




**ELASTOCOL 600c  
AEROSOL**

Offerte en français

WHMIS	PROTECTIVE CLOTHING	TRANSPORT OF DANGEROUS GOODS
		 <p><b>AEROSOLS</b> Class 2.1 UN1950 P.G.: None</p>

**SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**Use:** Primer used to enhance adhesion of self-adhesive membranes on porous surfaces.

**Formula number:** 423.1

**Manufacturer:**

Soprema Canada  
1675 Haggerty Street  
Drummondville (Quebec) J2C 5P7  
CANADA  
Tel.: 819 478-8163

**Distributors:**

Soprema Inc.  
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Chilliwack (BC) V2R 4H3  
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Soprema USA  
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Wadsworth (Ohio) 44281  
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Soprema USA  
12251 Seaway Road  
Gulfport (Mississippi) 39507  
UNITED STATES  
Tel.: 228 239-1168

**In case of emergency:**

SOPREMA (8:00am to 5:00pm): 1 800 567-1492

CANUTEC (Canada) (24h.): 613 996-6666

CHEMTREC (USA) (24h.): 1 800 424-9300

**EMERGENCY OVERVIEW!!!**

Green aerosol with strong solvent odour. CAUTION! Highly flammable gas under pressure. Vapours can accumulate and form flammable and explosive mixtures with air.

May cause skin, eye and respiratory tract irritation. Harmful or fatal if swallowed. Ingestion of the product can cause severe lung injury when aspirated. Inhalation of high concentrations of this product may cause central nervous system (CNS) depression (headache, nausea, dizziness, drowsiness, incoordination and unconsciousness).

**SECTION II: COMPOSITION AND INFORMATION ON DANGEROUS INGREDIENTS**

NAME	CAS #	% WEIGHT	EXPOSURE LIMIT (ACGIH)	
			TLV-TWA	TLV-STEL
May contain:				
Naphtha	64742-49-0	30-60	400 ppm	500 ppm
n-Heptane	142-82-5		400 ppm	500 ppm
n-Hexane	110-54-3		50 ppm (skin)	Not established
Acetone	67-64-1	30-60	500 ppm	750 ppm
Propane	74-98-6	10-30	1 000 ppm	Not established
Isobutane	75-28-5	1-5	Not established	Not established

**SECTION III: POTENTIAL HEALTH EFFECTS**

*Effects of Short-Term (Acute) Exposure*

**INHALATION**

Inhalation of vapours of this product can occur while using the product. The exposition to these vapours over exposure limits may cause irritation of the respiratory system and central nervous system depression (headaches, dizziness, nausea, tiredness, confusion and coma).

**Naphtha:**

The main effect of short-term inhalation exposure is depression of the central nervous system. The effects reported in studies with volunteers at 5000 ppm were marked dizziness/giddiness (at 4 minutes); incoordination (at 7 minutes); hilarity or a state of stupor (at 15 minutes) that persisted for 30 minutes after exposure. Subjects reported reduced appetite, slight nausea and a gasoline-like taste that persisted for several hours after exposure. Lower exposures produced only slight dizziness (1000 ppm for 6 minutes or 2000 ppm for 4 minutes). The fatal concentration has been reported to be 16000 ppm. Mucous membrane irritation may occur at high vapour concentrations. (1)

**Acetone:**

In one study, volunteers exposed to concentrations up to 500 ppm reported no harmful effects. In other studies, concentrations of approximately 300-500 were reported to cause slight irritation of the nose and throat. Exposure to 250 ppm for 4 hours has caused mild effects on performance in some behavioural tests (auditory tone discrimination and a mood test). As concentrations approach 1000 ppm, noticeable irritation has occurred and some people have reported headaches, light-headedness and tiredness. Inhalation of concentrations higher than 2000 ppm can cause dizziness, a feeling of drunkenness, drowsiness, nausea and vomiting. Unconsciousness may result if exposure is extremely high (greater than 10000 ppm). Intolerable nose and throat irritation would also occur at these concentrations. Even higher concentrations can cause collapse, coma and death. Tolerance to the effects of acetone can develop. Tolerance means that, with repeated exposures, higher concentrations are required to produce symptoms which had previously been observed at lower concentrations. One case report describes two men who were working in a confined space with extremely high acetone concentrations (measured at 12000 ppm, 3 hours after the accident). Low concentrations (up to 50 ppm) of trichloroethane were also detected. After working in the area 4 hours, the men noticed irritation of the throat, headache, weakness in the legs and a feeling of drunkenness. The men then left the area for 1 hour.

Upon returning, one man collapsed and the other felt faint. Rescuers, who were exposed for 2 to 3 minutes, experienced symptoms similar to the workers. The man who lost consciousness regained consciousness a short time later but was confused, drowsy, unsteady on his feet, felt nauseated and was vomiting. The other man had, at this point, also lost consciousness and was vomiting. Both men fully recovered. A single case report suggests slight kidney and liver damage may have occurred following a severe exposure to acetone. There are insufficient details available to draw conclusions from this report. (1)

**Propane:**

At air concentrations below 1000 ppm propane is virtually non-toxic. Brief exposures to 10,000 ppm cause no symptoms; 100,000 ppm can produce slight dizziness after a few minutes of exposure, but is not noticeably irritating to the nose and throat. Propane is a simple asphyxiant. High concentrations of propane can displace oxygen and cause asphyxiation. Oxygen content in the atmosphere must not be allowed to fall below 18%. Effects of oxygen deficiency are: 12-16% breathing and pulse rate increased, muscular co-ordination slightly disturbed; 10-14% emotional upset, abnormal fatigue, disturbed respiration; 6-10%: nausea and vomiting, collapse or loss of consciousness; below 6%: convulsive movements, possible respiratory collapse and death. (1)

**Isobutane:**

Low toxicity. Inhalation of 5% (50,000 ppm) isobutane for 2 hours caused no ill effects. No health effects were seen in humans exposed at 1,000 ppm for up to 8 hours or 500 ppm for 8 hours/day for 10 days. Isobutane can have central nervous system and asphyxiant effects at high concentrations – well above the lower explosion limit of 1.8% (18,000 ppm). (1)

**SKIN CONTACT**

Prolonged or repeated contact may cause defatting of the skin and produce dermatitis (dryness, irritation, redness and cracking). Contact with liquefied gas escaping from its high pressure cylinder may cause frostbite.

**Naphtha:**

Naphtha is a moderate to severe skin irritant, based on human information. Harmful effects are not expected to occur by skin absorption. (1)

**Acetone:**

Acetone is either slightly irritating or not irritating, based on animal and limited human information. Application of 1 ml of acetone in a small glass tube to six male volunteers for 30 or 90 minutes resulted in only mild redness and swelling at 90 minutes. The risk of developing health effects following the absorption of acetone through unbroken skin is very slight. There are several reports of people, usually young children, becoming ill following skin exposure to acetone while lightweight casts were being put on broken limbs. The symptoms experienced were similar to those described following high inhalation exposures. In all cases, a large amount of acetone came into contact with the skin for several hours and inhalation exposure may also have occurred. These reports are not considered relevant to people exposed to acetone at work. (1)

**Propane:**

The gas does not affect the skin. Contact with liquefied gas escaping at high pressure may cause frostbite. Symptoms of mild frostbite include numbness, prickling and itching in the affected area. Symptoms of more severe frostbite include a burning sensation and stiffness of the affected area. The skin may become waxy white or yellow. Blistering, tissue death and gangrene may also develop in severe cases. Close range contact with liquefied propane gas may cause injury characteristic of a thermal burn with swelling, fluid accumulation and extreme redness. Tissue death and gangrene may also develop. (1)

**Isobutane:**

Contact with liquefied gas escaping at high pressure may cause frostbite. Symptoms of mild frostbite include numbness, prickling and itching in the affected area. Symptoms of more severe frostbite include a burning sensation and stiffness of the affected area. The skin may

become waxy white or yellow. Blistering, tissue death and gangrene may also develop in severe cases. (1)

**EYE CONTACT**

The vapours may cause eye irritation with tearing and discomfort, redness and pain. Eye contact with the product may cause moderate to severe irritation.

**Naphtha:**

Based on a report of skin irritation, eye contact with the liquid may result in irritation and pain. Concentrated vapour may cause slight irritation. However, during exposure to 5000 ppm for 4 minutes there were no complaints of eye irritation. There is no human or animal information available. (1)

**Acetone:**

Acetone vapour causes mild irritation at concentrations of around 500 ppm. Irritation is very noticeable at 1000 ppm. Liquid acetone is severely irritating, based on animal and limited human information. In 3 human cases, acetone caused corneal injury which completely healed within 48 hours. In one unusual case, liquid acetone was held directly on the eye for a long time. In this particular case, there was permanent damage to the eye, with clouding of the cornea. (1)

**Propane and Isobutane:**

The gas does not cause eye irritation. Contact with liquefied gas escaping at high pressure may cause freezing of the eye. Permanent eye damage or blindness could result. (1)

**INGESTION**

It is unlikely that toxic amounts of this product would be ingested with normal handling and use. If significant amount of the product were ingested, symptoms as described for inhalation might occur. This product may cause irritation, mouth and throat burns and abdominal pains. The product can be aspirated (inhaled) into the lungs during ingestion or vomiting. Aspiration of even a small amount of liquid could result in a life threatening accumulation of fluid in the lungs. Severe lung damage (oedema), respiratory failure, cardiac arrest and death may result. (1)

**Naphtha:**

Animal toxicity information indicates that naphtha has very low toxicity if ingested. Ingestion of extremely large doses may cause nausea, vomiting, headache and other symptoms of central nervous system depression, as described for "Inhalation" above. (1)

**Acetone:**

Ingestion is not a typical route of occupational exposure. Several studies report no effects or minor effects (slight drowsiness) in people who ingested up to 20 grams/day for several days. Animal toxicity information also suggests that acetone is not very toxic following ingestion. If acetone is aspirated (breathed into the lungs during ingestion or vomiting) it can cause severe, life-threatening lung injury. Animal information suggests that acetone would be difficult to aspirate because it evaporates so quickly. Based on its physical properties, acetone can be aspirated into the lungs during ingestion or vomiting. One case report describes a man who intentionally drank 200 ml (about 7 ounces) of acetone. Within one hour, he had flushed cheeks and appeared drunk. His breathing was shallow and his throat red and swollen. He soon lapsed into coma and did not regain consciousness for 12 hours. Four weeks later, he developed symptoms similar to diabetes (increased urination, thirst and blood sugar levels). The patient fully recovered within 5 months after the incident. (1)

**Propane and Isobutane:**

Not applicable to gases.

**Effects of Long-Term (Chronic) Exposure**

**INHALATION**

**Naphtha:**

Nerve damage of the extremities, such as the hands and feet (peripheral neuropathy) has been reported in workers exposed to petroleum solvents containing mixtures of chemicals including naphtha. (1)

**Acetone:**

Most human population studies indicate that acetone would not produce significant health effects following long-term exposure. In a series of studies, no statistically significant differences in causes of death or clinical laboratory results were observed in 948 employees exposed to up to 1070 ppm acetone over 23 years. Another study which reviewed 18 years of industrial experience with employees in a cellulose acetate production facility did not show an increased incidence of illness. One other study did not find significant changes in clinical chemistry tests conducted on 60 employees who had worked at least 5 years in the acetate fibre manufacturing industry (exposures of 550-1050 ppm). No conclusions can be drawn from other reports which have described effects following long-term acetone exposure. These reports are limited by factors such as the small number of workers studied, the fact that other exposures may have contributed to or caused the observed effects and/or possible self-reporting biases. In one study, 110 men were exposed to a mean concentration of 361 ppm acetone for an average of 14.9 years. These men reported more heavy headedness, nausea, faintness, weight loss, eye irritation than a comparison group with no acetone exposure. They also did not perform as well on some neurobehavioral tests (reaction time and digit span tests). A few historical reports have also described long-term exposure effects such as irritation of the airways, throat, stomach and occasionally, dizziness, attacks of giddiness and a loss of strength. (1)

**Propane:**

No long-term effects have been reported from exposure to propane.

**Isobutane:**

No long-term effects have been reported from exposure to isobutane.

**SKIN CONTACT****Naphtha:**

Prolonged or repeated skin contact may cause dry, red, itchy skin (dermatitis). (1)

**Acetone:**

Prolonged or repeated contact may cause defatting of the skin and produce dermatitis (dryness, irritation, redness and cracking) (1)

**SKIN SENSITIZATION****Naphtha:**

There have been no reports of skin sensitization in people occupationally exposed to naphtha. Skin sensitization was not observed in a maximization test using 25 volunteers. (1)

**Acetone:**

Acetone is not a skin sensitizer. Negative results have been obtained in tests in humans and, despite widespread industrial use, no conclusive case reports of sensitization were located. Negative results were obtained in animal tests. (1)

**EYES/VISION****Naphtha:**

Limited information suggests that naphtha may cause harmful vision changes such as blurred vision, impaired colour discrimination, reduced responsiveness of the eye to visual stimulation and constriction of visual field. The available studies have involved small numbers of employees and exposure concentrations have generally been high (e.g. 423 to 1280 ppm for 5 years with higher peak concentrations). It has been suggested that these effects may be correlated with signs of peripheral neuropathy. (1)

**TARGET ORGANS****Naphtha:**

Long-term exposure of rubber tire workers to a solvent mixture which included naphtha caused some slight blood disorders. No conclusions can be drawn from this report because of the combined exposure. (1)

**Acetone:**

Only one case report seems to indicate slight hepatic and renal injuries after an exposure at high concentrations of acetone. Therefore, the details mentioned in this report are not sufficient to draw a conclusion. (1)

**Propane and Isobutane:**

There is no human or animal information available.

**HEART/BLOOD VESSELS****Acetone:**

No statistically significant differences in mortality from circulatory system or heart disease were observed in 948 employees exposed to up to 1070 ppm acetone for up to 23 years, when compared with the general United States population. (1)

**BLOOD/BLOOD FORMING SYSTEM****Acetone:**

No significant changes in blood composition or chemistry were found in 60 workers who had worked at least 5 years in the acetate fibre manufacturing industry (exposures of 550-1050 ppm). An early study, which reviewed 18 years of industrial experience with employees in a cellulose acetate production facility, did not show an increased incidence of illness. No conclusions can be drawn from a few historical reports that described long-term exposure effects such as irritation of the airways, throat, stomach and occasionally, dizziness, attacks of giddiness and a loss of strength. (1)

**NERVOUS SYSTEM****Naphtha:**

Damage to the nervous system of the extremities (hands, arms, legs and feet) has been observed in people occupationally exposed to naphtha. This condition is referred to as peripheral neuropathy. The majority of occupational cases have occurred in small industries where there was exposure to relatively high concentrations, usually for more than 8 hours/day. (1)

**Acetone:**

No conclusions can be drawn from the human information located. Studies in animals have not shown neurotoxic effects from acetone. In a study of 110 male workers exposed for an average of 14.9 years at an acetate fibre plant, workers were divided into highly exposed (greater than 500 ppm), moderately exposed (250-500 ppm) and compared with 67 unexposed male workers from the same plant. A dose-related relationship was found for a heavy, vague or faint feeling in the head, nausea and loss of weight. For workers aged 30-44, there was a significant decrease in simple reaction time and in a short-term memory test. However, this effect was not seen in workers aged less than 30 years or greater than 45 years. The authors questioned whether these findings were meaningful. Other neurobehavioural tests did not show any differences between exposed workers and controls. neurotoxic effects were studied in 71 workers who were exposed to 417-892 ppm (cited as 988-2114 mg/m<sup>3</sup>) acetone while cleaning trophy medals and in 86 unexposed controls. Average exposure duration was 14 years. Acetone-exposed workers had an increase in the self-reported symptoms of mood disorders, irritability, memory difficulties, sleep disturbances, numbness in hands and feet and pain in the bones, joints and muscles. No statistical analysis was reported for the incidence of these symptoms. Measurement of motor nerve conduction in the arms and legs showed some statistically significant decreases in speed and size of the nerve impulses and an increase in the duration of the impulses. A significantly delayed reaction time in a visual test and a lower attention score were observed in psychological tests. This study is limited by small numbers and lack of information on levels of alcohol consumption. Early studies which showed neurotoxic effects are not reliable because of factors such as problems with experimental design and unreliable statistical analysis. (1)

**CARCINOGENICITY****Naphtha, Propane and Isobutane:**

There is no human or animal information available. The International Agency for Research on Cancer (IARC) has not evaluated the carcinogenicity of this chemical. The American Conference of Governmental Industrial Hygienists (ACGIH) has not assigned a carcinogenicity designation to this chemical. The US National Toxicology Program (NTP) has not listed this chemical in its report on carcinogens. (1)

**Acetone:**

There is no human information. Animal information suggests that acetone is not carcinogenic. IARC has not evaluated the carcinogenicity of this chemical. ACGIH has designated this chemical as not classifiable as a human carcinogen (A4). NTP has not listed this chemical in its report on carcinogens. (1)

**TERATOGENICITY, EMBRYOTOXICITY, FETOTOXICITY****Naphtha:**

There is no human information available. Naphtha has not produced teratogenicity or embryotoxicity in the few animal studies available. Fetotoxicity has been observed in the presence of maternal toxicity. (1)

**Acetone:**

The information located is not sufficient to conclude that acetone causes developmental toxicity. No conclusions can be drawn based on the limited human information available. In animal studies, inhalation of acetone caused fetotoxicity in rats and mice and embryotoxicity in mice, but only at concentrations that also caused maternal toxicity. A limited oral study in mice showed fetotoxicity and embryotoxicity at a dose that did not cause decreased maternal body weight during pregnancy. A study of 891 women who worked or were working in the semiconductor industry showed an increased risk of miscarriages among fabrication workers. Seven chemicals were strongly associated with the increased risk of miscarriage, one of which was acetone. No conclusions can be drawn from this study because of factors such as the small number of workers studied and the concurrent exposure to other potentially harmful chemicals. There is insufficient information available to evaluate a Russian study that reports increased complications of pregnancy and reduced birth weight in children of mothers exposed to acetone. (1)

**Propane and Isobutane:**

There is no human or animal information available.

**REPRODUCTIVE TOXICITY****Naphtha:**

There is no human information available. Naphtha has caused severe testicular damage in male rats at concentrations which have produced significant other toxicity. (1)

**Propane and Isobutane:**

There is no human or animal information available.

**Acetone:**

In a study of 735 pregnancies in 560 women working in laboratories, exposure to acetone was associated with a significant decrease in a measure of fertility (the probability of conception per menstrual cycle) in comparison to other solvents. (1)

**MUTAGENICITY****Naphtha:**

The available information does not suggest that naphtha is mutagenic. Negative results were obtained in most tests using live animals and relevant routes of exposure. Positive results (chromosomal aberrations in bone marrow) were observed in male exposed by inhalation, but the purity of the sample was not specified. No human information was located. Negative results were obtained in cultured human cells (DNA damage, unscheduled DNA synthesis), with or without metabolic activation. (1)

**Propane and Isobutane:**

There is no information available.

**Acetone:**

There is no human information available. Negative results have been obtained in tests using cultured human cells. Negative results have also been obtained in a study which used live animals, cultured mammalian cells and bacteria. (1)

**TOXICOLOGICALLY SYNERGISTIC MATERIALS****Naphtha:**

The neurotoxic effects of naphtha vapour can be enhanced in rats by both methyl ethyl (MEK) and lead acetate, but are decreased by toluene. Pulmonary lesions in rats were also reported to be enhanced by

co-exposure to MEK. Both toluene and xylene prevent testicular atrophy by naphtha. (1)

**Propane and Isobutane:**

There is no information available.

**Acetone:**

Acetone has increased the liver toxicity of chemicals, such as carbon tetrachloride, chloroform, trichloroethylene, bromodichloromethane, dibromochloromethane, N-nitrosodimethylamine and 1,1,2-trichloroethane, the lung toxicity of styrene and the toxicity of acetonitrile and 2,5-hexanedione in laboratory animals. It appears to inhibit the metabolism and elimination of ethyl alcohol, thereby potentially increasing its toxicity. Acetone can either increase or decrease the toxicity of 1,2-dichlorobenzene, depending on the concentration of acetone used. (1)

**POTENTIAL FOR ACCUMULATION****Naphtha:**

Naphtha is mainly absorbed through the lungs. Animal studies indicate that skin absorption is low. However, skin absorption may be increased by exposure to other solvents at the same time. Naphtha can also be absorbed through the gastrointestinal tract, but this route is not important in occupational exposures. Naphtha is metabolized in the liver. The composition of metabolites varies from one species to another. 2,5-Hexanedione is the major metabolite and is believed to be responsible for the peripheral neuropathy. Naphtha and its metabolites are eliminated in the urine and in exhaled air. (1)

**Acetone:**

Acetone is a normal by-product of mammalian metabolism and is found in virtually every organ and tissue, and in the blood. Acetone can enter the body by inhalation, ingestion or skin contact. Acetone is metabolized by a number of routes to compounds, which are used by the body to make glucose and other products of intermediary metabolism, with the generation of carbon dioxide. Acetone is excreted both unchanged, and following metabolism, mainly as carbon dioxide. The main route of excretion is in the expired air, with very little excreted in the urine. Respiratory excretion is complete within 20 hours after inhalation. The amount of unchanged acetone excreted in the urine increases with increasing exposure concentration and duration, and with exercise during exposure. (1)

**Propane and Isobutane:**

There is no information available.

**SECTION IV: FIRST AID MEASURES****SKIN CONTACT**

Remove contaminated clothing. Wash thoroughly with soap and water. If irritation persists, get medical attention.

**EYE CONTACT**

Flush thoroughly with water for at least 15 minutes. If irritation persists, get medical attention.

**INHALATION**

In case of gas or vapour inhalation, move victim to fresh air. If breathing is difficult, give oxygen. If breathing stops, give respiratory assistance. Obtain medical assistance.

**SWALLOWING**

Do not induce vomiting. Immediately contact local poison control centre. Should vomiting occur, be sure to keep the victim's head below hips to avoid aspiration of vomit into the lungs. Maintain the victim at rest and obtain immediate medical attention.

**SECTION V: FIRE FIGHTING MEASURES**

**FLAMMABILITY:** Flammable aerosol.

**EXPLOSION DATA:** Sensitivity to mechanical impact: No  
Sensitivity to static charge: Can accumulate static charge.

**FLASH POINT:** -104.4 (propane) (ASTM D93)

**AUTO-IGNITION TEMPERATURE:** Not available

**FLAMMABILITY LIMITS IN AIR:** (% en volume) Not available

## FIRE AND EXPLOSION HAZARDS

Extremely flammable gas. This aerosol will readily ignite under the action of heat, sparkles or flames. Vapours may form explosive mixtures with air. Vapours are heavier than air and may travel a considerable distance to a source of ignition and flash back to a leak or open container. The product may ignite on contact with strong oxidizing agents. Do not cut, puncture or weld empty containers. Application on hot surfaces needs special precautions.

## COMBUSTION PRODUCTS

Irritating and/or toxic gases or fumes may be generated by thermal decomposition or combustion. Toxic and/or irritating gases or fumes can emanate from empty containers when submitted to high temperatures: CO, CO<sub>2</sub>, Aldehydes, ketone, acrolein, halogenated compound.

## FIRE FIGHTING INSTRUCTIONS

Evacuate area. Wear self-contained breathing apparatus and appropriate protective clothing in accordance with standards. Approach fire from upwind and fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Always stay away from containers because of the high risk of explosion. Stop leak before attempting to put out the fire. If leak cannot be stopped, and if there is no risk to the surrounding area, let the fire burn itself out. Move containers from fire area if this can be done without risk. Cool containers with flooding quantities of water until well after fire is out.

## MEANS OF EXTINCTION

Anti-alcohol or universal foam, dry chemical powder, CO<sub>2</sub>, sand. Use of water spray when fighting fire may be inefficient because of the low flash point of the product.

## SECTION VI: ACCIDENTAL RELEASE MEASURES

### RELEASE OR SPILL

Ventilate area. Wear appropriate protective equipment during cleanup. Eliminate all ignition sources. Shut off source of leak if it can be done without risk. Contain the spill. Absorb with inert material such as sand or earth. Sweep or shovel into containers with lids, use clean non-sparkling tools (sp.: plastic) to collect absorbed material. Cover and remove to appropriate well-ventilated area until disposal. Wash spill area with soap and water. Prevent entry into waterways, sewers or basements. Dispose of this product according to local environmental regulations.

## SECTION VII: HANDLING AND STORAGE

### HANDLING

This product and its vapours are extremely flammable and toxic. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid breathing mist, vapour or dust. Wash thoroughly after handling. Before handling, it is very important that ventilation controls are operating and protective equipment requirements are being followed. People working with this product would be properly trained regarding its hazards and its safe use. Eliminate all ignition sources (e.g. sparks, open flames, hot surfaces). Keep away from heat. Ground transfer containers to avoid static accumulation. Tightly reseal all partially used containers. Do not cut, puncture or weld containers.

### STORAGE

Store in a cool well-ventilated area out of direct sunlight and away from heat and ignition sources. Keep storage areas clear of combustible materials. No smoking near storage area. Store away from incompatible materials. Store the product according to occupational health and safety regulations and fire and building codes. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Have appropriate fire extinguishers and spill clean-up equipment near storage area. Inspect all containers to make sure they are properly labelled.

## SECTION VIII: EXPOSURE CONTROLS / PERSONAL PROTECTION

**HANDS:** Wear gloves in vinyl polyalcohol or viton.

**RESPIRATORY:** If the TLV is exceeded, if use is performed in a poorly ventilated confined area, use an approved respirator in accordance with standards.

**EYES:** Wear chemical safety goggles in accordance with standards.

**OTHERS:** Eye bath and safety shower.

**CONTROL OF VAPOURS:** Local exhaust is needed to control vapour and dust level to below recommended limits.

## SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

<b>PHYSICAL STATE:</b>	Aerosol
<b>ODOUR AND APPEARANCE:</b>	Green aerosol with strong solvent odour
<b>ODOUR THRESHOLD:</b>	Not available
<b>VAPOUR DENSITY (air = 1):</b>	Heavier than air
<b>EVAPORATION RATE (Butyl acetate = 1):</b>	Not available
<b>BOILING POINT (760 mm Hg):</b>	Not available
<b>FREEZING POINT:</b>	Not available
<b>SPECIFIC GRAVITY (H<sub>2</sub>O = 1):</b>	Not available
<b>SOLUBILITY IN WATER (20°C):</b>	Not soluble
<b>VOLATILE ORGANIC COMPOUND (V.O.C.) CONTENT:</b>	390 g/L
<b>VISCOSITY:</b>	Not available

## SECTION X: STABILITY AND REACTIVITY

**STABILITY:** This material is stable.

**CONDITIONS OF REACTIVITY:** Avoid excessive heat.

**INCOMPATIBILITY:** Strong acids, strong oxidizing and reducing agents, basis, halogenated compounds.

**HAZARDOUS DECOMPOSITION PRODUCTS:** During a fire, irritating/toxic gases, such as carbon monoxide, carbon dioxide and other toxic and irritating compounds, such as formaldehyde, methanol, acetic acid, hydrogen peroxide, methane and ethylene oxide may be formed, depending on fire conditions.

**CONDITIONS TO AVOID:** Open flames, sparks, electrostatic discharge, heat and other ignition sources; prolonged exposure to direct sunlight.

**HAZARDOUS POLYMERISATION:** None

## SECTION XI: TOXICOLOGICAL INFORMATION

### TOXICOLOGICAL DATA

#### *n*-Heptane: (1)

LC50 (inhalation, rat): 25 000 ppm (103 g/m<sup>3</sup>) (4-hour exposure)

LD50 (oral, rat): More than 15 000 mg/kg

LD50 (dermal, rabbit): Not available

#### *n*-Hexane: (1)

LC50 (male rat): 38 500 ppm (4-hour exposure); cited as 77 000 ppm (271 040 mg/m<sup>3</sup>) (1-hour exposure)

LD50 (oral, 14-day old rat): 15 840 mg/kg

#### Acetone: (1)

LC50 (male rat): 30 000 ppm (4-hour exposure); cited as 71 000 mg/m<sup>3</sup> (4-hour exposure)

LD50 (oral, adult male rat): 6 700 mg/kg (cited as 8.5 ml/kg)

LD50 (dermal, rabbit): Greater than 15 800 mg/kg (cited as greater than 20 ml/kg)

*Propane:* Not available

#### *Isobutane:* (1)

LC50 (inhalation, mouse): 520 000 ppm (52%) (2-hour exposure)

**INHALATION**

**Naphtha:**

The primary effect of inhaling naphtha is depression of the central nervous system. The order of symptoms shown by experimental animals with increasing dosage is irritation, irregular respiration, prostration, coma, convulsions and death resulting from respiratory arrest. Mice exposed to 8000 ppm for 5 minutes showed irritation, irregular respiration and unconsciousness. At 10000-15000 ppm there were signs of narcosis within 30 to 50 minutes. 15000-20000 ppm for 30 to 60 minutes caused convulsions and death. Respiratory arrest occurred in 3 of 4 mice within 3 minutes at 48000 ppm. (1)

**Acetone:**

Numerous studies have evaluated the effects of acetone on the central nervous system (CNS). The concentration of acetone that causes unconsciousness depends on both the amount of acetone and the length of exposure. In general, acetone concentrations in excess of 8000 ppm are required to produce symptoms, regardless of the exposure duration and species tested. Drowsiness, incoordination, loss of reflexes, unconsciousness, respiratory failure and death have been observed following acetone exposure. Several studies have evaluated behavioural responses in animals following acetone exposure (for example, avoidance/escape behaviours). The results of these studies have been variable and it is not possible to draw a clear description of the possible effects of acetone. In one study, 10700 ppm was the acetone concentration required to reduce a behavioural response in mice by 50%. Acetone was the least potent of the chemicals tested in this study. The concentration of acetone which reduces the respiratory rate of mice by 50% (RD50) was reported to be 23480 ppm in one study and 77516 ppm in another. The RD50 is a measure of sensory irritation (nose, throat and respiratory irritation). These results indicate that acetone is a weak sensory irritant. (1)

**Propane:**

Guinea-pigs breathing 5.5% (55000 ppm) propane by volume developed tremors after 5 minutes. Nausea, retching and stupefaction were observed when animals were exposed for 30-120 minutes. All the animals survived a 2-hour exposure and had no significant tissue damage. A gas concentration of 89% did not cause anesthesia, but depressed the blood pressure of cats. Inhalation of 10% propane by mice and 15% by dogs causes weak cardiac sensitization. Presumably, all of these effects are reversible when exposure ceases. In primates, 10% propane (100,000 ppm) caused some changes in heart function. At 20% there was aggravation of these symptoms and respiratory depression. (1)

**Isobutane:**

Mice exposed to isobutane concentrations of 15% (150,000 ppm), 20% (200,000 ppm) and 23% (230,000 ppm) showed signs of anesthesia within 60, 17 and 26 minutes, respectively. Exposure to 10 to 20% (100,000 to 200,000 ppm) did not cause any circulatory effects, but did cause slight respiratory depression in monkeys. Isobutane is a weak cardiac sensitizer in dogs and rats (high concentrations can cause abnormal heartbeat in animals under stress). (1)

**EYE IRRITATION**

**Naphtha and Propane:**

There is no information available.

**Acetone:**

Undiluted acetone is a severe eye irritant. Application of 0.005 ml of undiluted acetone produced severe irritation (graded 5/10). In a standard Draize test, application of 0.1 ml undiluted acetone resulted in severe irritation, while 1-30% solutions resulted in minimal irritation. In a modified Draize test, application of 0.1 ml undiluted acetone was reported to cause corrosive eye injury. (1)

**Isobutane (rabbit):**

Application of a hair spray containing 22% isobutane resulted in mild, temporary irritation. (1)

**SKIN CONTACT**

**Naphtha:**

No deaths and no effects on weight gain occurred in guinea pigs for up to one month following skin application of 3500 mg/kg undiluted naphtha (applied as a single 2 ml dose) for one week. Skin application of 1320-3300 mg/kg (cited as 2-5 ml/kg) of commercial naphtha (45% naphtha), under cover, for 4 hours, resulted in discomfort and incoordination in rabbits. Deaths occurred at the highest dose, five days after exposure. (1)

**Acetone:**

Undiluted acetone is not irritating to the skin. Uncovered application of 0.01 ml undiluted acetone produced no irritation in rabbits (graded 1/10). Acetone was also not irritating in guinea pigs. Application of 0.5 ml to the skin over 3 to 8 weeks produced cataracts in the eyes of guinea pigs. In a later study, conducted similarly, acetone produced cataracts in guinea pigs, but not rabbits. Statistical analysis of the data was not conducted. The development of cataracts may be an effect specific to guinea pigs. (1)

**Propane:**

Several formulations containing an isobutane-propane mixture were tested for skin irritation effects. All formulations contained less than 13% propane. All of the formulations containing propane caused only mild irritation. (1)

**Isobutane (rabbit):**

Application of a formulation containing 83.2% isobutane resulted in moderate irritation. However, application of other formulations containing 74.25 to 89.55% isobutane only produced mild irritation. The presence of other chemicals in the formulations probably influenced the results. (1)

**INGESTION**

**Naphtha:**

Oral toxicity is relatively low unless the material is aspirated into the lungs. Aspiration of 0.2 ml naphtha caused convulsions and death in rats within seconds. The rapid deaths appeared to be due to cardiac arrest, respiratory paralysis and asphyxia rather than pulmonary oedema or haemorrhaging. (1)

**Acetone:**

In a study designed to evaluate the aspiration risk, acetone was found to evaporate too quickly to be aspired. However, if ingested very quickly, acetone can be an aspiration hazard. Oral exposure to large doses of acetone in drinking water for 14 days has produced mild toxicity in rats and mice. Compared to controls, male rats receiving approximately 4300 or 7000 mg/kg/day and female rats given 8500 mg/kg/day had lower mean body weights. No significant changes in body weight were observed in mice. Kidney and liver weights were higher for exposed rats and mice. Slight liver injury was observed in female mice exposed to 5500 mg/kg/day and male mice exposed to 6300 mg/kg/day. Mild harmful effects were observed in rats and mice exposed to high oral doses for 13 weeks. Rats were exposed to up to approximately 3400 mg/kg/day for 13 weeks. Rats receiving the high dose had decreased body weight and liver and kidney weights were increased in rats receiving 1600 mg/kg/day or greater. Kidney damage was observed in males. However, this kidney effect may be specific to male rats and not relevant to other species or sexes. Mice were similarly exposed. Liver weights were increased and spleen weights decreased in females given the high dose. (1)

**Propane and Isobutane:**

Not applicable to gases.

**INHALATION**

**Naphtha:**

No major toxic effects have been reported in long-term inhalation studies. No toxic effects were seen in rats exposed to 400 or 3000 ppm for 26 weeks. Some changes in liver enzymes were noted but not in blood parameters. Naphtha has been shown to cause some hearing loss in rats exposed to 4000 ppm for 28 days. There was a significant increase in the auditory threshold of the mid-range frequencies (8 and

16 kHz). These effects were not seen in the low exposure group (800 ppm). Rats exposed to naphtha at 3000 ppm for 16 weeks showed no evidence of peripheral nerve damage. Similar negative neurological findings were reported in rats exposed to concentrations of 1500 ppm for 30 weeks or 3000 ppm for 26 weeks. Metabolic studies with naphtha with single 6-hour exposures of rats to 1800 ppm or 2000 ppm have shown that a neurotoxic metabolite (2,5-heptanedione) is present in urine of exposed animals. Although the 2,5-heptanedione is a metabolite minor (present at less than 1%), it is not possible to erase the neurotoxic effects of an exposure to naphtha. (1)

**Acetone:**

No significant harmful effects were observed in rats exposed by inhalation to 19000 ppm intermittently for 8 weeks. (1)

**Propane:**

No toxicity or abnormalities were observed when monkeys were exposed to approximately 750 ppm for 90 days. Similar results were obtained in another study where monkeys were exposed to an aerosol spray containing 65% propane and isobutane. (1)

**Isobutane:**

Rabbits and monkeys were exposed for 90 days to 3 different aerosol products (2 hair sprays and a deodorant) containing isobutane. No significant toxic effects were seen in any of the studies. (1)

**INGESTION**

**Naphtha:**

There is no information available.

**Acetone:**

No significant behavioural changes were observed in male rats administered 0.5% acetone in their drinking water for 6 weeks. Neurotoxic effects (e.g. peripheral neuropathy) were not observed in rats exposed 0.5-1% acetone in their drinking water for 12 weeks. (1)

**Propane and Isobutane:**

Not applicable to gases.

**CARCINOGENICITY**

**Naphtha, Propane and Isobutane:**

There is no information available.

**Acetone:**

Acetone has been used as a vehicle in dermal studies using mice. Mice generally received one or two 0.2 ml applications/week for 6 months to 2 years without an increased incidence of tumours. (1)

**TERATOGENOCITY, EMBRYOTOXICITY, FETOTOXICITY**

**Naphtha:**

Naphtha has not produced embryotoxicity or teratogenicity in rats following inhalation, or in mice following oral exposure to naphtha. Fetotoxicity was observed in mice following ingestion and in rats following inhalation of doses which produced maternal toxicity. (1)

**Propane and Isobutane:**

There is no information available.

**Acetone:**

The available information suggests that inhalation of acetone can cause fetotoxicity in rats and mice and embryotoxicity in mice, but only in the presence of maternal toxicity. Rats were exposed by inhalation to 440, 2200 or 11000 ppm acetone on days 6-19 of pregnancy. Signs of toxicity (body weight effects) were observed in mothers exposed to the highest concentration. The only statistically significant effect observed in the offspring was fetotoxicity (reduced foetal weight) in the high exposure group. Mice were exposed by inhalation to 440, 2200 or 6600 ppm acetone on days 6-17 of pregnancy. The high exposure group animals were initially exposed to 11000 ppm for one day and then the concentration was decreased to 6600 ppm because the mice experienced severe narcosis. Minimal maternal toxicity (increased liver weight) was then observed at 6600 ppm. Fetotoxicity (reduced foetal weight) and slight, but statistically significant, embryotoxicity (foetal deaths) were observed in the high exposure group. In a preliminary screening test (the Chernoff/Kavlock test), acetone was administered orally at a dose of 3500 mg/kg/day to female mice on days 6-15 of

pregnancy. In this study, the results indicated that acetone warranted high priority for additional developmental testing. No other conclusions can be drawn from this study. No conclusions can be drawn from one other study because the animals were exposed to acetone and several other potentially harmful chemicals at the same time.(1)

**MUTAGENICITY**

**Naphtha, Propane and Isobutane:**

There is no information available.

**Acetone:**

Negative results were obtained in the peripheral blood cells of mice that received 5000 – 20000 ppm acetone in drinking water for 13 weeks. Negative results have been obtained in tests using cultured mammalian cells and bacteria. Positive and negative results have been obtained in studies using yeast. (1)

**SKIN SENSITIZATION**

**Naphtha, Propane and Isobutane:**

There is no information available.

**Acetone:**

Negative results were obtained in the Mouse Ear Sensitization test. (1)

**REPRODUCTIVE TOXICITY**

**Naphtha:**

Severe testicular effects have been observed in rats and mice following inhalation and oral exposure to concentrations which have produced significant other toxicity (peripheral neuropathy). In some cases, sperm production has stopped and sometimes the damage has been irreversible. (1)

**Propane and Isobutane:**

There is no information available.

**Acetone:**

Sperm effects have been observed in rats already experiencing kidney damage. No effects on fertility have been observed. Rats and mice were exposed to up to 50000 ppm acetone in drinking water for 13 weeks. Sperm motility was decreased and the percentage of abnormal sperm was increased in male rats, at the high dose (approximately 4300 mg/kg/day). These same male rats had experienced kidney damage. Similar effects were not observed in the mice. No effects on reproductive or testicular toxicity were observed in male rats exposed to 0.5% acetone in their drinking water for 6 weeks. (1)

**SECTION XII: ECOLOGICAL INFORMATION**

**ENVIRONMENTAL EFFECTS**

Do not allow product or runoff from fire control to enter grounds, basements, storm or sanitary sewers, lakes, rivers, streams or public waterways. Block off drains and ditches. Provincial and federal regulations may require that environmental and / or agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May be harmful to aquatic life.

**SECTION XIII: DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL**

This product is considered as dangerous material. Consult local, state, provincial or territory authorities to know disposal methods. This material is also known as dangerous waste by RCRA (USA); disposal should follow EPA regulations.

**SECTION XIV : TRANSPORT INFORMATION**

**CLASSIFICATION (TDG and DOT):** Class 2.1

**IDENTIFICATION NUMBER:** UN 1950

**SHIPPING NAME:** Aerosols

**PACKING GROUP:** None

**CONTAINERS FOLLOW THE STANDARDS.**

**SECTION XV: REGULATORY INFORMATION**

**WHMIS:** A: Compressed gas  
 B5: Flammable aerosol.  
 D2B: Other toxicological effects (acetone, severe irritant for eyes, naphtha, severe skin irritant).

**DSL:** All constituents of this product are included in the Domestic Substances List (DSL – Canada).

**TSCA:** All constituents of this product are included in the Toxic Substances Control Act Inventory (TSCA – USA).

<b>HMIS (USA):</b>		<b>NFPA (USA):</b>	
<b>Health:</b>	<b>2</b>	<b>Health:</b>	<b>2</b>
<b>Flammability:</b>	<b>4</b>	<b>Flammability:</b>	<b>4</b>
<b>Physical hazard:</b>	<b>0</b>	<b>Instability:</b>	<b>0</b>
<b>Protective equipment:</b>	<b>G</b>	<b>Specific hazard:</b>	<b>-</b>

**SECTION XVI: OTHER INFORMATION****Glossary:**

**ANSI:** American National Standards Institute  
**ASTM:** American Society for Testing and Materials  
**CAS:** Chemical Abstract Services  
**CSA:** Canadian Standardisation Association  
**DOT:** Department of Transportation  
**EPA:** Environmental Protection Agency (United States)  
**HMIS:** Hazardous Material Information System  
**IARC:** International Agency of Research on Cancer  
**LD50/LC50:** Less high lethal dose and lethal concentration published  
**NFPA:** National Fire Protection Association  
**OSHA:** Occupational Safety & Health Administration (United States)  
**RCRA:** Resource Conservation and Recovery Act (United States)  
**TDG:** Transportation of Dangerous Goods (Canada)  
**TLV-TWA:** Threshold Limit Value – Time-weighted Average  
**WHMIS:** Workplace Hazardous Materials Information System (Canada)

**Reference:**

(1) CHEMINFO (2009) Canadian Centre for Occupational Health and Safety, Hamilton (Ontario) Canada

**Code of MSDS:**

CA U DRU SS FS 015

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The Material Safety Data Sheets of SOPREMA Canada are available on Internet at the following site: <http://www.soprema.ca/>

**Justification of the update:**

- Update of the dangerous ingredients. (Section II)
- Update of the data concerning the ingredients. (Sections III and XI)
- New format.

This MSDS contains all the information required by ANSI Z400.1 standard (United States), by regulation 29 CFR Part. 1910-1200 of the Hazard Communication Standard of OSHA and is in accordance with standard DORS/88-66 of WHMIS (Canada).

**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 of 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.**