31 July 2024

Chemical profile

# Linear alkylbenzene sulfonates

## Summary

* The chemicals are a group of linear alkylbenzene sulfonates (LAS) that are used in high volumes in Australia as surfactants in various domestic and cleaning products.
* Chemicals in this group are expected to be of low risk to the environment.
* The chemicals in this group are a priority for scheduling under the [Industrial Chemicals Environmental Management Standard](https://www.dcceew.gov.au/environment/protection/chemicals-management/national-standard) (IChEMS) due to their high-volume usage in Australia.

## Introduction and use of Linear alkylbenzene sulfonates in Australia

Linear alkylbenzene sulfonates are typically used as surfactants in a range of consumer and industrial products, such as in plastic and polymer products, automotive and furniture care products, and cleaning products.

The chemicals in this group have a use volume in the tens of thousands of tonnes per year in Australia. The surfactant concentrations vary but are typically 1-25% for consumer products and 5-25% for industrial/professional products.

## Controls under international conventions

The chemicals in this group have no obligations under international conventions.

## Chemical identity

This class of chemicals include salts of alkylbenzene sulfonic acid where the alkyl chain is linear with a length between 10 and 16 carbon atoms. These chemicals have been placed in a group as they all have similar use patterns and are expected to produce alkylbenzene sulfonate anions in the environment.

Some chemicals in the group have amine counterions to the sulfonate anion.

* **Group name:** Linear alkylbenzene sulfonates (LAS)
* **CAS registry numbers:** 27176-87-0; 121-65-3; 1322-98-1; 1331-61-9; 2211-98-5; 12068-08-5; 14356-38-8; 25155-30-0; 22967-67-5; 26264-06-2; 26836-07-7; 27177-77-1; 27479-45-4; 29061-63-0; 58089-99-9; 68081-81-2; 63428-97-7; 67952-66-3; 68411-30-3; 68442-72-8; 68584-22-5; 68584-23-6; 68584-27-0; 68910-31-6; 68910-32-7; 69669-44-9; 85480-54-2; 85480-55-3; 85480-57-5; 85536-14-7; 85995-82-0; 85995-83-1; 90194-26-6; 90194-29-9; 90194-30-2; 91696-66-1; 97467-80-6; 103818-94-6; 127184-52-5

**Table 1 – Indicative list of CAS RN included in the linear alkylbenzene sulfonates group.**

| CAS Name  | CAS RN |
| --- | --- |
| Dodecylbenzenesulfonic acid | 27176-87-0 |
| 4-Dodecylbenzenesulfonic acid | 121-65-3 |
| Sodium decylbenzenesulfonate | 1322-98-1 |
| Ammonium dodecylbenzenesulfonate | 1331-61-9 |
| Sodium *p*-dodecylbenzenesulfonate | 2211-98-5 |
| Benzenesulfonic acid, dodecyl-, compound with morpholine (1:1) | 12068-08-5 |
| Benzenesulfonic acid, 4-dodecyl-, compd. with cyclohexanamine (1:1) | 14356-38-8 |
| Sodium dodecylbenzenesulfonate | 25155-30-0 |
| Benzenesulfonic acid, 2-decyl-, compd. with 4-decylbenzenesulfonate, sodium salt (1:4:4) | 22967-67-5 |
| Calcium dodecylbenzenesulfonate | 26264-06-2 |
| Dodecylbenzenesulfonic acid monoethanolamine salt | 26836-07-7 |
| Potassium dodecylbenzenesulfonate | 27177-77-1 |
| Magnesium dodecylbenzenesulfonate | 27479-45-4 |
| Benzenesulfonic acid, dodecyl-, compd. With *N,N*-diethylethanamine (1:1) | 29061-63-0 |
| Benzenesulfonic acid, 4-dodecyl-, compd. with 2-aminoethanol (1:1) | 58089-99-9 |
| Benzenesulfonic acid, mono-C10-16-alkyl derivatives, sodium salts | 68081-81-2 |
| Benzenesulfonic acid, dodecyldimethyl-, sodium salt (1:1) | 63428-97-7 |
| Benzenesulfonic acid, dodecyl-, compd. with 1,2-ethanediamine (1:?) | 67952-66-3 |
| Benzenesulfonic acid, C10-13-alkyl derivs., sodium salts | 68411-30-3 |
| Benzenesulfonic acid, dodecyl-, reaction products with ethanolamine | 68442-72-8 |
| Benzenesulfonic acid, C10-16-alkyl derivatives | 68584-22-5 |
| Benzenesulfonic acid, C10-16-alkyl derivatives, calcium salts | 68584-23-6 |
| Benzenesulfonic acid, C10-16-alkyl derivatives, potassium salts | 68584-27-0 |
| Benzenesulfonic acid, mono-C10-16-alkyl derivatives, ammonium salts | 68910-31-6 |
| Benzenesulfonic acid, mono-C10-16-alkyl derivatives, compounds with ethanolamine | 68910-32-7 |
| Benzenesulfonic acid, C10-14-alkyl derivatives, sodium salts | 69669-44-9 |
| Benzenesulfonic acid, mono-C10-13-alkyl derivatives, ammonium salts | 85480-54-2 |
| Benzenesulfonic acid, mono-C10-13-alkyl derivatives, compounds with ethanolamine | 85480-55-3 |
| Benzenesulfonic acid, mono-C10-13-alkyl derivatives, potassium salts | 85480-57-5 |
| Benzenesulfonic acid, 4-C10-13-*sec*-alkyl derivatives | 85536-14-7 |
| Benzenesulfonic acid, 4-C10-14-alkyl derivatives, compounds with ethanolamine | 85995-82-0 |
| Benzenesulfonic acid, 2(*or* 4)-C10-14-alkyl derivatives, compounds with isopropanolamine | 85995-83-1 |
| Benzenesulfonic acid, 4-C10-14-alkyl derivatives, calcium salts | 90194-26-6 |
| Benzenesulfonic acid, 4-C10-14-alkyl derivatives, compounds with ethylenediamine (1:1) | 90194-29-9 |
| Benzenesulfonic acid, 4-C10-14-alkyl derivatives, compounds with ethylenediamine (2:1) | 90194-30-2 |
| Benzenesulfonic acid, 4-C10-14-alkyl derivatives, sodium salts | 91696-66-1 |
| Benzenesulfonic acid, mono-C10-13-*sec*-alkyl derivatives, calcium salts | 97467-80-6 |
| Benzenesulfonic acid, C10-14-alkyl derivatives | 103818-94-6 |
| Benzenesulfonic acid, 4-C10-13-*sec*-alkyl derivatives, sodium salts | 127184-52-5  |

## Hazards and risks to the environment

The [environmental risk](https://www.industrialchemicals.gov.au/sites/default/files/2022-01/EVA00065%20-%20Evaluation%20statement%20-%2014%20January%202022%20%5B1803%20KB%5D.pdf) of the linear alkylbenzene sulfonates was assessed by the Australian Industrial Chemical Introduction Scheme (AICIS) as being not persistent, not bioaccumulative, and not toxic according to Australian Environmental Criteria for Persistent, Bioaccumulative and/or Toxic Chemicals.

They are classified under the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) as Aquatic Chronic Category 3 (‘Harmful to aquatic life with long lasting effects’) and Aquatic Acute Category 2 (‘Toxic to aquatic life’).

Taking into account the GHS chronic toxicity classification, the chemicals in this group, if used in Australia in accordance with the particular assessed use for the chemicals, have potential to cause harm to the environment.

## References

AICIS (2022). Linear alkylbenzene sulfonates, [Evaluation Statement [EVA00065]](https://www.industrialchemicals.gov.au/sites/default/files/2022-01/EVA00065%20-%20Evaluation%20statement%20-%2014%20January%202022%20%5B1803%20KB%5D.pdf), 14 January 2022, Australian Industrial Chemicals Introduction Scheme.

## More information

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Web [Industrial Chemicals Environmental Management Standard - IChEMS - DCCEEW](https://www.dcceew.gov.au/environment/protection/chemicals-management/national-standard)