MATERIAL SAFETY DATA SHEET
Brake and Parts Cleaner
HEPTANE, LIQUID

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Wynn's Canada Inc.
7090 Edwards Blvd.
Mississauga, Ontario L5S 1Z1
(905) 670-3881

WHMIS Number: 00060514
Index: GCD1013/00B
Effective Date: 3/18/2011

EMERGENCY TELEPHONE NUMBERS

Toronto, ON (416) 226-6117 Montreal, QC (514) 861-1211 Winnipeg, MB (204) 943-8827
Edmonton, AB (780) 424-1754 Calgary, AB (403) 263-8660 Vancouver, BC (604) 685-5036

PRODUCT IDENTIFICATION

Product Name: Heptane, Liquid.
Chemical Name: Heptane.
Synonyms: Dipropyl Methane; Heptyl Hydride; n-Heptane, Primary Reference Fuel.
Chemical Family: Mixture of aliphatic hydrocarbons.
Molecular Formula: C7H16; CH3(CH2)5CH3.
Product Use: Fuel. Industrial solvent, cleaner, degreaser. Chemical intermediate.
CAS #: See Section 3, "Composition, Information on Ingredients".
WHMIS Classification / Symbol: B-2: Flammable Liquid.
READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Harmful if inhaled or swallowed. Vapours are mildly irritating to eyes and respiratory tract. High vapour concentrations may cause drowsiness. May cause cardiac arrhythmia, central nervous system (CNS) depression, peripheral nervous system (PNS) effects, liver damage and kidney damage. Vapour reduces oxygen available for breathing. Extremely flammable liquid and vapour. May cause flash fire or explosion. Can decompose at high temperatures forming toxic gases. Contents may develop pressure on prolonged exposure to heat.

POTENTIAL HEALTH EFFECTS

. Inhalation: Product may be mildly irritating to the nose, throat and respiratory tract and may cause coughing and sneezing. In cases of extreme exposure, this product may cause lung damage and an adverse effect on respiratory function. See "Other Health Effects" Section.
. Skin Contact: Heptane may cause symptoms of skin irritation such as reddening, swelling, rash, scaling, or blistering. Prolonged and repeated contact may lead to dermatitis.
. Skin Absorption: A single, prolonged skin exposure is not likely to result in the absorption of toxic amounts of the material.
. Eye Contact: Splashes to the eye may cause irritation, redness and pain. May cause lachrymation (excessive tears).
. Ingestion: This product causes irritation, a burning sensation of the mouth and throat and abdominal pain.
Other Health Effects: Effects (irritancy) on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential.
Heptane may cause central nervous system (CNS) depression, peripheral nervous system (PNS) effects, liver damage, kidney damage, cardiac arrhythmia, hearing loss, visual disturbances, chemical pneumonitis and pulmonary oedema.
CNS depression is characterized by headache, dizziness, drowsiness, nausea, vomiting and incoordination. Severe overexposures may lead to coma and possible death due to

respiratory failure. Peripheral Neuropathy is a progressive disorder of the nervous system characterized by sensory and motor abnormalities, muscle spasms, weakness and pain in the arms and legs, numbness and tingling of the fingers and toes and paralysis. Liver damage is characterized by the loss of appetite, jaundice (yellowish skin colour), and occasional pain in the upper left-hand side of the abdomen. Signs and symptoms of kidney damage generally progress from oliguria, to blood in the urine, to total renal failure. This product may sensitize heart muscle causing cardiac arrhythmia, in rare cases. n-Heptane can sensitize heart muscle to the actions of epinephrin. Pulmonary oedema is the build-up of fluid in the lungs that might be fatal. Symptoms of pulmonary oedema, such as shortness of breath, may not appear until several hours after exposure and are aggravated by physical exertion. (4)

3. COMPOSITION, INFORMATION ON INGREDIENTS

Hazardous Ingredients	CAS No.	ACGIH TLV	%
n-Heptane	000142-82-5	400 ppm	25 - 40
Other Heptane Isomers	Not Available.	Not Listed.	50 - 70
Methylcyclohexane	000108-87-2	400 ppm	1 - 5
Octane, all isomers	Various	300 ppm	1 - 5

4. FIRST AID MEASURES

FIRST AID PROCEDURES

. Inhalation: Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical attention IMMEDIATELY.

. Skin Contact: Start flushing while removing contaminated clothing. Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, obtain medical attention.

. Eye Contact: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

. Ingestion: Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. IMMEDIATELY contact local Poison Control Centre. Vomiting should only be induced under the direction of a physician or a poison control centre. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

Note to Physicians: This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed.

Heptane: Vasopressor drugs (e.g. epinephrine, ephedrine etc.) should not be given on their own as there may be danger of cardiac arrhythmia. (6)
Medical conditions that may be aggravated by exposure to this product include neurological and cardiovascular disorders, diseases of the skin, eyes or respiratory tract, preexisting liver and kidney disorders.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES
Flammability Class (WHMIS): B-2: Flammable Liquid.
Flash Point (TCC, Deg. Celsius): -9 to -4. (3)
Autoignition Temperature (Deg. Celsius): 246. (3)
Flammability Limits in Air (%): LEL: 1.0. (3) UEL: 7.0. (3)
Hazardous Combustion Products: Thermal decomposition products are toxic and may include oxides of carbon and irritating gases.

Unusual Fire or Explosion Hazards: Vapours from this product are heavier than air, and may "travel" to a source of ignition (eg. pilot lights, heaters, electric motors) some distance away, and then "flash back" to the point of product discharge causing an explosion and fire. Vapours may form explosive mixtures with air. Closed containers exposed to heat may explode. Rags and other materials containing this product may heat and spontaneously ignite if exposed to air. Store wiping rags and similar material in metal cans with tight fitting lids. Spilled material may cause floors and contact surfaces to become slippery. Enforce NO SMOKING rules in area of use.

Sensitivity to Mechanical Impact: Not expected to be sensitive to mechanical impact.
Rate of Burning: Not available.
Explosive Power: Not available.
Sensitivity to Static Discharge: Expected to be sensitive to static discharge when vapours are present between the lower and upper explosive limits.

EXTINGUISHING MEDIA
Fire Extinguishing Media: Foam. Dry Chemical, Carbon dioxide or water spray. Use carbon dioxide or dry chemical media for small fires. If only water is available, use it in the form of a fog. This material may produce a floating fire hazard in extreme fire conditions. Water may be ineffective due to low flash point. Use water spraying for cooling.
FIRE FIGHTING INSTRUCTIONS
Instructions to the Fire Fighters: Use water spray to cool fire-exposed containers or structures. Use water spray to disperse vapours; re-ignition is possible. Isolate materials that are not involved in the fire and protect personnel. Cool containers with flooding quantities of water until well after the fire is out. Spilled material may cause floors and contact surfaces to become slippery.
Fire Fighting Protective Equipment: Use self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region. The responsibility of reporting lies directly with the handlers of the substance.
Containment and Clean-Up Procedures: In all cases of leak or spill contact vendor at Emergency Number shown on the front page of this MSDS. Wear protective clothing. Do not use combustible materials such as sawdust as an absorbent. Eliminate all sources of ignition. Collect product for recovery or disposal. For release to land, or storm water runoff, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Ventilate enclosed spaces. Notify applicable government authority if release is reportable or could adversely affect the environment.

7. HANDLING AND STORAGE

HANDLING
Store wiping rags and similar material in metal cans with tight fitting lids. Enforce NO SMOKING rules in area of use.
Handling Practices: Ground and bond equipment and containers to prevent a static charge buildup. Use spark-resistant tools and avoid "splash-filling" of containers. Use normal "good" industrial hygiene and housekeeping practices. Containers which have been exposed to heat may be under internal pressure. These should be cooled and carefully vented before opening. A face shield and apron should be worn. Vent container frequently, and more often in warm weather, to relieve pressure. Attacks some types of rubber, plastics and coatings.
Ventilation Requirements: See Section 8, "Engineering Controls".
Other Precautions: Use only with adequate ventilation and avoid breathing vapours or mists. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

Clothing and footwear that dissipates static electrical charges should be worn when handling flammable materials. Natural fibers (cotton, wool, leather and linen) should be selected in favour of synthetic materials (rayon, nylon and polyester).
STORAGE
Storage Temperature (Deg Celsius): See below.
Ventilation Requirements: Ventilation should be explosion proof.
Storage Requirements: Store in a cool, well-ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Do not expose sealed containers to temperatures above 40 Deg. Celsius. Protect from direct sunlight. Protect against physical damage.
Special Materials to be Used for Packaging or Containers: Attacks some types of rubber, plastics and coatings. Confirm suitability of any material before using.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.
ENGINEERING CONTROLS
Engineering Controls: Local exhaust ventilation required. Ventilation should be explosion proof. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense vapours may collect. For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed. Such a procedure must include consideration of, among other things, ventilation, testing of tank atmosphere, provision and maintenance of SCBA, and emergency rescue. Use the "buddy" system. The second person should be in view and trained and equipped to execute a rescue. (4)
PERSONAL PROTECTIVE EQUIPMENT (PPE)
Eye Protection: Safety glasses with side shields are recommended to prevent eye contact. Use full face-shield or chemical safety goggles when there is potential for contact. Contact lenses should not be worn when working with this material.
Skin Protection: Gloves and protective clothing made from polyvinyl alcohol (PVA), nitrile rubber or viton should be impervious under conditions of use. Attacks some types of rubber, plastics and coatings. Do not use gloves or protective clothing made from butyl rubber, natural rubber, neoprene or PVC. Prior to use, user should confirm impermeability. Discard contaminated gloves.
Respiratory Protection: No specific guidelines available. Do not use compressed oxygen in hydrocarbon atmospheres. A NIOSH/MSHA-approved air-purifying respirator equipped with organic vapour cartridges for concentrations up to 1,000 ppm. An air-supplied respirator if concentrations are higher or unknown.

Heptane: Immediately Dangerous to Life and Health (IDLH) value: 750 ppm. (4) The purpose of establishing an IDLH value is to ensure that the worker can escape from a given contaminated environment in the event of failure of the most protective respiratory equipment. In the event of failure of respiratory protective equipment, every effort should be made to exit immediately. (4)
If while wearing a filter, cartridge or canister respirator, a SCBA or an air-line respirator, you can smell, taste or otherwise detect anything unusual, or in the case of a full facepiece respirator you experience eye irritation, leave the area immediately. Check to make sure the respirator to face seal is still good. If it is, replace the filter, cartridge or canister. If the seal is no longer good, you may need a new respirator. (4)
Other Personal Protective Equipment: Wear an impermeable apron and boots. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

EXPOSURE GUIDELINES

	ACGIH TLV (STEL)	OSHA PEL (TWA)	OSHA PEL (STEL)	NIOSH REL (TWA)	NIOSH REL (STEL)
n-Heptane	500 ppm	500 ppm	----	85 ppm	440 ppm (Ceiling)
Methylcyclohexane	----	500 ppm	----	400 ppm	----
Octane, all isomers	----	500 ppm	----	75 ppm	385 ppm (Ceiling)

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.
Appearance and Odour: Clear, colourless liquid. Gasoline-like odour.
Odour Threshold (ppm): 230 ppm (Detection) and 330 ppm (Perception). Poor warning properties.
Boiling Range (Deg Celsius): 90 to 110.
Melting/Freezing Point (Deg Celsius): -135 to -90.
Vapour Pressure (mm Hg at 20 Deg. Celsius): 45; 83 mm Hg at 38 Degrees Celsius.
Vapour Density (Air = 1.0): 3.4 to 3.5.
Relative Density (gm/cc, Water = 1.0): 0.688 to 0.70 at 16 Degrees Celsius.
Bulk Density: 688 to 700 Kg/M3.
Viscosity: Below 1 cPs at 40 Degrees Celsius.
Evaporation Rate (Butyl Acetate = 1.0): Above 1.
Water Solubility: Practically insoluble in water.
Solubility: Soluble in all proportions in most organic solvents, such as ethanol, diethyl ether, ketones and other esters.
% Volatile by Volume: 100 %.
pH: Not available.
Coefficient of Water/Oil Distribution: 4.66. (4)
Volatile Organic Compounds (VOC): 697 g/L. (3)

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY
Under Normal Conditions: Stable.
Under Fire Conditions: Flammable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: High temperatures, sparks, open flames and all other sources of ignition.
Materials to Avoid: Strong oxidizers (Liquid Oxygen, Peroxides and Chlorine). Strong Acids. Alkalies.
Decomposition or Combustion Products: Thermal decomposition products are toxic and may include oxides of carbon and irritating gases.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:

n-Heptane	LD50 (Oral, Rat)	= Above 15,000 mg/Kg (4)
	LD50 (Dermal, Rabbit)	= Above 2,000 mg/Kg (3)
	LC50 (Inhal'n, Rat, 4h)	= 103,000 mg/M3 (1,3,4)
Methylcyclohexane	LD50 (Oral, Mouse)	= 2,250 mg/Kg (1,3)
	LC50 (Inhal'n, Mouse, 4h)	= 29,345 mg/M3 (1)
	LC50 (Inhal'n, Rabbit, 4h)	= 7,614 ppm (1)
n-Octane	LC50 (Inhal'n, Rat, 4h)	= 118,000 mg/M3 (3)

Carcinogenicity Data: The ingredient(s) of this product is (are) not classed as carcinogenic by ACGIH, IARC, OSHA and NTP.
Reproductive Data: No adverse reproductive effects are anticipated.
Mutagenicity Data: No adverse mutagenic effects are anticipated.
Teratogenicity Data: No adverse teratogenic effects are anticipated.
Respiratory / Skin Sensitization Data: None known.
Synergistic Materials: None known.

Other Studies Relevant to Material: The main effect of short term exposure to n-Heptane is depression of the central nervous system. The effects observed in experimental animals, with increasing dose were: irritation, irregular respiration, prostration, coma, convulsion and death resulting from respiratory arrest. (4)

At a concentration of 8,000 ppm, mice experienced irritation, irregular respiration and unconsciousness after 5 minutes. Narcosis was seen after 30 to 50 minutes at levels of 10,000 to 15,000 ppm n-Heptane. n-Heptane at a concentration of 15,000 ppm to 20,000 ppm for the same time frame caused convulsions and death. (4)

Volunteers exposed to n-Heptane at 5,000 ppm experienced dizziness/giddiness at 4 minutes, incoordination after 7 minutes, hilarity or a state of stupor at 15 minutes, which persisted for 30 minutes after exposure. The subjects also reported reduced appetites, slight nausea and persistent gasoline-like taste. Exposure to a lower level, approximately 1,000 ppm for 6 minutes or 2,000 ppm for 4 minutes, produced slight dizziness. (4)

Current data has found that there are no major toxic effects to long term inhalation exposure. Experimental animals did have some changes to liver enzymes but not in the blood. Furthermore, exposure levels of 4,000 ppm for 28 days lead to hearing loss in some rats plus there was a significant increase in the auditory threshold of mid-range frequencies. (4)

Tire workers exposed to a mixture of n-Heptane did show some blood disorders. However, no conclusions can be made from this due to combined exposure to several chemicals. (4)

Rats exposed to n-Heptane at 3,000 ppm for 16 weeks showed no evidence of Peripheral nerve damage. The same results were observed in a similar group exposed to 1,500 ppm and 3,000 ppm for 26 weeks. (4)

Metabolic studies have detected the neurotoxic metabolite 2,5-Heptanedione in the urine of animals exposed to n-Heptane for 6 hours at 1,800 ppm or 2,000 ppm. Although 2,5-Heptanedione is a minor metabolite (present at less than 1 %) it is not possible to rule out neurotoxic effects from n-Heptane exposure. However neurotxicity is not expected from occupational exposure. (4)

There is no definitive information available on carcinogenicity, mutagenicity, teratogenicity, embryotoxicity and reproductive effects for n-Heptane. (3)

12. ECOLOGICAL INFORMATION

Ecotoxicity: May be harmful to aquatic life.
n-Heptane: Fish toxicity: 24-hour TLm = 4,925 ppm (Mosquito Fish). (3)
This naphtha will normally float on water with its lighter components evaporating rapidly. In stagnant or slow-flowing waterways, a naphtha hydrocarbon layer can cover a large surface area to create an anaerobic environment for freshwater and saltwater ecosystems. This covering layer might limit or eliminate natural atmospheric oxygen transport into the water and can be harmful or fatal to aquatic life. (3)
Environmental Fate: n-Heptane and heptane isomers all have estimated half-lives of between 2.4 and 4.4 days in air when photochemical hydroxyl and/or nitrate radicals present. (3) Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

13. DISPOSAL CONSIDERATIONS

This information applies to the material as manufactured. Processing, use or contamination may make the information inappropriate, inaccurate or incomplete. The responsibility for proper waste disposal lies with the owner of the waste.

Deactivating Chemicals: None required.
Waste Disposal Methods: Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.
Safe Handling of Residues: See "Waste Disposal Methods".
Disposal of Packaging: Empty containers retain product residue (liquid and/or vapour) and can be dangerous. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. Do not expose such containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death. Do not dispose of package until thoroughly washed out.

14. TRANSPORTATION INFORMATION

CANADIAN TDG ACT SHIPPING DESCRIPTION:
Heptanes, Class 3, UN1206, Pk Gp II.
Label(s)/Placard(s): Flammable Liquid.
Regulated Limit (9.2): Not applicable. Exemptions: Not applicable.
U.S. DOT CLASSIFICATION:
Heptanes, Class 3, UN1206, Pk Gp II.
Label(s)/Placard(s): Flammable Liquid.
Reportable Quantity (CERCLA-RQ): Not applicable. Exemptions: Not applicable.

15. REGULATORY INFORMATION

CANADA
CEPA - NSNR: All constituents of this product are included on the DSL under the CEPA.
CEPA - NPRI: Not included.
Controlled Products Regulations Classification (WHMIS): B-2: Flammable Liquid.
USA
Environmental Protection Act: All constituents of this product are included on the TSCA inventory under the US-EPA.
OSHA Hazard Communication (29CFR 1910.1200) Classification: Flammable Liquid.
NFPA: 1 Health, 3 Fire, 0 Reactivity. (7)
INTERNATIONAL: This product or its components are on the European inventory of existing commercial chemicals (EINECS).

16. OTHER INFORMATION

ADDITIONAL INFORMATION AND SOURCES USED
1. RTECS-Registry of Toxic Effects of Chemical Substances, On-line search, Canadian Centre for Occupational Health and Safety RTECS database, Vol I-V, 1985-1986 edition, Doris V. Sweet, Ed., National Institute for Occupational Safety and Health, U.S. Dept. of Health and Human Services, Cincinnati, 1987.
2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.
3. Supplier's Material Safety Data Sheet(s).
4. "CHEMINFO", through "CCINFOdisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
5. Guide to Occupational Exposure Values, 1998, American Conference of Governmental Industrial Hygienists, Cincinnati, 1998.
6. The British Columbia Drug and Poison Information Centre, Poison Managements Manual, Canadian Pharmaceutical Association, Ottawa, 1981.
7. NFPA 325M Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids, 1994 Edition, Quincy, MA, 1994.
8. Regulatory Affairs Group, Brenntag Canada Inc.

injuries or consequential damages which may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years.

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