

MATERIAL SAFETY DATA SHEET

ELASTOCOL 500

AEROSOL

Disponible en français

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

SECTION I. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name:	Elastocol 500 Aerosol	
Use:	Adhesive used to prime concrete, metal, or wood substrates to enhance the adhesion of torch-applied waterproofing membranes.	
Code of MSDS:	CA U DRU SS FS 013	
Formula Number:	407.1	
Revision date:	June 8, 2007	
Revised by:	Marie-Claude Fontaine, Health and Safety Supervisor (800) 567-1492 mcfontaine@soprema.ca	
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Distributors:	Soprema Inc. 44955 Yale Road West Chilliwack (BC) V2R 4H3 CANADA Tel.: (604) 793-7100	Soprema USA 310 Quadral Drive Wadsworth (Ohio) 44281 UNITED STATES Tel.: (800) 356-3521
In case of emergency:	SOPREMA (8:00am to 5:00pm – Eastern time): (800) 567-1492 CANUTEC (Canada) (24h.): (613) 996-6666 CHEMTREC (USA) (24h.): (800) 424-9300 Poison Control Centre: Consult local telephone directory	

EMERGENCY OVERVIEW!!!

Black 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
Toluene	108-88-3	30-60	20 ppm	Not established
Asphalt	8052-42-4	15-40	0.5 mg/m ³	Not established
Acetone	67-64-1	15-40	500 ppm	750 ppm
Propane	74-98-6	1-5	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***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.

Toluene:

Toluene is a moderate skin irritant, based on animal evidence. Prolonged contact is more irritating due to the defatting action of this solvent and dermatitis (dry, red skin) may result. (1)

Asphalt:

Asphalt may cause skin irritation. (2)

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.

Toluene:

Toluene is a mild eye irritant, based on animal evidence. Very short exposure (3 to 5 minutes) to the vapour has caused slight eye irritation at 300 ppm. Longer exposures (6 to 7 hours) to concentrations above 100 ppm have also caused slight irritation. Alterations in vision, for example, reduced acuity and suppressed colour vision, have been documented following exposure to mixed solvents. It is not possible to attribute these effects to toluene directly. (1)

Asphalt:

Asphalt may cause eye irritation. (2)

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, 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)

SECTION III. POTENTIAL HEALTH EFFECTS

INHALATION:

Inhalation of vapours 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).

Toluene:

The main effect of inhaling toluene vapour is on the central nervous system (CNS). Symptoms are related to exposure concentration. At approximately 50 ppm, slight drowsiness and headache have been reported. Irritation of the nose, throat and respiratory tract has occurred between 50 and 100 ppm. Concentrations of about 100 ppm have caused fatigue and dizziness; over 200 ppm has caused symptoms similar to drunkenness (giddiness), numbness, and mild nausea; over 500 ppm has caused mental confusion and incoordination. At higher concentrations (estimated at 10000 ppm) further depression of the central nervous system can result in unconsciousness and death. Most serious incidences of exposure have occurred when the vapour has accumulated in confined spaces. In two cases of acute occupational exposure, there were no blood disorders, liver or kidney damage. Historical reports of blood effects caused by toluene are more than likely due to benzene contamination. Liver and kidney effects, as well as heart disturbances, have been reported in cases of solvent abuse (glue-sniffing). Reversible kidney failure has resulted from a severe occupational exposure in a paint factory. (1)

Asphalt:

No information.

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 concentration 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. (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/days 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)

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)

Toluene:

Toluene is readily absorbed following ingestion producing CNS depression. Symptoms will be similar to those described for inhalation. Toluene may be aspirated, which is the inhalation of a chemical into the lungs, during ingestion or vomiting. Severe lung irritation, damage to the lung tissues and death may result. Ingestion of approximately 60 ml (2 oz) toluene was fatal to an adult within 30 minutes in one reported case. The authors state that the probable cause of death was depression of the central nervous system. However, it is possible that the toluene was aspirated and death was caused by aspiration. Ingestion is not a typical route of occupational exposure. (1)

Asphalt:

There is no information available.

SECTION III. POTENTIAL HEALTH EFFECTS

INGESTION: *(continued)*

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, Isobutane:

Not applicable to gases.

Effects of Long-Term (Chronic) Exposure

INHALATION:

Toluene:

Numerous studies of rotogravure printers, painters and rubberized-matting workers with chronic exposure to toluene are inconclusive about chronic central nervous system (CNS) damage. Some studies report changes such as memory loss, sleep disturbances, loss of ability to concentrate, or incoordination, while others report no effects. Recent studies using sensitive neurobehavioral tests have shown altered scores for exposed workers but whether or not these indicate CNS damage is not clear. Most studies reporting kidney damage in people result from solvent abuse (for example, glue-sniffing). These extreme exposures are not relevant to occupational situations. In epidemiological studies on workers exposed long-term to levels up to 200 ppm, there was no clear evidence of kidney damage. Occupational exposure to up to 500 ppm toluene has not been associated with liver effects. There is some evidence to suggest that long-term exposure to toluene may affect hearing. However, the limited information available does not allow a conclusion to be drawn. Although minor changes in blood parameters have been observed, it is generally accepted that toluene does not cause significant blood disorders. (1)

Asphalt:

There is no information available.

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, Isobutane:

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

CARCINOGENICITY:

Toluene:

There have been several human population studies which have examined the possible relationship between toluene exposure and cancer. Cancers of most sites were not significantly associated with toluene exposure in any study. Stomach cancer mortality, lung cancer rates and colorectal cancers were evaluated in some studies, but not others. Considering the multiple exposures in most studies and the inconsistencies in findings, it is not possible to conclude that toluene exposure is associated with cancer in humans. The International Agency for Research on Cancer (IARC) has concluded there is inadequate evidence for the carcinogenicity of toluene in humans. There is evidence suggesting a lack of carcinogenicity to o-toluene in experimental animals. The International Agency for Research on Cancer (IARC) has concluded that this chemical is not classifiable as to its carcinogenicity to humans (Group 3). The American Conference of Governmental Industrial Hygienists (ACGIH) has designated this chemical as not classifiable as a human carcinogen (A4). The US National Toxicology Program (NTP) has not listed this chemical in its report on carcinogens. (1)

Asphalt:

The International Agency for Research on Cancer (IARC) considers this chemical as not classifiable as a human carcinogen. (2)

SECTION III. POTENTIAL HEALTH EFFECTS

CARCINOGENICITY: *(continued)*

Acetone:

There is no human information. Animal information suggests that acetone is not carcinogenic. 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 designated this chemical as not classifiable as a human carcinogen (A4). The US National Toxicology Program (NTP) has not listed this chemical in its report on carcinogens. (1)

Propane, Isobutane:

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

TERATOGENICITY, EMBRYOTOXICITY, FETOTOXICITY:

Toluene:

Toluene is a developmental toxicity hazard, based on information obtained from animal studies. Fetotoxicity (reduced foetal weight), behavioural effects (effects on learning and memory) and hearing loss (in males) have been observed in the offspring of rats exposed by inhalation to 1200 or 1800 ppm toluene. These effects were observed in the absence of maternal toxicity. A detailed review of toluene and its potential to cause teratogenicity/embryotoxicity in occupational situations has been published. This review concludes that although many occupational studies have evaluated general solvent exposure and pregnancy outcomes, few studies have specifically investigated toluene exposure. Most of these studies have involved exposure to solvents in general or to certain solvent classes, with toluene exposure addressed as a co-exposure or identified as a common exposure in a sub-group. Outcomes of concern included spontaneous abortion (miscarriage) and teratogenicity (congenital malformations). Six studies examined the association of toluene exposure with spontaneous abortions. Four of the six studies were performed on similar groups of Finnish workers, by the same group of researchers, which can reduce overall confidence in the conclusions. Despite this and other limitations (e.g. recall bias, multiple chemical exposures), these studies do provide evidence suggesting there may be an association between occupational toluene exposure and the occurrence of spontaneous abortions. Nevertheless, further research is required before it will be possible to conclude that there is a causal relationship between toluene exposure and an increased incidence of spontaneous abortions. One study has reported an increased incidence of malformations (renal-urinary and gastrointestinal) in children born to women with a history of exposure to aromatic solvents, particularly toluene. However, it is not possible to draw specific conclusions regarding toluene from this study, because the toluene-specific results were based on a very small number of workers who were exposed to multiple chemicals. Concerns about the potential teratogenicity of toluene in humans have also arisen due to effects (usually renal/urinary) seen in solvent abuse cases (glue-sniffing). These extreme exposures to toluene, as well as other confounding factors such as tobacco and alcohol abuse, are not relevant to occupational situations. (1)

Acetone:

There is no human information. Animal information suggests that acetone would only cause effects in the presence of maternal toxicity.(1)

Asphalt, Propane, Isobutane:

There is no human or animal information available.

REPRODUCTIVE TOXICITY:

Toluene:

No conclusions can be drawn based on the available human information. Reproductive effects have not been observed in animal studies. A review of toluene and its potential to cause reproductive toxicity in workers has been published. Three cross-sectional studies evaluated fertility in women exposed to toluene or in the wives of exposed men. No conclusions can be drawn based on these studies, due to limitations such as selection bias, recall bias, and the fact that the workers were exposed to other potentially harmful chemicals. Another study suggests that menstrual function is not affected by exposure to toluene. Another report describes testicular atrophy and reduced spermatogenesis in one man who abused toluene for 10 years. This extreme exposure situation is not relevant to occupational exposures. (1)

Acetone:

No firm conclusions can be drawn from the available studies. A study of 25 men exposed to acetone and styrene during the manufacture of reinforced plastics showed an increased percentage of abnormal sperm head shapes in exposed workers compared to controls. 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 these two studies because of factors such as the small number of workers studied and the concurrent exposure to other potentially harmful chemicals. There is insufficient information for evaluation provided in a Russian study which reports increased complications of pregnancy and reduced birth weight in children of mothers exposed to acetone. One animal study showed sperm effects, in the presence of kidney damage. (1)

Asphalt, Propane, Isobutane:

There is no human or animal information available.

SECTION III. POTENTIAL HEALTH EFFECTS

MUTAGENICITY:

Toluene:

Results from the available human studies are inconclusive. Both positive and negative results have been obtained in human studies, but no studies were carried out with toluene exposure only, or with adequate control of other factors. Positive results have been obtained in some studies using live animals, but the studies either used an irrelevant route of exposure (intraperitoneal) or there are insufficient details available for evaluation. (1)

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)

Asphalt, Propane, Isobutane:

There is no information available.

TOXICOLOGICALLY SYNERGISTIC MATERIALS:

Toluene:

Exposure to other solvents such as benzene, xylene and ethanol (alcohol) slows the rate of clearance of toluene from the body, thereby enhancing the toxicity of toluene. (1)

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)

Asphalt, Propane, Isobutane:

There is no information available.

POTENTIAL FOR ACCUMULATION:

Toluene:

Toluene is readily absorbed by inhalation or ingestion and tends to be deposited more in tissues that are fatty or have a rich blood supply (e.g. brain, liver, kidney, fat). There was no evidence of accumulation in rats with repeated inhalation exposure to 300 ppm. Toluene is metabolized in the liver and excreted by the kidneys in the urine. It can also be exhaled unchanged. (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)

Asphalt, Propane, 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 by flow.

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

AUTO-IGNITION TEMPERATURE: Not available

FLAMMABILITY LIMITS IN AIR: (% in volume) Not available

SECTION V. FIRE-FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS:

Extremely flammable gas. This aerosol will readily ignite under the action of heat, sparkles or flames. Vapours can accumulate and form flammable and 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 need 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, CO₂, 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.

EXTINGUISHING MEDIA:

Dry chemical powder, CO₂, foam. 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 sources of ignition. Shut off source of leak if you can do it without risk. Contain the spill. Absorb with inert material such as sand or earth. Sweep or shovel into containers with lids, use clean non-sparking 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, 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 hands 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 should 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 empty 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 this flammable 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 made from polyvinyl alcohol (PVA 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

PHYSICAL STATE:	Aerosol
ODOUR AND APPEARANCE:	Black aerosol with strong solvent odour.
ODOUR THRESHOLD:	Not available
VAPOUR DENSITY (air = 1):	3.1
EVAPORATION RATE (Butyl acetate = 1):	> 1
BOILING POINT (760 mm Hg):	Not available
FREEZING POINT:	Not available
SPECIFIC GRAVITY (H₂O = 1):	0.91 kg / L
SOLUBILITY IN WATER (20°C):	Insoluble
VOLATILE ORGANIC COMPOUND (V.O.C.) CONTENT:	405 g/L
VISCOSITY:	Not available

SECTION X. STABILITY AND REACTIVITY

STABILITY:	This material is stable.
CONDITIONS OF REACTIVITY:	Avoid excessive heat.
INCOMPATIBILITY:	Strong oxidizing and reducing agents, acids, bases, halogenated solvents.
HAZARDOUS DECOMPOSITION PRODUCTS:	No evidence
HAZARDOUS POLYMERISATION:	None

SECTION XI. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:	
Toluene (I):	LC50 (inhalation, rat, 4 hours): 7350 ppm LD50 (oral, rat): 2600 – 7500 mg/kg LD50 (skin, rabbit): 12225 mg/kg
Asphalt:	Not available
Acetone (I):	LC50 (male rat): 30000 ppm (4-hour exposure); cited as 71000 mg/m ³ LD50 (oral, mature rat): 6700 mg/kg (cited as 8.5 ml/kg) LD50 (dermal, rabbit): Greater than 16000 mg/kg (cited as 20 ml/kg)
Propane (I):	Not available
Isobutane (I):	LC50 (inhalation, mouse, 2 hours): 520000 (52%)

Effects of Short-Term (Acute) Exposure

INHALATION:
Toluene: The major effect of toluene is on the central nervous system (CNS). Studies with rats have shown that up to approximately 1000 ppm causes excitation and increased activity. At approximately 2000 ppm, there is CNS depression with drowsiness, incoordination and unconsciousness. Death at higher concentrations is from respiratory failure. Animal studies have indicated that toluene is not directly toxic to the cardiovascular system. Recovery is rapid following cessation of exposure. Studies indicated no permanent damage to body systems. Studies in rats have shown hearing loss at high frequencies following toluene exposure both by inhalation (threshold concentration between 700 and 1000 ppm) and orally (620 mg/kg/day for 4 weeks). This effect has also been observed in a mouse strain that had a genetic predisposition to hearing loss. (1)
Asphalt: There is no information available.
Acetone: Numerous studies have evaluated the effects of acetone on the central nervous system (CNS). The concentration of acetone that causes unconsciousness depends on the 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) 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)

SECTION XI. TOXICOLOGICAL INFORMATION

EYE IRRITATION:

Toluene:

Toluene is a mild eye irritant. In an OECD-compliant test, application of 0.1 ml undiluted toluene produced no to mild irritation in rabbits. Application of 0.1 ml of undiluted toluene in another OECD-compliant test protocol produced slight irritation in rabbits. Application of 0.005 ml of in excess of a 40% solution of toluene caused severe eye injury in rabbits. These results are not consistent with the reports that used undiluted toluene in OECD-compliant tests. The results of this study are therefore questionable. (1)

Asphalt, 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 IRRITATION:

Toluene:

Toluene is a moderate skin irritant. In an OECD-compliant test, administration of 0.5 ml of undiluted toluene to intact skin, under a semi-occlusive cover, for 4 hours produced moderate irritation in rabbits. Another OECD-compliant test, showed slight irritation in rabbits following the application of 0.5 ml of undiluted toluene for 4 hours. There is insufficient information provided to properly evaluate these test results. Other test protocols have shown moderate irritation in intact and abraded skin, with prolonged exposure (23 hours), and in a study that does not strictly meet OECD guidelines. Application of 0.5 ml of undiluted toluene for 4 hours, to intact and abraded skin, produced moderate irritation in rabbits. Application of 0.5 ml of undiluted toluene for 23 hours, to intact and abraded skin, produced moderate irritation in rabbits. Application of 0.01 ml of undiluted toluene produced moderate irritation in rabbits. (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. (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:

Toluene:

No significant toxicity was seen after oral administration of up to 590 mg/kg to female rats for up to six months. (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)

Asphalt:

No information available.

Propane, Isobutane:

Not applicable to gases

Effects of Long-Term (Chronic) Exposure

INHALATION:

Toluene:

Daily inhalation by rats of toluene concentrations below 400 ppm for up to 24 months resulted in no significant toxicity. Evidence for chronic CNS neurotoxicity is inconclusive. Numerous studies on rats and mice have shown reduced performance on some neurobehavioral tests but not others, both during and after toluene inhalation exposures (usually at greater than 500 ppm). Where tests were repeated after an exposure-free period, most results were the same as controls. The significance of minor changes in brain cells or in behavioural tests is not known. (1)

SECTION XI. TOXICOLOGICAL INFORMATION

INHALATION: *(continued)*

Asphalt:

There is no information available.

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:

Toluene:

No significant toxicity was seen after oral administration of up to 590 mg/kg to female rats for up to six months. (1)

Asphalt:

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, Isobutane:

Not applicable to gases.

CARCINOGENICITY:

Toluene:

The International Agency for Research on Cancer (IARC) has concluded there is inadequate evidence for the carcinogenicity of toluene in experimental animals. Toluene was not carcinogenic in mice and rats exposed by inhalation to up to 1200 ppm for 24 months. (1)

Asphalt, Propane, 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:

Toluene:

Toluene does cause developmental effects in animals, based on fetotoxicity (reduced foetal weight), behavioural effects (effects on learning and memory) and hearing loss (in males) observed in the offspring of rats exposed by inhalation to 1200 or 1800 ppm toluene. These effects were observed in the absence of maternal toxicity. Rats (16/group) were exposed to 1800 ppm toluene or clean air on days 7-20 of pregnancy. The dose was targeted so as not to induce marked toxicity in the mothers and no toxicity was seen. Fetotoxicity, as evidenced by reduced birth weight, was observed in the offspring. Differences in performance on a behavioural test designed to measure learning and memory (the Morris water maze test) were observed, especially in the female offspring. There was a slight tendency toward hearing loss in exposed male offspring. This effect was statistically significant at 8 kHz. In a related study, rats (18 exposed/14 controls) were exposed to 1200 ppm toluene on day 7 of pregnancy to postnatal day 18 (35 days). Again, the dose was targeted so as not to induce marked toxicity in the mothers and no toxicity was seen. A statistically significant reduction in birth weight was seen in offspring born to exposed mothers. Delayed reflex development, increased short-term motor activity and significant reductions in learning and memory [as measured by performance on Morris maze test (especially in females)] were observed. Effects on learning and memory persisted after exposure terminated (3,5 months). Decreased hearing function was also observed and this effect was statistically significant in males at 16 mHz. Numerous other studies have evaluated the potential effects of toluene on the offspring of rats, mice or rabbits, primarily following inhalation exposure. In one well-conducted study, no effects in the offspring were observed in rabbits exposed to 30, 100 or 300 ppm or to 100 or 500 ppm during days 6-18 of pregnancy. Maternal toxicity was not observed. In an unpublished study, fetotoxicity (reduced foetal weight) was observed in the offspring of rats exposed to 2000 ppm for 80 days prior to mating through lactation. Maternal toxicity (reduced body weight) was observed at 2000 ppm. In other studies where maternal toxicity was observed, reduced foetal weight and increased mortality in the offspring have been reported. Other studies have had significant design limitations including continuous exposure regimes, lack of statistical evaluation of the data and incomplete or no evaluation of maternal toxicity. (1)

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.

SECTION XI. TOXICOLOGICAL INFORMATION

TERATOGENOCITY, EMBRYOTOXICITY, FETOTOXICITY:

Acetone: (continued)

Minimal maternal toxicity (increased liver weight) was then observed at 6600 ppm. Fetotoxicity (reduced foetal weight) and slight, but statistically significant, embryotoxicity (fetal 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)

Asphalt, Propane, Isobutane:

There is no information available.

REPRODUCTIVE TOXICITY:

Toluene:

No adverse effects on reproduction were observed in several studies on both rats and mice, even at maternally toxic exposures. Two generations of mice exposed intermittently by inhalation to 2000 ppm (6 hours/day, 7 days/week) had no reproductive effects. (1)

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)

Asphalt, Propane, Isobutane:

There is no information available.

MUTAGENICITY:

Toluene:

There is insufficient information available to conclude that toluene is mutagenic. There is some evidence that toluene can cause chromosome damage in vivo when administered to mice by injection, although conflicting results have been obtained and this route of exposure is not considered relevant to occupational situations. Negative results were obtained following oral administration. There is one report of positive results (chromosomal aberrations) in the bone marrow cells of rats exposed by inhalation. Insufficient details are available in English to evaluate this report. Positive and negative results have been obtained in tests using cultured mammalian cells. Negative results have been obtained in tests using bacteria. Positive and negative results have been obtained in fruit flies. (1)

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 one studies using yeast. (1)

Asphalt, Propane, Isobutane:

There is no information available.

SECTION XII. ECOLOGICAL INFORMATION

ENVIRONMENTAL EFFECTS:

Do not allow product or runoff from fire control to enter 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 other 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 listed as hazardous waste. Consult local, state, provincial or territory authorities to know disposal methods. Also listed as hazardous waste by the RCRA (USA); waste disposal as to follow EPA regulations. Do not dispose of waste with normal garbage or sewers systems.

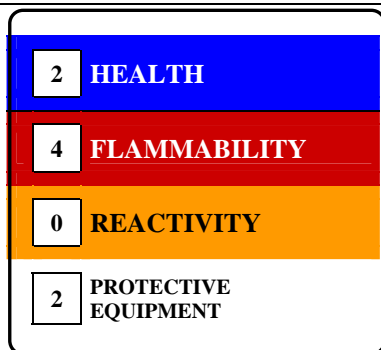
SECTION XIV. TRANSPORT INFORMATION

NAME OF PRODUCT:	Elastocol 500 Aerosol	IDENTIFICATION NUMBER:	UN 1950
CLASSIFICATION (TDG - DOT):	Class 2.1	SHIPPING NAME:	Aerosols
CONTAINERS FOLLOW THE STANDARDS OF:		PACKING GROUP:	None
Canada:	CAN / CGSB-43.150-97		
USA:	CFR 49 parts 100 to 199		

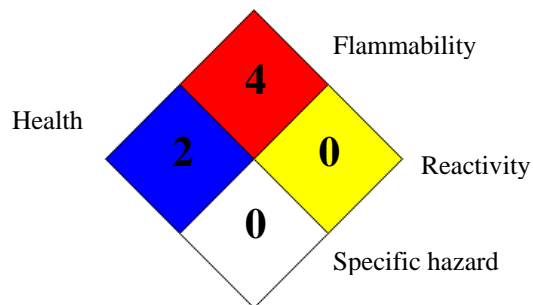
SECTION XV. REGULATORY INFORMATION

WHMIS: Class A: Compressed gas.
 Class B5: Flammable aerosol.
 Class D2A: Very toxic material causing other effects (toluene has teratogenicity and embryotoxicity effects).
 Class D2B: Toxic material causing other effects (toluene and asphalt have irritant effects).
DSL: All constituents of this product are included on the Domestic Substances List (DSL – Canada)
TSCA: All constituents of this product are included on the Toxic Substances Control Act Inventory (TSCA – United States).

HMIS (USA):



NFPA (USA):



SECTION XVI. OTHER INFORMATION

Glossary:

ACGIH: American Conference of Governmental Industrial Hygienists
ANSI: American National Standards Institute
ASTM: American Society for Testing and Materials
CAS: Chemical Abstract Services
CFR: Code of Federal Regulations (United States)
CSA: Canadian Standardisation Association
DOT: Department of Transportation (United States)
DSL: Domestic Substances List (Canada)
EPA: Environmental Protection Agency (United States)
HMIS: Hazardous Material Information System
IARC: International Agency for Research on Cancer
LC50: (Lethal concentration₅₀) Concentration of a substance in air that causes dead of 50% mortality of a defined animal population
LD50: (Lethal dose₅₀) Single dose of a substance that, when administrated by a define route in an animal assay, is expected to cause the death of 50% of a defined animal population.
NFPA: National Fire Protection Association (United States)
NIOSH: National Institute for Occupational Safety and Health
NTP: National Toxicology Program
OECD: Organisation for Economic Cooperation and Development
OSHA: Occupational Safety & Health Administration (United States)
PEL: Permissible Exposure Limit
RCRA: Resource Conservation and Recovery Act (United States)
RTECS: Registry of Toxic Effects of Chemical Substances
TDG: Transportation of Dangerous Goods
TLV: Threshold Limit Value
TWA: Time-weighted average
TSCA: Toxic Substances Control Act (United States)
WHMIS: Workplace Hazardous Materials Information System (Canada)

References:

- (1) CHEMINFO (2007) Canadian Centre of Organisational Health and Safety, Hamilton (Ontario) Canada
- (2) Material Safety Data Sheet of the supplier

This MSDS has been prepared by: Marie-Claude Fontaine
For more information: **SOPREMA Canada** 1-800-567-1492

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

Justification of the update:

- Modification of the Exposure Limit (TLV-TWA) of Asphalt and Toluene. (Section II)

This MSDS contains all the information required by ANSI Z-400.1-1998 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 or 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.