Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product name : Linear alkyl benzene sulphonic acid

1.2 Product Code:

DetenLAS® 320

Alkyl benzene sulphonic acid with side paraffin chain of 10-13 carbon atoms, with an average number of 11.7 carbon atoms.
Nº CAS[a]: 85536 - 14 - 7 Nº EINECS[b]: 287 - 494 – 3
(Benzenosulphonic acid, 4 - C_{10-13} - sec – alkyl derivatives)
Formula: $CH_3 - (CH_2)_n – CH\ [C_6H_4 - p(SO_3H)] - (CH_2)_m – CH_3$ (n + m = 7 - 10) (n, m = 0 - 10)
Mean molecular weight: 320
Alternative names: Linear alkyl benzene sulphonic acid, sulphonic acid from the alkylbenzenes mixture and sulphonic acid.

1.3 Product Use

Sulphonic acid is the basic raw material for the production of alkyl benzene sodium sulphonate, the most commonly used surfactant all over the world for the production of household cleaning detergents and industrial and institutional detergent formulations.

1.4 Supplier/Manufacturer's name

DETEN QUÍMICA, S.A.
Address: Rua Hidrogênio 1744 – COPEC – Complexo Petroquímico de Camaçari – Bahia (Brazil) -
Business phone Tel.: +55 71 3634-3207 / 08 Fax.: +55 71 3634-5155

1.5 Emergency Phone

DETEN QUÍMICA S.A.
+55 71 3634-3333
0800-284-8474

2. HAZARDS IDENTIFICATION

2.1 Physical/chemical hazards

Eyes: Small concentration exposure can cause irritation. The contact with the liquid and exposure to high vapor concentrations can cause irritation and burns.

Skin: Owing to its acid and corrosive nature, it provokes irritation and skin burns. Prolonged and repeated exposure with the skin can cause necrosis, if the necessary precautions are not taken into consideration.

Inhalation: Normally, there is the presence of free SO_3 and SO_2, and under some circumstances, it can form H_2S, which are toxic.

Ingestion: Because of its acid nature, the product can cause irritation and burns in the gastrointestinal track even when swallowed in small quantities.

Overexposure effect :

Acute overexposure: Unknown
Chronic overexposure: Unknown

2.2 Fire and explosion hazard

None
See Section 10: "STABILITY AND REACTIVITY".

3. COMPOSITION / INFORMATION ON INGREDIENTS

See Section 1.1 “PRODUCT AND COMPANY IDENTIFICATION”.

Hazardous component: Benzene sulphonic acid, 4 - C_{10-13} – sec – alkyl – derivatives

Classified as “Corrosive” (See Section 15: “REGULATIONS”).

Hazard sign: “Corrosive” – It can cause burns – Do not inhale the gases.

Component material: This product is a mixture of moderately strong organic acids.

Average concentration: 96% mass min.

4. FIRST AID MEASURES

Contact with the eyes: Flush with water for 15 minutes. See the assistance of an ophthalmologist.

Contact with the skin: Take off contaminated clothing. Rinse with plenty of water. If irritation persists, seek medical assistance.

Inhalation: Remove victim to a ventilated area out of danger. If necessary, administer artificial breathing and call a doctor.

Ingestion: Victim should drink neutralizing agent (magnesium) dissolved in milk and be hospitalized.

5. PREVENTION AND FIRE FIGHTING MEASURES

Extinguishing media: Product is not flammable or explosive, but in case of decomposition at fire, it can release gases. Use water vapor, dry chemical or CO_2 foam.

Special fire fighting procedures: When fighting fire in confined spaces, wear self contained breathing apparatus.

Protection against fire and explosions: Product is not flammable or explosive.

Dangerous combustion products: During a fire, there may be decomposition with the release of SO_2 and H_2S toxic gases.

6. SPILL AND LEAK CONTROL MEASURES

Personal precautions: wear PPE (Personal Protective Equipment)

See Section 8: “EXPOSURE CONTROL AND PERSONAL PROTECTION”

Environmental precautions

On land: Keep people away from it. If possible, contain the spill. Prevent superficial and groundwater contamination, as well as soil and vegetation. Notify the authorities and warn the neighborhood, if necessary.

Stop the spill with inert absorbing material. The product can be neutralized with a sodium carbonate solution. Place the recovered wastes in appropriate containers for recycling or disposal.

Consult an expert in recovered material elimination. The material can be eliminated by controlled incineration, after being washed with sodium carbonate solution and rinsed with water. Perform activities in compliance with local and official legislation.

On water: Warn other vessels. Notify the port and the pertinent authorities and keep people away from it. Stop and eliminate the spill, as possible.

Block the spill area and avoid ecological damage.

Eliminate the product from the surface, absorbing the contaminated cover or with suitable absorbing material.

Consult an expert in recovered material disposal and perform activities in compliance with local and official legislation.

See also Section 4 “First Aids” and Section “Stability and Reactivity”.

7. HANDLING AND STORAGE

The water free sulphonic acid is as corrosive to metals as concentrated sulfuric acid. DetenLAS® 320 sulphonic acid is moderately corrosive to steel, increasing corrosion when the product is kept at high temperatures (above 40 ºC). If stored in carbon steel tanks, this corrosion can extract a small quantity of iron, which damages the product. Stainless steel is highly recommended for tanks and piping. As an alternative, coated carbon steel tanks can be used (for example with epoxy or polyester resins).

DetenLAS® 320 sulphonic acid should be stored at temperature ranges between 30 ºC a 40 ºC, to simplify handling. The tanks are heated indirectly by hot water coils (at 60 ºC at most) or electrical conductors. The indirect direct heating is not recommended, because it can form “hot points”, resulting in the acid color degradation. The storage tanks must be coated with suitable thermal insulation to save conservation energy.

When pumping the acid, it is advisable to use displacement pumps instead of the centrifugal ones. The pipings and parts of the pump in contact with the acid should be of stainless steel.

Storage/handling temperature:
Recommended temperature: 30 - 40 ºC.
Avoid high temperatures of the wall (40 ºC at most).
Use hot water as heat transfer fluid. The high viscosity at low temperatures can cause pumping problems.

Loading/unloading temperature:
Temperature should be kept at 32 - 38 ºC to simplify loading. The piping installed at the vapor heating system should be done by electrical system. The contact surface temperature should not be much higher than inside the tank.

Storage pressure: Atmospheric

Electrostatic accumulation risk: None

Viscosity at loading/unloading temperature: 1.010 cSt (at 25 ºC)

Normal transportation system :
- Tank-car
- Tank-truck
- Drums

Coating and storage materials and handling:

Suitable:

Tanks (wagons, trucks):
316 Stainless Steel.
Carbon acid with coating: phenol, glass, polyester reinforced with fiber glass; epoxy and polyester resins.

Drums:
Metal drums with double polymeric cover and free of weld nugget to avoid the reaction of sulphonic acid with metal.

Transfer:
Lines: 316 stainless steel, PVC or fiber glass pipe.
Hoses: Polyethylene, Teflon, butyl rubber, with neoprene coating.
Pumps: with 316 stainless steel gears.
Pumps/gears: 316 stainless steels. Valves with Teflon coating and flywheel.
Connections: Teflon

Unsuitable:

Tanks (tank-cars, can-trucks):
Carbon steel.
Aluminum
Other metals

Special precautions:
SO_2 gases can accumulate in the tanks and the necessary precautions shall be taken in case of operators’ exposure.
The product has a hazard reaction with hydroxides (base). Do not store them together.
The air should be continuously analyzed when working in a confined space.
Keep the area well ventilated.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

Personal Protective Equipment: Acid suit to prevent contact with the skin. Safety gloves and acid or PVC resistant rubber coats, face masks for emergency cases and confined spaces.

Take off the saturated/contaminated clothes with small quantities of the products, which can cause burns on the skin that cannot be immediately perceived.

Worker's hygiene: Avoid contact with the skin, eyes and clothes. The area of work must be equipped with safety showers and eyewash stations.

Incompatibility with hydroxides (basis).

Ventilation needs: In a confined space, the storage tanks can accumulate toxic gases (SO_2, H_2S). Keep the area well ventilated and use face mask. The air must be continuously analyzed when there are people working in confined space.

Exposure limit value (T.L.V.): Not established.

9. PHYSCIAL/CHEMICAL PROPRIETIES

Aspect:

Physical state: Viscous liquid
Color: Brown

Odor: Sulfur dioxide (SO_2)
Density (at 25 ºC): 1.053 g/cm^3
Viscosity (at 25 ºC): 1,010 cSt
Solubility in water (at 20 ºC): Soluble
Melt index : - 12 ºC
Total acidity: 3.21 meq/g

10. REACTIVITY AND STABILITY

Stability: Stable

Conditions to avoid instability: not applicable

Materials and conditions to be avoided (Incompatibility): Reactive with metals, oxides, carbonates and carbides.

The product presents a hazardous reaction with hydroxides (base).

Dangerous polymerization: Not applicable

Conditions to avoid polymerization: Not applicable

Hazardous decomposition products: Normally there is the presence of SO_2, which under some circumstances can form H_2S.

Releases heat when diluted in water.

Corrosion: Moderate to severe.

11. TOXICOLOGICAL INFORMATION

LD_{50} (Oral, rats): 1350 – 1470 mg / Kg (OCDE[1] - 401) [Lethal Dose 50 %]
LD_{50} (Dermal, rabbits): High sensitivity (OCDE[1] - 405) [Lethal Dose 50 %]

12. ECOTOXICOLOGICAL INFORMATION

12.1 Biotic environment toxicity

LC_{50} - 96 (Vertebrate): 5 - 15 ppm [50% Effective lethal concentration, in 96 hours]

EC_{50} - 24 (*Daphnia*)[2]: 5.9 ppm [50% effective concentration in 24 hours, for lack of mobility]

EC_{10} - 16 (*Pseudomonas putida*): 51 ppm [Effective concentration of 10 %, in 16 hours to hinder growth]

12.2 Environment risks

Biodegradation: > 98 % (O.C.D.E. - 301)

Phtodegradation : 50 % (2,2 days)

Bioaccumulation: No data.

Sodium sulphonate obtained by neutralisation of DetenLAS® 320 complies with the biodegradabilityrequirements stipulated in the EC detergents regulations Nº 648/ 2004. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.

Effects on the environment

Water: This product is soluble in water; major spills can result in hazardous concentrations for aquatic life.

Air: The decomposition in the combustion of this product can provoke a cloud of irritating, corrosive and poisonous gases.

Soil: This product is corrosive, therefore in case of spill it can cause immediate damage in the contact area. It can contaminate the soil, posing a risk of groundwater contamination.

13. CONSIDERATIONS ON TREATMENT AND DISPOSAL

Handle wastes with care.

Mechanical elimination using inert absorbents. If it is possible, resort to controlled incineration for elimination; afterwards wash with a sodium carbonate solution and rinse with water or eliminate according to the official legislation (national or local).

Avoid disposing large quantities of sulphonic acid into sewerage and sewers.

The sodic salt biodegradability of the sulphonic acid is higher than 90 %.

Do not mix with hydroxides (bases).

14. TRANSPORTATION INFORMATION

Hazard classification

Code: Page 8.104

IMO[3] / IMCO[4]: 2.586 / 8

ONU[5]: 2.586

IATA[6]:

T.P.C. / ADR: 80 / 2.586 Class 8

T.P.F./ RID[7]: Package Group III / Label Nº 8

Other data :

Transportation temperature: 25 - 40 ºC
Transportation pressure: Atmospheric
Load/unload temperature: 30 - 40 ºC
Tank trucks: Stainless steel coating. For long distances at low temperature, trucks equipped with heating coils.

Drums: Metal drums with double polymeric coating and free of welding nuggets to avoid the sulphonic acid reaction with metal.

15. REGULATIONS

Identification and classification labels according to the Ministry of Transport Administration Rule 420 of 2004 that regulates land transportation of hazardous products:

Classified as “Corrosive”

Causes burns.
Do not inhale gases.

Appropriate symbols for hazardous product with hazard indication: “Corrosive”

Decree no. 96.044 - Road transportation of hazardous products and successive modifications and adaptations.

Decree no. 98.973 – Rail transportation of hazardous products and successive modifications and adaptations.

16. OTHER INFORMATION

If necessary, or in case of doubts, contact Deten Química or visit our web site at: www.deten.com.br. Additional information available by formal request.

a. CAS - Chemical Abstract System No.
b. EINECS - European Inventory of Existing Commercial Chemical Substances
1. OCDE: Organization for Cooperation Development and Economic
2. Samples of sediments were collected at the bottom od Sinos river with the Daphnia magna micro-crustaceus
3. IMO: International Maritime Organization
4. IMCO: International Maritime Consultative Organization – UN Organism
5. UN: United Nations
6. IATA: International Air Transport Association
7. RID: Regulation for international transportation of goods by road (European law)
8. Regulation of the European Parliament and the Council of the European Union