

# SAPONIN

GHS MATERAIL SAFETY DATA SHEET

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

SAPONIN

### OTHER NAMES

saponins, "sapogenin glycoside", "saponin glycoside", "saponin steroid", "saponin quillaja", sapoglycosides

### PRODUCT USE

Used as foam stabiliser in fire extinguishers; emulsifier for fats, oils, bitumens. Forms a strong foam in water.

### SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

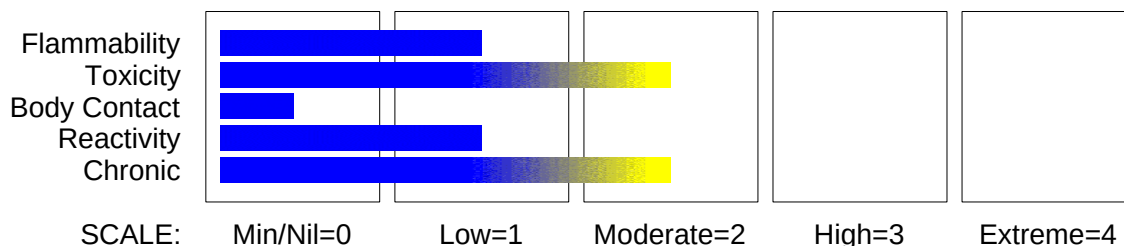
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

### HAZARD RATINGS



## Section 2 - HAZARDS IDENTIFICATION

### GHS Classification

Acute Aquatic Hazard Category 3

Skin Sensitizer Category 1

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## Section 2 - HAZARDS IDENTIFICATION



### EMERGENCY OVERVIEW

#### HAZARD

WARNING

Determined by using GHS criteria:

H317 H402

May cause allergic skin reaction

Harmful to aquatic life

#### PRECAUTIONARY STATEMENTS

##### Prevention

Avoid breathing dust/fume/gas/mist/vapours/spray.

Contaminated clothing should not be allowed out of the workplace.

##### Response

If skin irritation or rash occurs, seek medical advice/attention.

Wash contaminated clothing before reuse.

Specific treatment: refer to Label or MSDS.

IF ON SKIN: Gently wash with plenty of soap and water.

##### Disposal

Dispose of contents and container in accordance with relevant legislation.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| NAME    | CAS RN    | %   |
|---------|-----------|-----|
| saponin | 8047-15-2 | >99 |

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

### 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

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## Section 4 - FIRST AID MEASURES

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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 contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- 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 saponin (saponine, sapogenine) poisonings:

- Give activated charcoal by mouth, to absorb and inactivate the saponin.
  - Slime preparations of rice and oats or paraffin should be given as a mucous-membrane protective.
  - Substitution of electrolytes and fluid is essential after extensive episodes of vomiting and diarrhoea.
  - If the patient is excited, sedatives should be given; artificial respiration may be necessary in the event of breathing arrest.
  - Fatal poisonings are rare due to modern intensive care regimes.
- Toxicology: Marquardt H. et al: Academic Press, 1999.

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

### FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- Prevent, by any means available, spillage from entering drains or water courses.
- 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.

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## Section 5 - FIRE FIGHTING MEASURES

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- 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<sub>2</sub>), other pyrolysis products typical of burning organic material.

May emit poisonous fumes.

May emit corrosive 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

Gas tight chemical resistant suit.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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### EMERGENCY PROCEDURES

#### MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable labelled container for waste disposal.

#### MAJOR SPILLS

Moderate hazard.

- CAUTION: Advise personnel in area.
- Alert Emergency Services and tell them location and nature of hazard.
- Control personal contact by wearing protective clothing.
- Prevent, by any means available, spillage from entering drains or water courses.
- Recover product wherever possible.
- IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal.
- ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise Emergency Services.

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

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## Section 7 - HANDLING AND STORAGE

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### 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.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.

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## Section 7 - HANDLING AND STORAGE

- 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

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

### STORAGE INCOMPATIBILITY

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.

### SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific preventions

X: Must not be stored together

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

The following materials had no OELs on our records

• saponin: CAS:8047- 15- 2 CAS:11006- 75- 0 CAS:74499- 23- 3

### MATERIAL DATA

It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

(P.N.O.S) does NOT apply.

### PERSONAL PROTECTION



#### EYE

- Safety glasses with side shields.
- Chemical goggles.
- 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

NOTE: The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

Suitability and durability of glove type is dependent on usage. Factors such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity,

are important in the selection of gloves.

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids.

- polychloroprene
- nitrile rubber
- butyl rubber
- fluorocautchouc
- polyvinyl chloride

Gloves should be examined for wear and/ or degradation constantly.

#### OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

#### 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               |

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\* - 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

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area. 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, degreasing 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, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation) | 0.5- 1 m/s (100- 200 f/min.)   |
| direct spray, spray painting in shallow booths, 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.)   |
| grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).                                                                | 2.5- 10 m/s (500- 2000 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 m/s (200-400 f/min) for extraction of solvents generated in a tank 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.

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## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

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### APPEARANCE

Saponins (sapinogen glycosides) and sapogenins are widely distributed in plants. Each saponin consists of an aglucone moiety (the sapogenin), a sugar and a glycoside. The sapinogenin may be a steroid or a triterpene (unsaturated hydrocarbons based on the isoprene unit  $\text{H}_2\text{CC}(\text{CH}_3)\text{CH}=\text{CH}_2$ ) and with structures similar to that of steroid hormones), and the sugar may be glucose, galactose, a pentose or a methylpentose.

Saponins are bitter-tasting and foam strongly when shaken in water. They form oil-in-water emulsions and act as collective colloids. They are poisonous towards lower life forms.

White amorphous powder; dissolves & foams strongly in water.

White when pure, yellowish or brown when crude.

Saponin as a general term applies to two groups of plant glycosides.

As a specific term applies to derivative from Quillaja or Saponaria.

### PHYSICAL PROPERTIES

Solid.

Mixes with water.

Molecular Weight: Not available.

Melting Range (°C): Not applicable.

Solubility in water (g/L): Miscible

pH (1% solution): Not available.

Volatile Component (%vol): Not applicable

Relative Vapour Density (air=1): Not applicable

Lower Explosive Limit (%): Not available.

Autoignition Temp (°C): Not available.

State: Divided solid

Boiling Range (°C): Not applicable.

Specific Gravity (water=1): >1.0

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

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## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

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### CONDITIONS CONTRIBUTING TO INSTABILITY

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

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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual. Saponins (saponines and steroidal sapogenines) are weakly absorbed by the intestine and because of their detergent action, concentrate in the lipid layer of the cells of the gastric and intestinal epithelium. This results in cell damage and severe irritation of the gastrointestinal tract, characterised by burning of the mouth and stomach, cough, salivation and lachrymation, followed by nausea, vomiting, and diarrhoea. Severe fluid and electrolyte loss may also ensue. Reflexes via the autonomic nervous system may produce disturbances to heart function and circulatory system. Death may be the result of

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a shock reaction. Although saponins are generally poorly absorbed, local irritation of the mucous membranes may enhance their permeability as a result of damage to the intestinal wall. After absorption, systemic damage to red blood cells may produce severe haemolysis, causing anoxia and kidney failure. Humans generally do not suffer severe poisoning from saponins as endogenous cholestrin inactivates them so that only mucous membranes are involved. Because of this, saponins have been used in sneezing powders, emetics and cough syrups to facilitate expectoration. Most saponins are diuretic. In humans this effect disappears within a week following the neutralising action of cholestrin. Some saponins have been identified as potentially harmful to humans because they reduce serum cholesterol by preventing its re-adsorption after it has been excreted by the bile. It is hypothesised that the saponins either bind with bile or cause bile salts to bind to the polysaccharides in dietary fibre. Either way the bile salts are unavailable to bind cholesterol.

## 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

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

Open cuts, abraded or irritated skin should not be exposed to this material.

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.

## INHALED

Inhalation may produce health damage\*.

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 dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual.

Inhalation of saponin (saponin, sapogenin) dusts or aerosols may produce spasm, oedema of the larynx, chemical pneumonitis and pulmonary oedema. High concentrations may cause mucous membrane damage. Symptoms include burning sensation, coughing, wheezing, shortness of breath, headache and nausea.

## CHRONIC HEALTH EFFECTS

There exists limited evidence that shows that skin contact with the material is capable either of inducing a sensitisation reaction in a significant number of individuals, and/or of producing positive response in experimental animals.

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.

Several instances of allergenicity resulting from contact with steroidal saponins (sapogenins, including phytosteroids and phyto-oestrogens) have been recorded. Severe irritation has been reported following dermal exposure to sapogenin-containing saps but confounding factors such as the presence of raphides (calcium oxalates) may be significant. Saponins (saponine, sapogenine) are extremely toxic if absorbed in the blood stream; they act by haemolysis (destruction of red blood cells) even at extreme dilution. Many saponins are phytoestrogenic. A common feature of the phytoestrogens is their striking similarity to 17 $\beta$ -oestradiol and the synthetic oestrogen, diethylstilboestrol. There is evidence that phytoestrogens may mediate oestrogen-like effects by direct interaction with the oestrogen receptor of cells. Although the hormonal

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## Section 11 - TOXICOLOGICAL INFORMATION

activity of phytoestrogens is two to five orders of magnitude below that of oestrodiol, their high concentration in certain plants and their slower metabolic disposition, can lead to tissue levels exceeding those of endogenous oestrogens by a factor of a thousand or more.

### TOXICITY AND IRRITATION

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances. No significant acute toxicological data identified in literature search.

## Section 12 - ECOLOGICAL INFORMATION

Substances containing unsaturated carbons are ubiquitous in indoor environments. They result from many sources (see below). Most are reactive with environmental ozone and many produce stable products which are thought to adversely affect human health. The potential for surfaces in an enclosed space to facilitate reactions should be considered.

|                                                                                                  |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source of unsaturated substances<br>Occupants (exhaled breath, ski oils, personal care products) | Unsaturated substances (Reactive Emissions)<br>Isoprene, nitric oxide, squalene, unsaturated sterols, oleic acid and other unsaturated fatty acids, unsaturated oxidation products | Major Stable Products produced following reaction with ozone.<br>Methacrolein, methyl vinyl ketone, nitrogen dioxide, acetone, 6MHQ, geranyl acetone, 4OPA, formaldehyde, nonanol, decanal, 9- oxo- nonanoic acid, azelaic acid, nonanoic acid.                                 |
| Soft woods, wood flooring, including cypress, cedar and silver fir boards, houseplants           | Isoprene, limonene, alpha-pinene, other terpenes and sesquiterpenes                                                                                                                | Formaldehyde, 4- AMC, pinoaldehyde, pinic acid, pinonic acid, formic acid, methacrolein, methyl vinyl ketone, SOAs including ultrafine particles                                                                                                                                |
| Carpets and carpet backing                                                                       | 4- Phenylcyclohexene, 4-vinylcyclohexene, styrene, 2-ethylhexyl acrylate, unsaturated fatty acids and esters                                                                       | Formaldehyde, acetaldehyde, benzaldehyde, hexanal, nonanal, 2 - nonenal                                                                                                                                                                                                         |
| Linoleum and paints/polishes containing linseed oil                                              | Linoleic acid, linolenic acid                                                                                                                                                      | Propanal, hexanal, nonanal, 2-heptenal, 2- nonenal, 2-decenal, 1- pentene- 3 - one, propionic acid, n- butyric acid                                                                                                                                                             |
| Latex paint<br>Certain cleaning products, polishes, waxes, air fresheners                        | Residual monomers<br>Limonene, alpha- pinene, terpinolene, alpha- terpineol, linalool, linalyl acetate and other terpinoids, longifolene and other sesquiterpenes                  | Formaldehyde<br>Formaldehyde, acetaldehyde, glycoaldehyde, formic acid, acetic acid, hydrogen and organic peroxides, acetone, benzaldehyde, 4- hydroxy- 4-methyl- 5- hexen- 1- al, 5 - ethenyl- dihydro- 5- methyl- 2(3H)- furanone, 4- AMC, SOAs including ultrafine particles |
| Natural rubber adhesive                                                                          | Isoprene, terpenes                                                                                                                                                                 | Formaldehyde, methacrolein, methyl vinyl ketone                                                                                                                                                                                                                                 |
| Photocopier toner, printed paper, styrene polymers                                               | Styrene                                                                                                                                                                            | Formaldehyde, benzaldehyde                                                                                                                                                                                                                                                      |
| Environmental tobacco smoke                                                                      | Styrene, acrolein, nicotine                                                                                                                                                        | Formaldehyde, benzaldehyde, hexanal, glyoxal, N-methylformamide, nicotinaldehyde, cotinine                                                                                                                                                                                      |
| Soiled clothing, fabrics,                                                                        | Squalene, unsaturated sterols,                                                                                                                                                     | Acetone, geranyl acetone, 6MHO,                                                                                                                                                                                                                                                 |

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## Section 12 - ECOLOGICAL INFORMATION

|                                                                          |                                                                                                            |                                                                                                                                                                                                        |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| bedding                                                                  | oleic acid and other saturated fatty acids                                                                 | 40PA, formaldehyde, nonanal, decanal, 9 - oxo- nonanoic acid, azelaic acid, nonanoic acid                                                                                                              |
| Soiled particle filters                                                  | Unsaturated fatty acids from plant waxes, leaf litter, and other vegetative debris; soot; diesel particles | Formaldehyde, nonanal, and other aldehydes; azelaic acid; nonanoic acid; 9- oxo- nonanoic acid and other oxo- acids; compounds with mixed functional groups (=O, - OH, and - COOH) C5 to C10 aldehydes |
| Ventilation ducts and duct liners                                        | Unsaturated fatty acids and esters, unsaturated oils, neoprene                                             |                                                                                                                                                                                                        |
| " Urban grime"                                                           | Polycyclic aromatic hydrocarbons                                                                           | Oxidized polycyclic aromatic hydrocarbons                                                                                                                                                              |
| Perfumes, colognes, essential oils (e.g. lavender, eucalyptus, tea tree) | Limonene, alpha- pinene, linalool, linalyl acetate, terpinene- 4- ol, gamma - terpinene                    | Formaldehyde, 4- AMC, acetone, 4- hydroxy- 4- methyl- 5- hexen- 1- al, 5- ethenyl - dihydro- 5- methyl- 2(3H) furanone, SOAs including ultrafine particles                                             |
| Overall home emissions                                                   | Limonene, alpha- pinene, styrene                                                                           | Formaldehyde, 4- AMC, pinonaldehyde, acetone, pinic acid, pinonic acid, formic acid, benzaldehyde, SOAs including ultrafine particles                                                                  |

Abbreviations: 4-AMC, 4-acetyl-1-methylcyclohexene; 6MHQ, 6-methyl-5-heptene-2-one, 4OPA, 4-oxopentanal, SOA, Secondary Organic Aerosols

Reference: Charles J Weschler; Environmental Health Perspectives, Vol 114, October 2006.

DO NOT discharge into sewer or waterways.

## Section 13 - DISPOSAL CONSIDERATIONS

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction,
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning or process equipment to enter drains. It may be necessary to collect all wash water for treatment before disposal.

In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. Where in doubt contact the responsible authority.

- 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

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## Section 13 - DISPOSAL CONSIDERATIONS

apparatus (after admixture with suitable combustible material)  
· Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

## Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN, IATA,  
IMDG

## Section 15 - REGULATORY INFORMATION

### REGULATIONS

No regulations applicable

No data available for saponin as CAS: 8047-15-2, CAS: 11006-75-0, CAS: 74499-23-3.

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

| Ingredient Name | CAS                                     |
|-----------------|-----------------------------------------|
| saponin         | 8047- 15- 2, 11006- 75- 0, 74499- 23- 3 |

### MSDS SECTION CHANGES

*The following table displays the version number of and date on which each section was last changed.*

| Section Name                         | Version | Date         | Section Name                     | Version | Date         | Section Name             | Version | Date         |
|--------------------------------------|---------|--------------|----------------------------------|---------|--------------|--------------------------|---------|--------------|
| First Aid (inhaled)                  | 4       | 9- Jun- 2007 | Handling Procedure               | 4       | 9- Jun- 2007 | Physical Properties      | 4       | 9- Jun- 2007 |
| First Aid (swallowed)                | 4       | 9- Jun- 2007 | Storage (storage requirement)    | 4       | 9- Jun- 2007 | Acute Health (eye)       | 4       | 9- Jun- 2007 |
| Fire Fighter (extinguishing media)   | 4       | 9- Jun- 2007 | Storage (suitable container)     | 4       | 9- Jun- 2007 | Acute Health (inhaled)   | 4       | 9- Jun- 2007 |
| Fire Fighter (fire fighting)         | 4       | 9- Jun- 2007 | Engineering Control              | 4       | 9- Jun- 2007 | Acute Health (skin)      | 4       | 9- Jun- 2007 |
| Fire Fighter (fire incompatibility)  | 4       | 9- Jun- 2007 | Exposure Standard                | 4       | 9- Jun- 2007 | Acute Health (swallowed) | 4       | 9- Jun- 2007 |
| Fire Fighter (fire/explosion hazard) | 4       | 9- Jun- 2007 | Personal Protection (eye)        | 4       | 9- Jun- 2007 | Chronic Health           | 4       | 9- Jun- 2007 |
| Spills (major)                       | 4       | 9- Jun- 2007 | Personal Protection (hands/feet) | 4       | 9- Jun- 2007 | Environmental            | 4       | 9- Jun- 2007 |
| Spills (minor)                       | 4       | 9- Jun- 2007 | Personal Protection (other)      | 4       | 9- Jun- 2007 | Disposal                 | 4       | 9- Jun- 2007 |

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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## Section 16 - OTHER INFORMATION

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