



PRODUCT:

LINEAR ALKYL BENZENE SULPHONIC ACID

SDS NUMBER: DT02

VERSION: 08

DATE: 07/31/2012

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MATERIAL SAFETY DATA SHEET**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Product name (comercial name):** Linear Alkylbenzene Sulphonic Acid**Product code:** DetenLAS® 320**Company:** Deten Química S.A.**Address:** Rua Hidrogênio 1744 - COPEC - Camaçari/ Bahia/ Brasil - CEP: 42.810-000**Telephone number:** +55 71 3634-3207 / 3208**Emergency telephone number:** +55 71 3634-3333 / 0800-284-8474**Fax number:** +55 71 3634-5155**E-mail:** fala@deten.com.br**2. HAZARDS IDENTIFICATION****Most important hazards**

Corrosive and astringent.
Harmful if swallowed and inhaled.
Causes severe burns to skin and eye damage.
Releases toxic fumes.

Product effects**Adverse effects to the human health**

Ingestion: May cause burns to mouth, throat and stomach.
Inhalation: Causes irritation to the respiratory (very irritating gases or vapors).
Skin Contact: Causes severe burns.
Eye Contact: Causes severe eye injury.

Environmental effects:

Water: Soluble product. Large spill can produce dangerous concentrations for aquatic life.
Air: The decomposition in the combustion of this product may cause a cloud of irritating, corrosive and poisonous gases.
Soil: Corrosive product. The spill may cause immediate damage in the contact area and can contaminate soil and groundwater.

Physical and chemical hazards:

Corrosive product.

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Specific hazards:

It is not flammable under normal conditions, but attacks certain metals producing hydrogen.

Main symptoms:

Ingestion: stomach aches.

Inhalation: no specific data.

Skin contact: pain or irritation, redness, blistering on the skin.

Contact with eyes: pain, tearing and redness.

Product classification:

Acute toxicity: Category 4 (Oral)

Corrosion and skin irritation: Category 1 C

Damage/ serious eye irritation: Category 1

Classification system adopted:

Adoption of Globally Harmonized System of Classification and Labeling of Chemicals (GHS), United Nations.

Emergency Overview:

Corrosive.

May be fatal if inhaled or ingested.

Causes severe burns to skin and eyes.

The vapors are extremely irritating to eyes and respiratory tract.

Prolonged or repeated exposure can cause discoloration and erosion of teeth.

Can decompose at high temperatures forming toxic gases.

Content can develop pressure on prolonged exposure to heat.

Label elements

Pictograms:



Signal word: Danger

Hazard Statement:

- Harmful if inhaled.
- Causes severe burns to skin and eye damage.
- Causes serious eye damage.



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- If inhaled, seek medical attention immediately.
- If swallowed do not induce vomiting, seek medical advice immediately and show this container or label.
- Immediately flush eyes with running water for at least 15 minutes. Get medical attention.
- Do not use on site without proper ventilation.
- Wash hands thoroughly after handling.
- Use appropriate personal protective equipment (splash goggles and face shield, protective gloves, capes and rubber boots or PVC mask with filters for acid gases).

3. COMPOSITION/INFORMATION ON INGREDIENTS**MIXTURE****Chemical name or common:** Linear Alkyl Benzene Sulphonic Acid**Chemical nature:** Aromatic sulfonic acid**Ingredients or impurities contributing to hazard:**

Chemical name or common	CAS number	Concentration or concentration range	Product classification	Classification system adopted
Benzenesulfonic acid, C10 4 - 13 - sec - alkyl derivatives	85536-14-7	96%	- Acute toxicity: Category 4 (Oral) - Corrosion and skin irritation: Category 1 C - Damage/ serious eye irritation: Category 1	GHS

4. FIRST-AID MEASURES**First-aid measures:****Inhalation:**

Remove victim to fresh air and keep at rest.
If necessary, apply artificial respiration and seek medical attention immediately.

Skin Contact:

Immediately remove all contaminated clothing and wash exposed areas with plenty of water for at least 15 minutes.
If irritation, seek medical attention.



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MATERIAL SAFETY DATA SHEET**Eye Contact:**

Immediately flush eyes with running water for at least 15 minutes.
Get medical attention.

Ingestion:

Drink a neutralizing agent (eg magnesia) dissolved in milk.
Seek medical attention immediately.

Actions must be avoided:

Never give anything orally or induce vomiting in the victim unconscious or convulsing.

Protection of first-aiders:

Take no action if there is any personal risk or inadequate training.
If there is suspicion of the presence of fumes, the rescuer should use a proper mask or a breathing apparatus.
It may be dangerous to apply artificial respiration.
Wash contaminated clothing with water before removing them, or wear gloves.

Notes to an attending physician:

Treat symptomatically.
Provocative measures of vomiting and gastric lavage are contraindicated.
Dilute the acid by administering large amounts of water or milk.
Following administer neutralizing soft, such as milk of magnesia, lime water, aluminum hydroxide gel or soap solution.
The use of neutralizing more energetic is not appropriate due to release of heat during the chemical reaction with the acid, which can aggravate the extent or severity of injury.
Also do not use sodium carbonate or bicarbonate, which react with the acids producing carbon dioxide.
In case of more pronounced and severe burns, apply symptomatic treatment.

5. FIREFIGHTING MEASURES

Extinguishing Media:

Use dry chemical, CO₂, water spray (fog) or foam.

Extinguishing media not recommended:

Water jets directly over the burning liquid.

Specific risks relating to the measures:

During firing can be release toxic gases, SO₂ and H₂S.



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In case of fire or heat, will occur a pressure increase and the container may burst.

Special methods of fire fighting:

Evacuate area and fight fire from a safe distance.
Position themselves with their backs to the wind.
Use water spray to cool exposed equipment near the fire.
Use dikes to contain the water used in combat.

Protection of persons involved in fire fighting:

Use respiratory protective equipment and clothing type/protection approach for high temperatures.

Specific hazards arising from the chemical combustion:

In combustion releases toxic and corrosive gases such as carbon monoxide, carbon dioxide and sulfur oxides.

6. SPILL AND LEAK CONTROL MEASURES

Personal precautions:

Use personal protective equipment.
Avoid inhalation, contact with eyes and skin.
Do not touch the damaged containers or spilled material without using the appropriate clothing.
Danger of slipping because of the product spilling.

Environmental precautions:

On land:

Prevent the flow of product to rivers, streams, water courses or low-lying areas, underground sewers, wells, soil and vegetation.
Soak up with absorbent material (sand, acid binder agent, universal binder, sawdust).
Collect all the waste in suitable containers and labelled and dispose in accordance with local legislation.
Communicate the authorities and alert the neighborhood if necessary.

In water:

Report to the port, vessels and other relevant authorities.
Block the spill area and avoid ecological damage.
Remove the product from the contaminated surface with suitable absorbent.

Emergency procedures and alarm systems:

Isolate spill or leak area immediately.
Keep unauthorized personnel away.



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Stay upwind.
Keep out of low areas.
Ventilate closed spaces before entering.

Methods for cleaning:

Absorb material with sand, land or absorbent material and non-combustible. Place in container for later removal.
Because photodegradable and biodegradable, it may suggest the use of technologies that apply photodegradation and bioremediation in the recovery of contaminated areas.

Prevention of secondary hazards:

Surfaces may become slippery after stroke.

Differences in the action of large and small leaks:**Small spills:**

Absorb with land, sand or other noncombustible material and transfer to containers for later disposal.

Large spills:

Stop leak if without risk.
Absorb with dry land, sand or other non-combustible material.
Do not touch spilled material.
Eliminate all ignition sources.
Call for assistance on disposal.

7. HANDLING AND STORAGE

Handling**Appropriate technical measures**

Handle in a ventilated area or with system of ventilation / local exhaust.
Avoid formation of vapours/mist.
Avoid contact with incompatible materials.

Prevention of worker exposure

Use appropriate protective equipment.

Prevention of fire and explosion

Eliminate hot and ignition sources.
No special measures required.



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MATERIAL SAFETY DATA SHEET**Precautions and guidelines for safe handling**

Handle the product in a cool and well-ventilated place.
Do not handle in metal containers.
Avoid packaging falls.
Heavier packages must be transported by forklift.
Do not mix with incompatible products, when diluting always add water and then the product, never the other way around.
Label the packaging.

Hygiene measures**Appropriate:**

Wash hands and face after handling and before eating and drinking.
Take off all contaminated clothing and wash before reuse.

Inappropriate:

Eat, drink or smoke in the area where the product is handled, stored and processed.

Storage:**Technical measures****Appropriate conditions:**

Store at temperatures below 40°C.
Store in a dry, cool and well-ventilated place on trays or strips of wood.
Keep container closed when not in use.
Keep away from alkaline oxidizing agents, and metals.
Keep away from heat and sources of ignition.
Never add water to this product.
Use stainless steel for the construction of tanks and pipes.
Alternatively, use coated carbon steel tanks (for example, with polyester or epoxy resins).

Conditions to be avoided:

Exposure of drums under the sun, rain and high temperatures.
If stored in tanks of carbon steel, corrosion can draw a small amount of iron, which impairs the product.

Packaging materials**Recommended use:**

Plastic packaging, 316L stainless steel tanks and tanks of carbon steel coated with epoxy or polyester resins.



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Metal drums with double layer of polymeric coating and solder points to avoid reaction of sulfonic acid with metal.

Inappropriate:

Equipment for handling, storage or transport, must not be made of: iron, carbon steel, aluminum and its alloys, copper and its alloys, titanium and cast. Confirm the suitability of any material before use.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION**Specific control parameters****Occupational exposure limits**

Not established.

Biological indicators:

Not established.

Other limits and values:

Not established.

Appropriate engineering controls:

Provide ventilation/exhaust systems in the places of storage and handling.
The area of work must be equipped with safety showers and eyewash stations.
In a confined space, the storage tanks can accumulate toxic gases (SO₂, H₂S)
The air must be continuously analyzed when there are people working in confined space.

Appropriate personal protective equipment**Eye/ face protection:**

Splash goggles and face shield.

Skin and body protection:

Safety gloves and acid or PVC resistant rubber coats

Respiratory protection:

Face masks with filters for acid gases

Special precautions

Chemicals should only be handled by enabled persons.



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Follow rigidly the operational and safety procedures in the work with chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES**Appearance:** Brown viscous liquid**Odor:** Spicy**pH:** < 1**Melting point/freezing point:** < -7°C**Initial boiling point and boiling range:** 190°C**Flashpoint:** > 93,3°C (closed vessel)**Evaporation rate:** Not available**Inflammability:** Not applicable**Upper/lower flammability or explosive limits:** Not applicable**Vapour Pressure:** Not available**Vapour density:** Not available**Density:** 1,0491 g/cm³ [25°C]**Solubility:** Easily soluble in hot or cold water**Partition coefficient: n-octanol/ water:** 3,32**Auto-ignition temperature:** 380°C**Decomposition temperature:** Not available**Viscosity:** Kinematics: 13,148 cm²/s [ASTM D 7042-04]**10. STABILITY AND REACTIVITY****Chemical stability:**

Stable under normal conditions of temperature and pressure.

Reactivity:

Test data are not available regarding specific reactivity for this product or its ingredients.



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MATERIAL SAFETY DATA SHEET**Possibility of hazardous reactions:**

Is reactive with alkaline bases and oxidizing agents.
The reaction with cyanide, sulfides, phosphides, silicides and carbides release poisonous gases.

Conditions to avoid:

Contact with metals, oxides, carbides and carbonates.

Incompatible substances or materials:

Metals, oxides, carbides, carbonates and hydroxides.

Hazardous decomposition products:

In the burning, gases and partial and total combustion vapors are produced, such as carbon monoxide and carbon dioxide. The smoke can also contain sulfur oxides and hydrogen sulphide, which may be toxic.

11. TOXICOLOGICAL INFORMATION**Information according to the different routes of exposure****Acute toxicity:**

LD₅₀ (oral, rats): 775 mg/kg
LD₅₀ (dermal, rabbit): 2000 mg/kg

Corrosion and irritation of the skin:

Corrosive. Visible necrosis (Rabbit/ Exposure: 3minutes/ Observation: 3hours)

Serious eye damage/ eye irritation:

Irritating. Edema of the conjunctiva (Rabbit / Exposure: 3 hours / Observation: 3 hours)

Respiratory or skin sensitization:

Respiratory: not present significant effects or critical hazards.
Skin: corrosive to the skin.

Germ cell mutagenicity:

It is not mutagenic in a battery of genetic toxicology tests.

Carcinogenicity:

Not available.



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Toxicity to reproduction and lactation:

Not available.

Systemic toxicity for certain target organs - Single exposure:

Not available.

Systemic toxicity for certain target organs - Repeated exposure:

Not available.

Aspiration Hazard:

Not available.

Main symptoms:

Inhalation: Not available.

Ingestion: Stomach pain

Eye Contact: Pain, tearing, redness

Skin Contact: Pain or irritation, redness, blistering of the skin may occur.

Specific effects:

Inhalation: Gases and vapors very irritating to the airways

Ingestion: Harmful if swallowed. Can cause burns to the mouth, throat and stomach.

Eye Contact: Causes severe eye injury.

Skin Contact: Causes severe burns.

Substances that may cause

Interaction:

Not available.

Additives:

Not available.

Potentiation:

Not available.

Synergy:

Not available.

12. ECOLOGICAL INFORMATION



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MATERIAL SAFETY DATA SHEET**Environmental effects, behaviors and product impacts****Ecotoxicity:**

LC₅₀ (*Daphnia magna*, 48 h): 9.3-11.6 mg/L

Persistence and degradability:

Aerobic biodegradation is the main mechanism of removal.

Removal of the hydrophilic sulphonate alquilsulfatase by a preceding oxidation beta, which results in sulfate groups and sulfite-free.

Some *Pseudomonas* strains can completely degrade the surfactant without prior desulfurization.

Photochemical degradation was also reported to 215 nm, resulting in formic acid and formaldehyde. (HSDB, 2002)

Bioaccumulative potential:

The extract did not bioconcentrate in aquatic organisms.

Mobility in soil:

The extract is soluble in water, showing high mobility in the soil.

Not easily vaporized from the surface of the soil or water.

The adsorption in aqueous medium is not relevant.

In the atmosphere, is in the particulate phase, wet deposition suffering. (HSDB, 2002)

Other adverse effects:

No significant effects or critical hazards.

13. CONSIDERATIONS ON TREATMENT AND DISPOSAL**Methods recommended for the treatment and disposal applied to:****Product:**

Significant amounts of residual waste product should not be removed by channeling wastewater, but processed in a treatment plant effluent.

Remove any excess products and non-recyclable products through an authorized waste disposal company.

Disposal of this product, solutions and any by-products must meet the requirements of environmental protection and legislation for the protection and waste disposal requirements of local regional authorities.

Product waste:

Keep the product remains in their original containers and properly sealed.

The disposal must be carried out according to the established for the product.



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MATERIAL SAFETY DATA SHEET**Contaminated packaging**

Empty containers represent a fire hazard.
Evaporate the residue under a fume hood.

14. TRANSPORT INFORMATION**National and international regulations****Land:**

UN - "United Nations"
Recommendations on the TRANSPORT OF DANGEROUS GOODS. Model Regulations, 16th Edition, 2009.

UN number: 2586**UN proper shipping name:** Alkyl sulphonic acid, liquid**Class/subclass of main risk:** 8**Class/subclass of subsidiary risk:** Not applicable**Risk number:** 80**Packing group:** III**Regulamentações adicionais:** Não se aplica**Additional regulations:** Not applicable**Sea:**

IMO - "International Maritime Organization"
International Maritime Dangerous Goods Code (IMDG Code) - Incorporating Amendment 34-08; 2008 Edition.

UN number: 2586**UN proper shipping name:** Alkyl sulphonic acid, liquid**Class/subclass of main risk:** 8**Class/subclass of subsidiary risk:** Not applicable**Risk number:** 80**Packing group:** III**Additional regulations:** Not applicable**Air:**

IATA - "International Air Transport Association"
Dangerous Goods Regulation (DGR) - 51th Edition, 2010.

UN number: 2586**UN proper shipping name:** Alkyl sulphonic acid, liquid**Class/subclass of main risk:** 8



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MATERIAL SAFETY DATA SHEET**Class/subclass of subsidiary risk:** Not applicable**Risk number:** 80**Packing group:** III**Additional regulations:** Not applicable**15. REGULATIONS****Specific rules for the chemical:**

Not applicable.

16. OTHER INFORMATION**Important information, but not specifically described at the previous sections:**

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.

Bibliographic references:

- [HSDB] HAZARDOUS SUBSTANCES DATA BANK. Sodium Dodecylbenzenesulfonate. In: TOMES CPS tm SYSTEM. Toxicology; Occupational Medicine and Environmental Series. Englewood: Micromedex; 2002.
- HERA-LAS: <http://www.heraproject.com>

Legend and Abbreviations:

- CAS: Chemical Abstracts Service
- CL₅₀: Lethal Concentration 50%
- DL₅₀: Lethal Dose 50%
- GHS: Globally Harmonised System
- HERA: Human & Environmental Risk Assessment
- HSDB: Hazardous Substances Data Bank
- PVC: Polyvinyl chloride
- UN: United Nations