Not Listed

Mutagenic effects: Not available.
Teratogenic effects: Not available.

Cancer Lists

---NTP Carcinogen---

<u>Ingredient</u>	<u>Known</u>	<u>Anticipated</u>	<u>IARC Category</u>
Hexaethylenetetramine	No	No	No
Sodium Metasilicate	No	No	No
Acacia Powder	No	No	No

Other Toxic Effects on Humans: None Known

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE: No Data Available

Oxygen Demand Data:
No data available

ENVIRONMENTAL TOXICITY:

Acute Aquatic Effects Data:
No data available

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Dispose of material in accordance with federal, state and local requirements. For proper disposal of used material, an assessment must be completed to determine the proper and permissible waste management options permitted under applicable rules, regulations and/or laws governing your location.

CONTAMINATED MATERIALS: Wash contaminated clothing before reuse.



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14. TRANSPORTATION INFORMATION

Domestic (Land, D.O.T.), International (Water, I.M.O.), International (Air, I.C.A.O.)

CLASS: Flammable Solid, Organic, N.O.S. (Hexamethylenetetramine),4.1
PRODUCT LABEL: NASA Standard 6001 Igniter
UN NUMBER: 1325
PACKING GROUP: II
D.O.T. SHIPPING NAME: Flammable Solid, Organic, N.O.S.
PRODUCT RQ (kg): NA
ERG Guide Number: 153
SUPPLEMENTAL HAZARD: NA

15. REGULATORY INFORMATION

FEDERAL REGULATORY STATUS

Chemical Inventory Status - Part 1

Ingredient	<u>TSCA</u>	<u>EC</u>	<u>Japan</u>	<u>Australia</u>
Hexamethylenetetramine	YES	YES	YES	YES
Sodium Metasilicate	YES	YES	YES	YES
Acacia Powder	YES	YES	YES	YES

Chemical Inventory Status - Part 2

Ingredient	<u>Korea</u>	<u>DSL</u>	<u>CANADA</u> <u>NDSL</u>	<u>Phil.</u>
Hexamethylenetetramine	YES	YES	No	YES
Sodium Metasilicate	YES	YES	No	YES
Acacia Powder	YES	YES	No	YES

Federal, State & International Regulations - Part 1

Ingredient	<u>-SARA 302-</u>		<u>List</u>	<u>-SARA 313-</u> <u>Chemical Catalog</u>
	<u>RQ</u>	<u>TPQ</u>		
Hexamethylenetetramine	No	No	No	No
Sodium Metasilicate	No	No	No	No
Acacia Powder	No	No	No	No

Federal, State & International Regulations - Part 2

Ingredient	<u>CERCLA</u>	<u>-RCRA-</u> <u>261.33</u>	<u>-TSCA-</u> <u>8(d)</u>
Hexamethylenetetramine	NA	No	No
Sodium Metasilicate	NA	No	No
Acacia Powder	NA	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.



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Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No

Reactivity: No (Pure / Liquid)

STATE REGULATIONS:

PROP 65 - WARNING:

THIS PRODUCT DOES NOT CONTAIN A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

RCRA 40 CFR: None.

Australian Hazchem Code: Not known allocated.

Poison Schedule: None

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA). This material or all of its components are listed on the Canadian Domestic Substances List (DSL). This material or all of its components are listed (or considered as having been notified) on the European Inventory of Existing Chemical Substances (EINECS). Other inventory lists: Korea (TCCL), Australia (AICS), China (Draft), PICCS (Philippines-RA6969), Japan (ENCS METI/MOL).

16. OTHER INFORMATION

NFPA Ratings: Health: 2 Flammability: 2 Reactivity: 0

Label Requirements:

WARNING! KEEP AWAY FROM HEAT AND IGNITION SOURCES. HARMFUL IF SWALLOWED. AVOID BREATHING VAPORS. USE WITH ADEQATE VENTILATION. AVOID CONTACT WITH EYS, SKIN AND CLOTHES. WASH THOROUGHLY AFTER HANDLING. KEEP CONTAINER CLOSED.

Hazardous Material Information System (HMIS):	Health	2
	Flammability	2
	Reactivity	0
	Personal Protection	C

National Fire Protection Association (NFPA) 2-Health, 2-Flammability, 0-Reactivity

NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

Protective Equipment: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER.



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Prepared By: Paul Eigbrett (MSDS Authoring Services)
Approval Date: June 23, 2009

Part Number:
Supersedes Date: New

ADDITIONAL INFORMATION:

The data in this Material Safety Data Sheet relates only to the specific material designated herein. It does not relate to use in combination with any other material or in any process. This Material Safety Data Sheet (MSDS) has been reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-2004)

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

END OF MSDS