Linear alkylbenzenesulfonic acids (C10-C16): Human health tier II assessment

11 April 2014

Chemicals in this assessment

Chemical Name in the Inventory	CAS Number
Benzenesulfonic acid, 4-dodecyl-	121-65-3
Benzenesulfonic acid, dodecyl-	27176-87-0
Benzenesulfonic acid, C10-16-alkyl derivatives	68584-22-5
Benzenesulfonic acid, C10-14-alkyl derivatives	103818-94-6

Preface

This assessment was carried out by staff of the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) using the Inventory Multi-tiered Assessment and Prioritisation (IMAP) framework.

The IMAP framework addresses the human health and environmental impacts of previously unassessed industrial chemicals listed on the Australian Inventory of Chemical Substances (the Inventory).

The framework was developed with significant input from stakeholders and provides a more rapid, flexible and transparent approach for the assessment of chemicals listed on the Inventory.

Stage One of the implementation of this framework, which lasted four years from 1 July 2012, examined 3000 chemicals meeting characteristics identified by stakeholders as needing priority assessment. This included chemicals for which NICNAS already held exposure information, chemicals identified as a concern or for which regulatory action had been taken overseas, and chemicals detected in international studies analysing chemicals present in babies' umbilical cord blood.

Stage Two of IMAP began in July 2016. We are continuing to assess chemicals on the Inventory, including chemicals identified as a concern for which action has been taken overseas and chemicals that can be rapidly identified and assessed by using Stage One information. We are also continuing to publish information for chemicals on the Inventory that pose a low risk to human health or the environment or both. This work provides efficiencies and enables us to identify higher risk chemicals requiring assessment.

The IMAP framework is a science and risk-based model designed to align the assessment effort with the human health and environmental impacts of chemicals. It has three tiers of assessment, with the assessment effort increasing with each tier. The Tier I assessment is a high throughput approach using tabulated electronic data. The Tier II assessment is an evaluation of risk on a substance-by-substance or chemical category-by-category basis. Tier III assessments are conducted to address specific concerns that could not be resolved during the Tier II assessment.

These assessments are carried out by staff employed by the Australian Government Department of Health and the Australian Government Department of the Environment and Energy. The human health and environment risk assessments are conducted and published separately, using information available at the time, and may be undertaken at different tiers.

This chemical or group of chemicals are being assessed at Tier II because the Tier I assessment indicated that it needed further investigation.

For more detail on this program please visit:**www.nicnas.gov.au**

Disclaimer

ACRONYMS & ABBREVIATIONS

Grouping Rationale

The chemicals in this group are structurally related linear alkylbenzenesulfonic acids (LASAs). These chemicals can have an alkyl chain length between 10 and 16 carbon atoms. The carbon chain distribution of the chemicals will vary depending on the method of production and the source of the precursor chemicals. The average molecular weight is expected to be similar to that of dodecylbenzenesulfonic acid (CAS No. 27176-87-0).

The chemicals are usually a mixture of homologues and phenyl positional isomers, each containing a sulfonated aromatic ring and a linear alkyl chain attached at any position except for the sulfonated carbon (IPCS 1996). The proportions are determined by the starting materials. They are manufactured by reacting the parent alkylbenzenes with sulfuric acid or sulfur trioxide to give the corresponding sulfonic acid. This would be expected to give mostly 2- and 4-substitution, with a steric preference for 4.

The chemicals in this group are typically used as intermediates in other chemical processes. Additionally, most of the chemicals in this group have similar end uses, typically in cleaning and washing products.

The chemicals in this group are expected to have similar toxicity and they share similar physico-chemical properties, including density and melting points.

Import, Manufacture and Use

Australian

The following Australian industrial uses were reported under previous mandatory and/or voluntary calls for information:

The chemicals benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) and dodecylbenzenesulfonic acid (CAS No. 27176-87-0) have reported domestic uses in cleaning and washing agents and as additives.

The chemical benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5)

has reported site-limited use in the manufacture of other chemicals.

Benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) is listed on the 2006 High Volume Industrial Chemicals List (HVICL) with a total reported volume of 1000–10000 tonnes.

Dodecylbenzenesulfonic acid (CAS No. 27176-87-0) and C10–16 alkylbenzenesulfonic acid (CAS No. 68584-22-5) have been listed in Australian safety data sheets (SDS) for commercial and domestic cleaning products at up to 30 % concentration (concentrations are typically below 10 %).

International

The following international uses have been identified through European Union Registration, Evaluation, Authorisation and Restriction of Chemicals (EU REACH) dossiers; the Organisation for Economic Cooperation and Development Screening Information Dataset Initial Assessment Report (OECD SIAR); Galleria Chemica; Substances and Preparations in the Nordic countries (SPIN) database; the European Commission Cosmetic Ingredients and Substances (CosIng) database; United States (US) Personal Care Product Council International Nomenclature of Cosmetic Ingredients (INCI) dictionary; eChemPortal: OECD High Production Volume chemical program (OECD HPV), the US Environmental Protection Agency's Aggregated Computational Toxicology Resource (ACToR), and the US National Library of Medicine's Hazardous Substances Data Bank (HSDB).

Dodecylbenzenesulfonic acid (CAS No. 27176-87-0) is reported in the CosIng database with identified cosmetic functions of cleansing and as a surfactant.

Linear alkylbenzenesulfonic acids (LASAs) are reported to be primarily as an intermediate in the production of linear alkylbenzenesulfonates (LASs) (US EPA, 2004). Other site limited uses reported for dodecylbenzenesulfonic acid (CAS No. 27176-87-0) include in the manufacture of:

- anti-static agents;
- lubricants; and
- reprographic agents.

The chemicals have reported domestic use including:

- in paints, lacquers and varnishes;
- as a surface treatment; and
- in cleaning and washing agents.

The chemicals dodecylbenzenesulfonic acid (CAS No. 27176-87-0) and benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) are reported to be present in a range of domestic cleaning products (car, laundry and surface cleaners) up to a concentration of 30 % (concentrations are typically below 10 %) (Household Products Database, US Department of Health and Human Services).

The chemicals have reported commercial use including in fuel additives.

The is no international use information available for the C10–14 alkylbenzenesulfonic acid (CAS No. 103818-94-6).

Dodecylbenzenesulfonic acid (CAS No. 27176-87-0) and C10–16 alkylbenzenesulfonic acid (CAS No. 68584-22-5) have reported non-industrial use in preservatives and agricultural pesticides.

Restrictions

Australian

No known restrictions have been identified.

International

Food packaging

Dodecylbenzenesulfonic acid (CAS No. 27176-87-0) may be used to manufacture plastic materials and articles with a specific migration limit (SML) of 30 mg/kg (EU Directive 2002/72/EC).

Existing Worker Health and Safety Controls

Hazard Classification

Dodecylbenzenesulfonic acid (CAS No. 27176-87-0) is classified as hazardous, with the following risk phrases for human health in the Hazardous Substances Information System (HSIS) (Safe Work Australia):

R38: Irritating to skin.

R41: Risk of serious eye damage

R43: May cause sensitisation by skin contact

Exposure Standards

Australian

No specific exposure standards are available.

International

No specific exposure standards are available.

Health Hazard Information

Limited data are available for this group of chemicals. The chemicals are expected to exist almost entirely as the linear alkylbenzenesulfonate (LAS) anions at the pH of biological solutions. Sodium, magnesium and ammonium salts of linear alkylbenzenesulfonic acids, which also exist as the LAS anion in biological solutions, are considered to be suitable analogues for the chemicals. The cation component of these analogue chemicals is not expected to contribute significantly towards toxicity of these chemicals.

Toxicokinetics

No toxicokinetic data are available for these chemicals.

The analogue chemicals (LASs) are readily absorbed through the gastrointestinal tract, are distributed throughout the body and are extensively metabolised. The parent compound and metabolites are excreted primarily in the urine and faeces. However, the main route of excretion is isomer dependent. The limited evidence available shows that dermal absorption of LASs is low, although prolonged contact may compromise the dermal barrier and allow increased absorption to occur (NICNAS).

Acute Toxicity

Oral

The chemicals benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) and dodecylbenzenesulfonic acid (CAS No. 27176-87-0) were of moderate acute toxicity in animal tests following oral exposure. The reported median lethal dose (LD50) values in rats range from 530–1470 mg/kg bw (IUCLID 2000a; IUCLID 2000b, US EPA, 2004).

The analogue chemicals (LASs) are also of moderate acute toxicity via the oral route in rats and mice with LD50 values ranging from 404–1470 mg/kg bw in rats and 1250–2300 mg/kg bw in mice. Reported signs of toxicity include piloerection, diarrhoea, weakness and changes in motor activity. Convulsions, torsion and paralysis of the hind limbs were also observed in mice (NICNAS).

The data available support classification for acute oral toxicity (refer to **Recommendation** section).

Dermal

Limited data are available. The chemicals may be of moderate acute toxicity following dermal exposure but the data are not sufficient to warrant classification. A classification for corrosion is, however, warranted (refer to **Irritation** section).

In an acute dermal toxicity study in rabbits, benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) was applied at two doses: 2000 mg/kg (undiluted) and 212 mg/kg (2 % aqueous dilution). Three out of six rabbits exposed to the undiluted dose died (LD50 = 2000 mg/kg bw). Chemical burns, severe oedema and necrosis were observed. All the animals exposed to 212 mg/kg of this chemical survived. Local skin reactions observed included erythema, mild oedema and mild desquamation (US EPA, 2004). Benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) also has a reported LD50 value in the range 530–1060 mg/kg bw (IUCLID, 2000a) but sufficient study details are not available to assess the reliability of this value.

Whilst several unreliable studies indicating moderate dermal toxicity are available for the analogue chemicals (LASs), sodium (C10–13)-alkylbenzenesulfonate (CAS No. 68411-30-0) was of low acute toxicity in animal tests following dermal exposure (LD50 greater than 2000 mg/kg bw) (NICNAS) .

Inhalation

No data are available for the chemicals.

The analogue chemicals (LASs) may be toxic by inhalation. However, the data available are not sufficient to allow hazard classification. Mortalities (3/8 animals) were observed in an acute inhalation study in rats, at aerosol concentrations of 0.31 mg/L for four hours. The median lethal concentration (LC50) was not determined. Observed sub-lethal effects included clear to red nasal discharge (NICNAS).

Corrosion / Irritation

Skin Irritation

Benzenesulfonic acid, dodecyl- (CAS No. 27176-87-0) is currently classified as hazardous with the risk phrase 'Irritating to skin' (R38) in HSIS (Safe Work Australia). The available data support an amendment to this classification (refer to **Recommendation** section) to reflect the findings reported below. The recommended classification should apply to all chemicals being assessed in this group.

The chemicals (LASAs) are strongly acidic with a pH <2 (IUCLID, 2000a; IUCLID 2000b; US EPA 2004). Therefore, it can be predicted that, when applied to healthy intact skin, full thickness destruction of the skin tissue is possible.

The chemical benzenesulfonic acid, dodecyl- (CAS No. 27176-87-0) was applied to intact rabbit skin for four hours. The primary dermal irritation scores were 3.4, 6.3, and 7.0 at four, 24, and 48 hours, respectively (US EPA, 2004).

The chemical, benzenesulfonic acid, C10-16-alkyl derivatives (CAS No. 68584-22-5) was reported to be corrosive to rabbit skin following a 10-minute exposure (IUCLID 2000a) and caused chemical burns, severe oedema and necrosis in an acute dermal toxicity study (see **Acute toxicity: dermal**).

Eye Irritation

Benzenesulfonic acid, dodecyl- (CAS No. 27176-87-0) is currently classified as hazardous with the risk phrase 'Risk of serious damage to eyes' (Xi; R41) in HSIS (Safe Work Australia). Whilst limited test data are available and given that corrosive chemicals are also considered to cause irreversible effects to the eyes, this classification is implicit within the proposed corrosivity classification.

Sensitisation

Skin Sensitisation

The limited data available indicate that the chemicals (LASAs) are not skin sensitisers. The chemical benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) was reported to be non-sensitising in two guinea pig maximisation tests (GPMT) (IUCLID 2000a). No study details are available. Another LASA, benzenesulfonic acid, C10–13 (not listed on the AICS) was also not sensitising in a GPMT (US EPA, 2004). The analogue chemicals (LASs) were not considered to be skin sensitisers (NICNAS). Based on this information, it is proposed that the chemicals should not be classified as skin sensitisers.

Observation in humans

There was no evidence of skin sensitisation in human repeated insult patch tests (HRIPT) with the analogue chemicals (LASs) (NICNAS).

Repeated Dose Toxicity

Oral

Based on the available data, the chemicals are not considered to cause serious damage to health from repeated oral exposure.

In a 28-day oral gavage study in rats, a no observed adverse effect level (NOAEL) of 100 mg/kg bw/day was reported for dodecylbenzenesulfonic acid (CAS No. 27176-87-0). The stomach was the target organ with forestomach erosion and/or ulcer observed in males at 400 mg/kg bw/day, and squamous cell hyperplasia of the stomach observed in both sexes at 200 mg/kg bw/day. Minor biochemical and organ weight changes were also observed. Effects were reported to be completely or partially reversed during the 15-day recovery period (OECD, 2009).

Similar effects were observed in studies of up to two years' duration, for the analogue chemicals (LASs), with reported NOAEL values ranging from 40–250 mg/kg bw/day (NICNAS).

Dermal

Based on the studies available for dermal exposure to the analogue chemicals (LASs), no adverse systemic effects are expected. However, the chemicals in this group may compromise the integrity of the skin (either by surfactant action and/or extreme pH) and increase dermal absorption of other chemicals in LAS containing product formulations.

The analogue chemicals (LASs) produced no treatment-related systemic effects in repeated dose dermal toxicity studies in rats. Severe necrosis and severe infiltration of leukocytes at the application site were observed in one 15 day study in which LAS (20 and 30 %) was applied to the backs of male Wistar rats (NICNAS).

Inhalation

No data are available.

Genotoxicity

Based on the weight of evidence from the available in vitro and in vivo genotoxicity studies, the chemicals are not considered to be genotoxic.

The chemicals benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) and dodecylbenzenesulfonic acid (CAS No. 27176-87-0) were negative in a bacterial reverse mutation test (Ames test) in *Salmonella typhimurium*, with or without metabolic activation (IUCLID, 2000a; IUCLID 2000b; US EPA 2004; OECD, 2009). Dodecylbenzenesulfonic acid (CAS No. 27176-87-0) was also negative in an in vitro chromosome aberration study using Chinese hamster lung (CHL) cells, both in the absence and the presence of metabolic activation system.

Benzenesulfonic acid, C10–16-alkyl derivatives (CAS No. 68584-22-5) and another LASA, benzenesulfonic acid, C10–13 (not listed on the AICS) were reported to be negative in an in vivo mouse micronucleus assay (IUCLID 2000a, US EPA 2004).

The analogue chemicals (LASs) are also not considered to be genotoxic (NICNAS).

Carcinogenicity

No data are available for the chemicals.

Based on the weight of evidence from the available carcinogenicity studies for the analogue chemicals (LASs), in which there was no evidence of tumourigenesis (NICNAS), the chemicals in this group are not likely to be carcinogens.

Reproductive and Developmental Toxicity

The chemical dodecylbenzenesulfonic acid (CAS No. 27176-87-0) has been tested in a reproductive toxicity study according to the reproduction/developmental toxicity screening test [OECD TG 422]. There were no fertility or developmental effects observed and the maternal and foetal NOAELs were 400 mg/kg bw/day, the top dose tested (OECD, 2009).

Developmental effects observed in studies using the analogue chemicals (LASs) (including embryo death, deformities and litter loss) were only observed at maternally toxic doses (NICNAS).

Risk Characterisation

Critical Health Effects

The critical health effects for risk characterisation include systemic acute effects (acute toxicity by oral exposure) and local effects (corrosion and eye damage).

Public Risk Characterisation

The available use information indicates that these chemicals may be available in domestic cleaning products, laundry detergents and auto cleaning products (available as liquid/pump spray formulations) at concentrations up to 30 % (although typical concentration is <10 %) (refer to **Use** section). Other surfactants may also be present in products containing the chemicals.

Although use in cosmetic products in Australia has not been identified, these chemicals are reported to be used in cosmetic products overseas (CosIng). It is predicted that cosmetic formulations will be buffered to achieve a neutral pH. Therefore, if the concentrations in cosmetics are low and the formulations are neutralised with a salt, corrosive effects are not expected. As public exposure to high concentrations of the chemicals is not expected through cosmetic uses, the risk to public health from this use is not considered to be unreasonable and further risk management is not considered necessary for public safety.

The main routes of public exposure to these chemicals are expected to be through the skin or by accidental ingestion via the mouth. Where high concentrations of these chemicals are used in domestic products, the potential risk of accidental contact with skin and eyes is of concern. Incidental oral exposure resulting in oral toxicity is considered less likely given the types of products in which the chemicals are used. The effects due to inhalation toxicity are not considered to be relevant to exposure to the public. The types of spray products (pump sprays) that may contain these chemicals are designed to produce large particles to efficiently deliver the spray to the surface being cleaned. In practice, 95–99 % of cosmetic and commercial sprays have a mean aerodynamic equivalent diameter of >10 µm. This means the chemicals are more likely to have inhalable fractions that can be cleared through the mucociliary action of the lungs (CIR 2012).

Currently, there are no restrictions in Australia on using these chemicals in domestic products. In the absence of any regulatory controls, the characterised critical health effects (particularly corrosion and serious eye damage) have the potential to pose an unreasonable risk under the uses identified. This could be mitigated by appropriate labelling taking into account the total surfactant concentration in the products.

Occupational Risk Characterisation

During product formulation, dermal, ocular and inhalation exposure of workers to the chemicals in this group may occur, particularly where manual or open processes are used. These may include transfer and blending activities, quality control analysis, and cleaning and maintenance of equipment. Worker exposure to these chemicals at lower concentrations may also occur while using formulated products containing the chemicals. The level and route of exposure will vary depending on the method of application and work practices employed.

Given the critical systemic acute and local health effects, the chemicals may pose an unreasonable risk to workers unless adequate control measures to minimise dermal, ocular and inhalation exposure to the chemicals are implemented. The chemicals should be appropriately classified and labelled to ensure that a person conducting a business or undertaking (PCBU) at a workplace (such as an employer) has adequate information to determine appropriate controls. The data available support an amendment to the hazard classification in HSIS (refer to **Recommendation** section).

NICNAS Recommendation

Further risk management is required. Sufficient information is available to recommend that risks to public health and safety from the potential use of these chemicals in cosmetic and domestic products be managed through changes to poisons scheduling, and risks for workplace health and safety be managed through changes to classification and labelling.

Assessment of these chemicals is considered to be sufficient provided that risk management recommendations are implemented and all requirements are met under workplace health and safety and poisons legislation as adopted by the relevant state or territory.

Regulatory Control

Public Health

Appropriate scheduling and labelling should be undertaken to mitigate risk for the chemicals' use in domestic and cosmetic products. Due to the toxicity profile at concentrations reported to be potentially in use, these chemicals should be considered for listing in Schedule 6 of the SUSMP, consistent with the Scheduling Policy Framework guidelines. Matters to be taken into consideration include:

- the available use information indicates that the chemicals may be available in domestic cleaning products, laundry detergents and auto cleaning products at concentrations up to 30 % (although typical concentration is <10 %);
- corrosive effects in rabbit skin were observed following 10 minutes of exposure to the chemicals, although the formulation of domestic and cosmetic products is expected to mitigate this risk to a certain extent;
- exemptions to scheduling may be applicable at low concentrations or when labelled with a warning of corrosive effects and risk of eye damage; and
- the available use information, which indicates that other surfactants may also be present in products containing these chemicals; therefore, consideration of these chemicals as part of a broader schedule entry taking into account the total surfactant concentration, may be appropriate.

Work Health and Safety

These chemicals are recommended for classification and labelling under the current approved criteria and adopted GHS as below. This assessment does not consider classification of physical hazards and environmental hazards.

NB: The current classification for R41 (Risk of serious eye damage) is included within the proposed corrosivity classification.

Hazard	Approved Criteria (HSIS)[a]	GHS Classification (HCIS)[b]
Acute Toxicity	Harmful if swallowed (Xn; R22)	Harmful if swallowed - Cat. 4 (H302)
Irritation / Corrosivity	Causes burns (C; R34)	Causes severe skin burns and eye damage - Cat. 1B (H314)

[a] Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)].

[b] Globally Harmonized System of Classification and Labelling of Chemicals (GHS) United Nations, 2009. Third Edition.

[*] Existing Hazard Classification. No change recommended to this classification

Advice for consumers

Products containing these chemicals should be used according to the instructions on the labels.

Advice for industry

Control measures

Control measures to minimise the risk from dermal, ocular and inhalation exposure to the chemicals should be implemented in accordance with the hierarchy of controls. Approaches to minimise risk include substitution, isolation and engineering controls. Measures required to eliminate or minimise risk arising from storing, handling and using a hazardous chemical depend on the physical form and the manner in which the chemical is used. Examples of control measures which may minimise the risk include, but are not limited to:

- using closed systems or isolating operations;
- using local exhaust ventilation to prevent the chemical from entering the breathing zone of any worker;
- minimising manual processes and work tasks through automating processes;
- work procedures that minimise splashes and spills;
- regularly cleaning equipment and work areas; and
- using protective equipment that is designed, constructed, and operated to ensure that the worker does not come into contact with the chemical.

Guidance on managing risks from hazardous chemicals are provided in the *Managing risks of hazardous chemicals in the workplace—Code of practice* available on the Safe Work Australia website.

Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

Obligations under workplace health and safety legislation

Information in this report should be taken into account to assist with meeting obligations under workplace health and safety legislation as adopted by the relevant state or territory. This includes, but is not limited to:

- ensuring that hazardous chemicals are correctly classified and labelled;
- ensuring that (material) safety data sheets ((m)SDS) containing accurate information about the hazards (relating to both health hazards and physicochemical (physical) hazards) of the chemical are prepared; and
- managing risks arising from storing, handling and using a hazardous chemical.

Your work health and safety regulator should be contacted for information on the work health and safety laws in your jurisdiction.

Information on how to prepare an (m)SDS and how to label containers of hazardous chemicals are provided in relevant codes of practice such as the *Preparation of safety data sheets for hazardous chemicals— Code of practice* and *Labelling of workplace hazardous chemicals—Code of practice*, respectively. These codes of practice are available from the Safe Work Australia website.

A review of the physical hazards of these chemicals has not been undertaken as part of this assessment.

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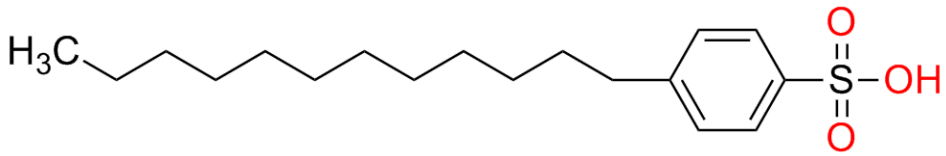
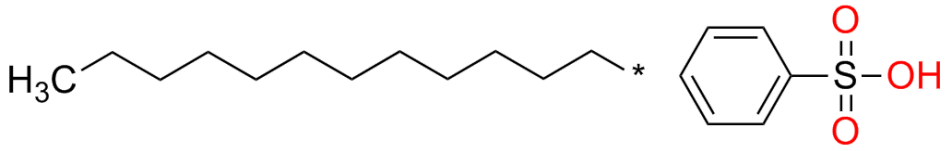
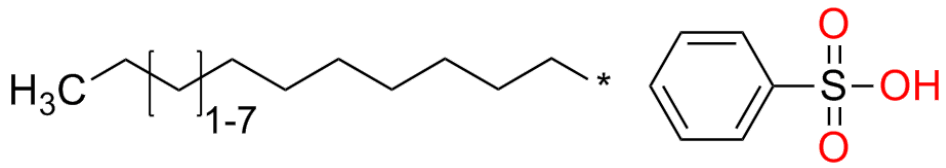
Last Update 11 April 2014

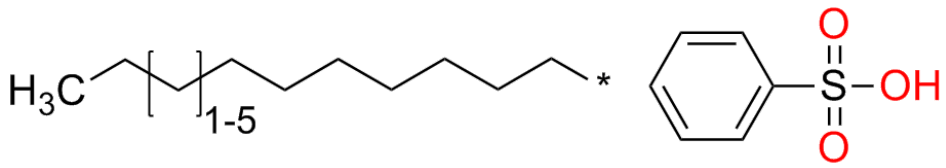
Chemical Identities

Chemical Name in the Inventory and Synonyms	**Benzenesulfonic acid, 4-dodecyl-** 4-Dodecylbenzenesulfonic acid p-dodecylbenzenesulphonic acid Benzenesulfonic acid, p-dodecyl-
CAS Number	121-65-3
Structural Formula	
Molecular Formula	C18H30O3S
Molecular Weight	326.49

Chemical Name in the Inventory and Synonyms	**Benzenesulfonic acid, dodecyl-** Dodecylbenzenesulfonic acid Benzenesulfonic acid, dodecyl
CAS Number	27176-87-0
Structural Formula	

	
Molecular Formula	C18H30O3S
Molecular Weight	326.49

Chemical Name in the Inventory and Synonyms	**Benzenesulfonic acid, C10-16-alkyl derivatives** (C10-16) Alkylbenzenesulfonic acid (C10-C16) Saturated alkylbenzenesulfonic acid
CAS Number	68584-22-5
Structural Formula	
Molecular Formula	Unspecified
Molecular Weight	

Chemical Name in the Inventory and Synonyms	**Benzenesulfonic acid, C10-14-alkyl derivatives** (C10-14)-alkylbenzenesulfonic acid
CAS Number	103818-94-6
Structural Formula	
Molecular Formula	Unspecified
Molecular Weight	

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