CAFFEINE ANHYDROUS

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
CAFFEINE ANHYDROUS

OTHER NAMES

C8-H10-N4-O2, "3, 7-dihydro-1, 3, 7-trimethyl-1H-purine-2, 6-dione", "3, 7-dihydro-1, 3, 7-trimethyl-1H-purine-2, 6-dione", "1H-purine, 2, 6-dione, 3, 7-dihydro-1, 3, 7 -trimethyl-", "1H-purine, 2, 6-dione, 3, 7-dihydro-1, 3, 7-trimethyl-", methyltheobromine, "theobromine, 1-methyl-", "theobromine, 1-methyl-", "theophylline, 7-methyl-", "theophylline, 7-methyl-", "1, 3, 7-trimethylxanthine",

PROPER SHIPPING NAME
ALKALOID SALTS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S
ALKALOIDALKALOID SALTS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S. or ALKALOID SALTS, SOLID, N.O.S.
(contains caffeine)

PRODUCT USE
Central nervous system stimulant used in beverages and medicine (cardio-vascular and psychostimulant analeptic).
Administered in powder or tablets in doses of 100 to 300 mg. Frequently included in analgesic preparations with aspirin or codeine. Use in soft drinks not to exceed 0.02%. Approx. caffeine content of various beverages per 6 oz cup: brewed coffee: 100 to 150 mg; `instant' coffee: 60 to 80 mg; decaffeinated coffee 3 to 5 mg; tea 40 to 100 mg; cola drinks: 17 to 55 mg.

SUPPLIER
Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

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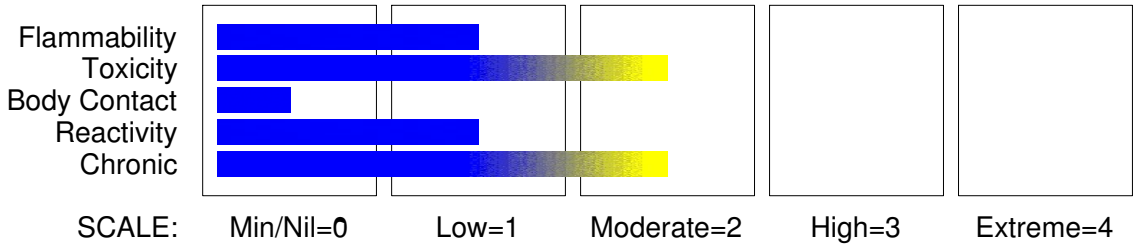
HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Oral) Category 3

EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H301
Toxic if swallowed

PRECAUTIONARY STATEMENTS

Prevention

Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.

Response

Specific treatment: refer to Label or MSDS.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
caffeine	58-08-2	>99

Section 4 - FIRST AID MEASURES

SWALLOWED

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
· Urgent hospital treatment is likely to be needed.
· In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
· If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
· If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.
· Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
· INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.

EYE

If this product comes in contact with the eyes:
· Wash out immediately with fresh running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· If pain persists or recurs seek medical attention.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:
· Flush skin and hair with running water (and soap if available).
· Seek medical attention in event of irritation.

INHALED

· If fumes or combustion products are inhaled remove from contaminated area.
· Lay patient down. Keep warm and rested.
· Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
· Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
· Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.
for caffeine intoxication:
If caffeine has been ingested within 4 hours in amounts over 15 mg/kg, removal from the

continued...

stomach by Ipecac syrup or gastric lavage is recommended. Activated charcoal is probably useful within the first 4 hours. Magnesium sulfate cathartic may be useful.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
· Water spray or fog.
· Foam.
· Dry chemical powder.
· BCF (where regulations permit).
· Carbon dioxide.

FIRE FIGHTING
· Alert Fire Brigade and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water course.
· Use fire fighting procedures suitable for surrounding area.
· Do not approach containers suspected to be hot.
· Cool fire exposed containers with water spray from a protected location.
· If safe to do so, remove containers from path of fire.
· Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
· Solid which exhibits difficult combustion or is difficult to ignite.
· Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
· Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
· Build-up of electrostatic charge may be prevented by bonding and grounding.
· Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.
· All movable parts coming in contact with this material should have a speed of less than 1-metre/sec.
Combustion products include: carbon monoxide (CO), carbon dioxide (CO_2), nitrogen oxides (NO_x), other pyrolysis products typical of burning organic material.
May emit poisonous fumes.

FIRE INCOMPATIBILITY
Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Personal Protective Equipment
Breathing apparatus.
Gas tight chemical resistant suit.
Limit exposure duration to 1 BA set 30 mins.

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Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

· Clean up waste regularly and abnormal spills immediately.
· Avoid breathing dust and contact with skin and eyes.
· Wear protective clothing, gloves, safety glasses and dust respirator.
· Use dry clean up procedures and avoid generating dust.
· Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
· Dampen with water to prevent dusting before sweeping.
· Place in suitable containers for disposal.

MAJOR SPILLS

· Clear area of personnel and move upwind.
· Alert Fire Brigade and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water course.
· Stop leak if safe to do so.
· Contain spill with sand, earth or vermiculite.
· Collect recoverable product into labelled containers for recycling.
· Neutralise/decontaminate residue.
· Collect solid residues and seal in labelled drums for disposal.
· Wash area and prevent runoff into drains.
· After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
· If contamination of drains or waterways occurs, advise emergency services.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

+	X	+	X	0	+

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of exposure occurs.
· Use in a well-ventilated area.
· Prevent concentration in hollows and sumps.

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· DO NOT enter confined spaces until atmosphere has been checked.
· DO NOT allow material to contact humans, exposed food or food utensils.
· Avoid contact with incompatible materials.
· When handling, DO NOT eat, drink or smoke.
· Keep containers securely sealed when not in use.
· Avoid physical damage to containers.
· Always wash hands with soap and water after handling.
· Work clothes should be laundered separately. Launder contaminated clothing before re -use.
· Use good occupational work practice.
· Observe manufacturer's storing and handling recommendations.
· Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

Glass container.
· Lined metal can, lined metal pail/ can.
· Plastic pail.
· Polyliner drum.
· Packing as recommended by manufacturer.
· Check all containers are clearly labelled and free from leaks.
For low viscosity materials
· Drums and jerricans must be of the non-removable head type.
· Where a can is to be used as an inner package, the can must have a screwed enclosure.
For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.):
· Removable head packaging;
· Cans with friction closures and
· low pressure tubes and cartridges
may be used.
-
Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages *.
-
In addition, where inner packagings are glass and contain liquids of packing group I and II there must be sufficient inert absorbent to absorb any spillage *.
-
* unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.

STORAGE INCOMPATIBILITY

Avoid strong acids, bases.
Avoid reaction with oxidising agents.

STORAGE REQUIREMENTS

· Store in original containers.
· Keep containers securely sealed.
· Store in a cool, dry, well-ventilated area.
· Store away from incompatible materials and foodstuff containers.
· Protect containers against physical damage and check regularly for leaks.
· Observe manufacturer's storing and handling recommendations.

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• caffeine: CAS:58- 08- 2 CAS:5743- 12- 4 CAS:75639- 14- 4 CAS:71701- 02- 5 CAS:95789- 13- 2

MATERIAL DATA

Airborne particulate or vapour must be kept to levels as low as is practicably achievable given access to modern engineering controls and monitoring hardware. Biologically active compounds may produce idiosyncratic effects which are entirely unpredictable on the basis of literature searches and prior clinical experience (both recent and past).
OEL STEL (Russia): 0.5 mg/m3

PERSONAL PROTECTION




EYE

For laboratory, larger scale or bulk handling or where regular exposure in an occupational setting occurs:
· Chemical goggles
· Face shield. Full face shield may be required for supplementary but never for primary protection of eyes
· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

· Rubber gloves (nitrile or low-protein, powder-free latex). Employees allergic to latex gloves should use nitrile gloves in preference.
· Double gloving should be considered.
· PVC gloves.
· Protective shoe covers.
· Head covering.
Suitability and durability of glove type is dependent on usage. Factors such as:
· frequency and duration of contact,
· chemical resistance of glove material,

continued...

· glove thickness and
· dexterity,
are important in the selection of gloves.

OTHER
· For quantities up to 500 grams a laboratory coat may be suitable.
· For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs.
· For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.
· For manufacturing operations, air-supplied full body suits may be required for the provision of advanced respiratory protection.
· Eye wash unit.
· Ensure there is ready access to an emergency shower.
· For Emergencies: Vinyl suit.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS
Enclosed local exhaust ventilation is required at points of dust, fume or vapour generation.
HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapours.
Barrier protection or laminar flow cabinets should be considered for laboratory scale handling.
When handling quantities up to 500 kilogram,work in either a standard laboratory with general dilution ventilation (e.g. 6-12 air changes per hour) is preferred. Quantities up to 1 kilogram may require a designated laboratory using fume hood, biological safety cabinet, or approved vented enclosures. Quantities exceeding 1 kilogram should be handled in a designated laboratory or containment laboratory using appropriate barrier/ containment technology.
Manufacturing and pilot plant operations require barrier/ containment and direct coupling technologies.
Barrier/ containment technology and direct coupling (totally enclosed processes that create a barrier between the equipment and the room) typically use double or split butterfly valves and hybrid unidirectional airflow/ local exhaust ventilation solutions (e.g. powder containment booths). Glove bags, isolator glove box systems are optional.
HEPA filtration of exhaust from dry product handling areas is required.
Fume-hoods and other open-face containment devices are acceptable when face velocities of at least 1 m/s (200 feet/minute) are achieved. Partitions, barriers, and other partial containment technologies are required to prevent migration of the material to

continued...

uncontrolled areas. For non-routine emergencies maximum local and general exhaust are necessary. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, etc. evaporating from tank (in still air)	0.25- 0.5 m/s (50- 100 f/min.)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers (released at low velocity into zone of active generation)	0.5- 1 m/s (100- 200 f/min.)
direct spray, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2.5 m/s (200-500 f/min.) for extraction of gases discharged 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

The need for respiratory protection should also be assessed where incidental or accidental exposure is anticipated: Dependent on levels of contamination, PAPR, full face air purifying devices with P2 or P3 filters or air supplied respirators should be evaluated.
The following protective devices are recommended where exposures exceed the recommended exposure control guidelines by factors of:
10; high efficiency particulate (HEPA) filters or cartridges
10-25; loose-fitting (Tyvek or helmet type) HEPA powered-air purifying respirator.
25-50; a full face-piece negative pressure respirator with HEPA filters
50-100; tight-fitting, full face-piece HEPA PAPR
100-1000; a hood-shroud HEPA PAPR or full face-piece supplied air respirator operated in pressure demand or other positive pressure mode.

continued...

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

White fleecy masses or long, flexible, silky crystals or powder. Odourless with a bitter taste. Slightly soluble in water and alcohol. Soluble in chloroform; very slightly soluble in ether.

PHYSICAL PROPERTIES

Solid.
Does not mix with water.
Sinks in water.

Molecular Weight: 194.22
Melting Range (°C): Not available
Solubility in water (g/L): Partly miscible
pH (1% solution): 7
Volatile Component (%vol): Not applicable
Relative Vapour Density (air=1): Not applicable.
Lower Explosive Limit (%): Not available.
Autoignition Temp (°C): 925
State: Divided solid

Boiling Range (°C): 178
Specific Gravity (water=1): 1.23
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not applicable.
Evaporation Rate: Not applicable
Flash Point (°C): Not applicable
Upper Explosive Limit (%): Not available.
Decomposition Temp (°C): Not Available
Viscosity: Not Applicable

log Kow (Sangster 1997): - 0.07

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
Xanthine derivatives may produce nausea, vomiting, anorexia, gastric pain, haematemesis, diarrhoea, and increased levels of SGOT. Proteinuria, diuresis, and increased excretion of renal tubular cells and red blood cells may also occur. Respiratory effects may include tachypnoea and arrest. Central nervous system effects may include restlessness, dizziness, headache, insomnia, reflex hyperexcitability, stammering speech, muscle twitching and convulsions alternating with severe depression. Coma may occur in overdose. Cardiovascular effects include palpitation, hypotension, tachycardia, extrasystoles, life

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-threatening ventricular arrhythmias and circulatory failure. Other symptoms of overexposure include rash, fever, flushing, hyperglycaemia, inappropriate antidiuretic hormone syndrome, and relaxation of bronchial smooth muscle. Caffeine and other alkylxanthines act as physiological stimulants by blocking the neuromodulator effects of adenosine. Adenosine has a depressant action in the brain, heart, kidneys and other organs and is believed to mediate its effects via four adenosine receptor subtypes (A1, A2a, A2b, and A3). In addition, adenosine has been shown to be involved in pain cognition , movement and sleep. Adenosine receptor antagonists, of which xanthines and a number of fused heterocyclic compounds are representative, have been developed as anti-asthmatic, antidepressant, anti-arrhythmic, renal protective, anti-Parkinsonism and cognitive enhancing drugs. One of the principal biochemical actions of the xanthines involve their inhibition of the enzyme, phosphodiesterase. Synthetic inhibitors of this type (PDEIs) are used in several clinical settings and produce a wide variety of adverse side-effects. These include tachycardia (elevated pulse rate), decreased blood pressure (hypotension), central nervous system effects, altered colour perception (a blue-green haze persists), an increased sensitivity to light (photophobia), dizziness, light-headedness, fainting, nausea, vomiting and diarrhoea, dyspepsia (upset stomach), facial flushing, nasal congestion, urinary tract infection, skin rash, muscle aches in the pelvic area and, rarely, heart attack or even stroke.
Ingestion of small amounts of caffeine (100-300 mg is not harmful and helps relieve mental fatigue, drowsiness and general inertia. Acute poisoning is characterised by nausea, vomiting, headaches, vertigo, muscle tremor, manic excitement, insomnia and occasionally, even convulsive coma. Additional symptoms are tinnitus, scintillating scotoma, extrasystoles, tachycardia, polyuria, sometimes followed by oliguria. Caffeine increases gastric secretions and may cause gastric ulceration. The fatal dose is probably about 10 grams.
Low concentrations may produce a slight decrease in heart rate. Large amounts may produce headache, lightheadedness, dizziness, chills, fever, excitement, restlessness, nervousness, insomnia, mild delirium,hallucinations, tinnitus, constricted pupils, decreased visual fields, amblyopia, diplopia, and photophobia. Neurological symptoms may last for several days. Other symptoms of intake of large quantities include gastrointestinal irritation, nausea, vomiting, stimulation of gastric secretions, anorexia, haematemesis, abdominal cramps, diarrhoea, and diuresis followed by dehydration. Alternating states of consciousness, muscle twitching, tremors, hyperaesthesia, hypertonicity or hypotonicity, trismus, opisthotonus and convulsions are symptoms of acute poisoning. Increases in basal metabolic rate, metabolic acidosis, ketonuria, glycosuria, hyperglycaemia, hypokalaemia, and rhabdomyolysis have been reported. Other effects include dyspnae, tachypnea, chest tightness, palpitations and increases in systolic blood pressure. Arrhythmias including tachycardia and extra systoles may also occur. Seizures generally proceed fatal poisonings.
McGee reports a 19-year old woman with abdominal cramps, semicomatose, with shallow irregular breathing. She developed ventricular fibrillation and died in 3 hours. At autopsy, a blood caffeine level was 0.181 mg/ml. She had been taking over-the-counter diet pills and was estimated to have ingested 18 grams of caffeine.

EYE
Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals.

SKIN
Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

continued...

Skin contact is not thought to produce harmful health effects (as classified under EC Directives using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

INHALED

Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual.
The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of dusts, or fumes, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
Inhalation of caffeine dusts or aerosols may produce nose and throat irritation, coughing and chest discomfort. The material may act as a stimulant following massive inhalations. Heavy exposure may produce palpitations, excitement, insomnia, dizziness, headache and vomiting.

CHRONIC HEALTH EFFECTS

On the basis, primarily, of animal experiments, concern has been expressed by at least one classification body that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.
Long term exposure to high dust concentrations may cause changes in lung function (i.e. pneumoconiosis) caused by particles less than 0.5 micron penetrating and remaining in the lung. A prime symptom is breathlessness. Lung shadows show on X-ray.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Excessive consumption of beverages containing caffeine, termed "caffeinism", may produce headaches, irritability and symptoms of nervous neurosis. Chronic intake may produce agitation, disturbed sleep, caffeine-induced psychosis, heartburn and hyperventilation. Low grade fever and elevated plasma free fatty-acids have been reported. Respiratory failure and cardiopulmonary arrest may occur. Prolonged intake of high doses of caffeine -containing products may produce tolerance, physical and psychological dependence and symptoms of withdrawal after abrupt cessation.

The U.S. Food and Drug Administration has proposed removal of caffeine from its "generally recognised as safe" list and is gathering additional information. Concerns with excessive use include possible reproductive effects to the foetal craniofacial area, musculoskeletal system, possible bladder cancer (2 separate epidemiological studies), myocardial infarction, and, to a lesser degree, constipation, palpitations, shortness of breath and depressed mental state.

Women with a high daily intake of caffeine may have a higher incidence of spontaneous abortion and premature births. Use of caffeine by pregnant women has been associated with spontaneous abortion, breech presentations, stillbirth, premature delivery and low birth weight.

Administration to mice resulted in a statistically significant increase in the incidence of carcinogenic tumours of the skin and appendages.

TOXICITY AND IRRITATION

TOXICITY	IRRITATION
Oral (human) LDLo: 192 mg/kg	Nil reported.
Oral (woman) LDLo: 1000 mg/kg	

continued...

Oral (man) TDLo: 13 mg/kg
Oral (woman) TDLo: 96 mg/kg/1d- I
Oral (rat) LD50: 192 mg/kg
Oral (Rat) LD50: 7080 mg/kg
Oral (Human) LD: 400 mg/kg
Oral (Human) TDLo: 140 mg/kg
Oral (Human) TDLo: 51 mg/kg
Oral (Human) TDLo: 96 mg/kg
Oral (Human) LD: 192 mg/kg
Oral (Human) LD: 320 mg/kg
Intravenous (Human) TDLo: 7 mg/kg
Intravenous (Human) TDLo: 68 mg/kg
Intravenous (Human) LD: 57 mg/kg
Intraperitoneal (Rat) LD50: 240 mg/kg
Subcutaneous (Rat) LD50: 170 mg/kg
Intravenous (Rat) LD50: 105 mg/kg
Oral (Mouse) LD50: 127 mg/kg
Intraperitoneal (Mouse) LD50: 168 mg/kg
Subcutaneous (Mouse) LD50: 242 mg/kg
Intravenous (Mouse) LD50: 62 mg/kg
Oral (Dog) LD50: 140 mg/kg
Subcutaneous (Dog) LD50: 100 mg/kg
Intravenous (Dog) LD: 4 mg/kg
Oral (Cat) LD: 100 mg/kg
Intraperitoneal (Cat) LD: 180 mg/kg
Subcutaneous (Cat) LD: 150 mg/kg
Intravenous (Cat) LD: 80 mg/kg
Oral (Rabbit) LD50: 224 mg/kg
Intraperitoneal (Rabbit) LD: 150 mg/kg
Subcutaneous (Rabbit) LD: 275 mg/kg
Intravenous (Rabbit) LD50: 58 mg/kg
Oral (Guinea pig) LD50: 230 mg/kg
Intraperitoneal (Guinea pig) LD: 220 mg/kg
Subcutaneous (Guinea pig) LD: 200 mg/kg
Subcutaneous (Pig) LD: 140 mg/kg
Intravenous (Cat) TDLo: 2.5 mg/kg
Intravenous (Cat) TDLo: 20 mg/kg

The substance is classified by IARC as Group 3:
NOT classifiable as to its carcinogenicity to humans.
Evidence of carcinogenicity may be inadequate or limited in animal testing.
Tumorigenic - Carcinogenic by RTECS criteria.

Section 12 - ECOLOGICAL INFORMATION

log Kow (Sangster 1997): - 0.07

DO NOT discharge into sewer or waterways.

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Section 13 - DISPOSAL CONSIDERATIONS

· Recycle wherever possible.
· Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
· Dispose of by: Burial in a licenced land-fill or Incineration in a licenced apparatus (after admixture with suitable combustible material)
· Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.
· Containers may still present a chemical hazard/ danger when empty.
· Return to supplier for reuse/ recycling if possible.
Otherwise:
· If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
· Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: TOXIC
HAZCHEM: 2X

UNDG:

Dangerous Goods Class:	6.1	Subrisk:	None
UN Number:	1544	Packing Group:	III

Shipping Name:ALKALOID SALTS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S
ALKALOIDALKALOID SALTS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S. or ALKALOID SALTS, SOLID, N.O.S.
(contains caffeine)

Air Transport IATA:

ICAO/IATA Class:	6.1	ICAO/IATA Subrisk:	None
UN/ID Number:	1544	Packing Group:	III
ERG Code:	6L		

Shipping name:ALKALOID SALTS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S
ALKALOIDALKALOID SALTS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S. or ALKALOID SALTS, SOLID, N.O.S.
(contains caffeine)

continued...

Section 14 - TRANSPORTATION INFORMATION

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	None
UN Number:	1544	Packing Group:	III
EMS Number:	F- A, S- A		

Shipping name:ALKALOID SALTS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S
ALKALOIDALKALOID SALTS, SOLID, N.O.S.
ALKALOIDS, SOLID, N.O.S. or ALKALOID SALTS, SOLID, N.O.S.
(contains caffeine)

Section 15 - REGULATORY INFORMATION

REGULATIONS

caffeine (CAS: 58-08-2) is found on the following regulatory lists;
International Agency for Research on Cancer (IARC) Carcinogens
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for caffeine as CAS: 5743-12-4, CAS: 75639-14-4, CAS: 71701-02-5, CAS: 95789-13-2.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
caffeine	58- 08- 2, 5743- 12- 4, 75639 - 14- 4, 71701- 02- 5, 95789- 13- 2

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

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