MATERIAL SAFETY DATA SHEET

Section 1: Product and Company Information

Manufacturer: **Kel Kem Ltd.**
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Date: **April 1, 2009**
Prepared by: **Gerry van Konynenburg**
WHMIS Classification: **B2, D1B, D2A, D2B**
HCS Classification: **Flammable liquid, Target organ effects**

Product Name: Fire Starter Gel
Product Code(s): KK0082-A, KK0083-A
Product Use: Combustion aid

Section 2: Composition/Information on Ingredients

Ingredient	CAS Number	Percent (Wt. %)	LD50(Oral-rat)	LC50(Inhalation-rat
Methanol	67-56-1	70 – 100	6200 mg/kg	64000 ppm/4hrs

There are no ingredients or additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Section 3: Hazards Identification

Emergency Overview:
WARNING!
FLAMMABLE LIQUID AND VAPOR. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
Flammable liquid. Keep away from heat, sparks and flame. Avoid breathing vapor or mist. Avoid contact with skin and clothing. May cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use.

Potential Acute Health Effects - See section 11 for more detailed information on health effects and symptoms.
Extremely hazardous by the following route of exposure: of ingestion. Hazardous by the following route of exposure: of inhalation. Slightly hazardous by the following route of exposure: of skin contact (irritant, permeator), of eye contact (irritant). Non-sensitizer to skin. Severe over-exposure can result in death.

Note to Physician: Acute exposure to methanol, either through ingestion or breathing high airborne concentrations can result in symptoms appearing between 40 minutes and 72 hours after exposure. Symptoms and signs are usually limited to CNS, eyes and gastrointestinal tract. Because of the initial CNS's effects of headache, vertigo, lethargy and confusion, there may be an impression of ethanol intoxication. Blurred vision, decreased acuity and photophobia are common complaints. Treatment with ipecac or lavage is indicated in any patient presenting within two hours of ingestion. A profound metabolic acidosis occurs in severe poisoning and serum bicarbonate levels are a more accurate measure of severity than serum methanol levels. Treatment protocols are available from most major hospitals and early collaboration with appropriate hospitals is recommended. For example:

Sodium Bicarbonate Early treatment with sodium bicarbonate is essential to compensate metabolic acidosis – here the sodium bicarbonate is used to bring the blood to a normal physiological pH to help prevent or reverse visual impairment.

Hemodialysis In severe cases, hemodialysis is considered to be an effective treatment for removing both methanol and formate from the blood.

Ethanol Treatment The metabolism of methanol is inhibited by the co-exposure to ethanol. Ethanol acts as a competing substrate for the alcohol dehydrogenase enzyme and as a result clinically administered ethanol treatments have been shown to prevent the elevation of formate levels.

Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

WHMIS HAZARD SYMBOL(S):

Section 4: First Aid Measures

Skin: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Eye: Immediately flush eyes with plenty of water for at least 60 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation: Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion: Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Notes to Physician: See Section 3

Section 5: Fire Fighting Measures

Flammable. (Highly flammable liquid & vapour).

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Flammable Liquid. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May be ignited by heat, sparks, static discharge and open flames. Containers may explode when heated. Emits acrid smoke and irritating fumes when heated to decomposition.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. Cool containers with flooding quantities of water until well after fire is out.

Flash Point:	11°C. (51.8°F) TCC
Flammability Limits:	Lower Explosion Limit (% by volume) – Methanol 6
	Upper Explosion Limit (% by volume) – Methanol 36
Autoignition Temperature (C) :	464°C (867.2°F)
Hazardous Combustion Products:	Carbon monoxide, Carbon Dioxide
Sensitivity to Mechanical Impact:	Not available
Sensitivity to Static Discharge:	May ignite if vapours are present.

Section 6: Accidental Release Measures

Small spill and leak - Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill and leak - Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. **Note: see section 1 for emergency contact information and section 13 for waste disposal.**

Section 7: Handling and Storage

Handling: Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage: Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8: Exposure Controls/Personal Protection

Engineering controls: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof

ventilation equipment.
Gloves: Nitrile gloves if skin contact is likely
Eyes: Safety glasses/goggles if eye contact is likely. Splash goggles are recommended.
Respiratory: Wear a NIOSH/MSHA approved air-purifying respirator equipped with organic vapour cartridges for concentrations up to 50 ppm.
Other: Rubber apron if splashing is likely.
Exposure Limits:

Canada:	**United States:**
ACGIH (Canada, 2003). Skin TWA: 200 ppm 8 hour(s). STEL: 250 ppm 15 minute(s). TWA: 260 mg/m³ 8 hour(s). STEL: 328 mg/m³ 15 minute(s). CA Alberta Provincial (Canada, 10/2006). Skin 8 hrs OEL: 262 mg/m³ 8 hour(s). 8 hrs OEL: 200 ppm 8 hour(s). 15 min OEL: 250 ppm 15 minute(s). 15 min OEL: 328 mg/m³ 15 minute(s). CA British Columbia Provincial (Canada, 7/2007). Skin TWA: 200 ppm 8 hour(s). STEL: 250 ppm 15 minute(s). CA Ontario Provincial (Canada, 3/2007). Skin TWAEV: 200 ppm 8 hour(s). TWAEV: 260 mg/m³ 8 hour(s). STEV: 250 ppm 15 minute(s). STEV: 325 mg/m³ 15 minute(s). CA Quebec Provincial (Canada, 12/2006). Skin TWAEV: 200 ppm 8 hour(s). TWAEV: 262 mg/m³ 8 hour(s). STEV: 250 ppm 15 minute(s). STEV: 328 mg/m³ 15 minute(s).	OSHA (United States, 2003). TWA: 200 ppm 8 hour(s). TWA: 260 mg/m³ 8 hour(s). ACGIH TLV (United States, 1/2007). Skin TWA: 200 ppm 8 hour(s). TWA: 262 mg/m³ 8 hour(s). STEL: 250 ppm 15 minute(s). STEL: 328 mg/m³ 15 minute(s). OSHA PEL 1989 (United States, 3/1989). Skin TWA: 200 ppm 8 hour(s). TWA: 260 mg/m³ 8 hour(s). STEL: 250 ppm 15 minute(s). STEL: 325 mg/m³ 15 minute(s). NIOSH REL (United States, 12/2001). Skin TWA: 200 ppm 10 hour(s). TWA: 260 mg/m³ 10 hour(s). STEL: 250 ppm 15 minute(s). STEL: 325 mg/m³ 15 minute(s). OSHA PEL (United States, 11/2006). TWA: 200 ppm 8 hour(s). TWA: 260 mg/m³ 8 hour(s).

Section 9: Physical and Chemical Properties

Physical State	Liquid	**Odour & Appearance**	Pink gel, alcohol odour
Odour Threshold (ppm)	2000 ppm	**Specific Gravity**	0.84
Vapour Pressure (MM)	96mm of Hg @ 20°C	**Vapour Density (Air=1)**	1.11
Evaporation Rate	2.1 (vs Butyl Acetate)	**Boiling Point (C)**	64.5°C (148.1°F)
Freezing Point (C)	-98°C (-144°F)	**Solubility in Water (20C)**	Miscible
% Volatile (by weight)	99.3%	**pH**	7
Coefficient of water/oil distribution	Not available		

Section 10: Stability and Reactivity

Chemical Stability (Yes or No)	Yes	
If No, under which conditions?		
Reactivity (Yes or No)	Yes	Methanol with Nitric Acid will produce methyl nitrate which is explosive.
Under what conditions?		
Incompatibility to other substances	Yes	Oxidizing compounds, nitric and sulphuric acids, aldehydes, acyl chlorides and alkali metals.
If so, which ones?		
Hazardous decomposition products		Burning may produce CO, CO2

Section 11: Toxicological Information

Exposure Limits:
Note: The odour threshold of Methanol is several times higher than the TEAEV.

Canada
Acute toxicity

Methanol	**Result**	**Species**	**Dose**	**Exposure**
	LD50 Dermal	**Rabbit**	**15840 mg/kg**	**-**
	LD50 Dermal	**Rabbit**	**15800 mg/kg**	**-**
	LD50 Intra peritoneal	**Rat**	**7529 mg/kg**	**-**
	LD50 Intravenous	**Rat**	**2131 mg/kg**	**-**
	LD50 Oral	**Rat**	**5600 mg/kg**	**-**
	LD50 Oral	**Rat**	**5600 mg/kg**	**-**
	TDLo Oral	**Rat**	**8 g/kg**	**-**
	TDLo Intraperitoneal	**Rat**	**3490 mg/kg**	**-**
	TDLo Intraperitoneal	**Rat**	**3000 mg/kg**	**-**

Conclusion/Summary : Not available.	**TDLo Oral**	**Rat**	**3 g/kg**	**-**
	TDLo Oral	**Rat**	**3500 mg/kg**	**-**

Chronic Toxicity: May be fatal or cause blindness if swallowed. Chronic Exposure Effects can include one or all of the following: Acute poisoning, Headaches, nausea, vomiting, unconsciousness, kidney and liver damage. Exposure can cause dermatitis.

Effects of overexposure: Prolonged exposure by inhalation or by absorbtion may cause systemic poisoning of lungs, liver and kidneys. **See also Section 3**.

Sensitization: None known.

Carcinogenicity: No evidence of carcinogenicity.

Reproductive Toxicity, Mutagenicity, & Teratogenicity: Limited evidence of mutagenicity exists in vitro mouse lymphoma forward mutation assay. There is no in vivo information. Methanol is reported to cause birth defects in rats exposed to very high levels of vapours (20,000ppm)

Synergistic Products: Carbontetrachloride.

Other effects: This product contains Methanol which may produce blindness and other serious effects on vision, as well as death.Severe irritation of the skin, eyes, nose and throat.

Section 12: Ecological Information

No known significant effects or critical hazards.

Section 13: Disposal Considerations

Dispose of in a manner consistent with Federal, Provincial and local laws and Regulations. Ignitable waste.

Section 14: Transport Information

TDG (Canada)

Class: Class 3: Flammable Liquid
Subsidiary Class: Class 6.1: Toxic Substance
Proper Shipping Name: Methanol
UN Number: UN1230
Packing Group: II
Special Provisions: In containers of 1 L (1KG) or less, this product is classified as “Limited Quantities””Consumer Commodity” under TDG regulations.

DOT (United States)

Class: Class 3: Flammable Liquid
Subsidiary Class: Class 6.1: Toxic Substance
Proper Shipping Name: Methanol
UN Number: UN1230
Packing Group: II
Special Provisions: IB2, T7, TP2
In containers of 1 L (1KG) or less, this product is classified as a ”Consumer Commodity” ORM-D under DOT regulations.

IATA For air shipment classification and associated regulations, please refer to the latest edition of IATA Dangerous Goods Regulations.

Section 15: Regulatory Information

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR. This product and/or all of its components are on the TSCA inventory list.

Section 16: Other Information

Notice to the Reader: This MSDS was prepared using material from the manufacturer and other sources. The information is provided in good faith and is correct to the best of Kel Kem Ltd.'s knowledge as of the date hereof and is designed to assist our customers; however Kel Kem Ltd. makes no representation as to its completeness or accuracy. Final determination of suitability of any material is the sole responsibility of the user. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. Kel Kem Ltd. disclaims all expressed or implied warranties or representations.

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