

GHS Classification

ID341

Undecylbenzenesulfonic acid (C11)

CAS 50854-94-9

Date Classified: Oct. 23, 2006 (Environmental Hazards: Jan. 25, 2007)

Physical Hazards

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Explosives	Not applicable	—	—	—	Containing no chemical groups with explosive properties
2 Flammable gases	Not applicable	—	—	—	Classified as "liquid" or "solid" according to GHS definition
3 Flammable aerosols	Not applicable	—	—	—	Not aerosol products
4 Oxidizing gases	Not applicable	—	—	—	Classified as "liquid" or "solid" according to GHS definition
5 Gases under pressure	Not applicable	—	—	—	Classified as "liquid" or "solid" according to GHS definition
6 Flammable liquids	Classification not possible (liquid)	—	—	—	No data available
7 Flammable solids	Not classified (solid)	—	—	—	Classified into Class 8 (UN#2585 Alkyl sulfonic acids (solid) or Aryl sulfonic acids (solid) (with not more than 5% free sulfuric acid)) (UN Recommendation on the Transport of Dangerous Goods).
8 Self-reactive substances and mixtures	Not classified	—	—	—	No data available, though being sulfonyls, containing chemical groups with self-reactive properties. Classified into Class 8 (UN#2585 Alkyl sulfonic acids (solid) or Aryl sulfonic acids (liquid) (with not more than 5% free sulfuric acid), UN#2586 Alkyl sulfonic acids (liquid) or Aryl sulfonic acids (liquid) (with not more than 5% free sulfuric acid)) (UN Recommendation on the Transport of Dangerous Goods).
9 Pyrophoric liquids	Not classified (liquid)	—	—	—	Classified into Class 8 (UN#2586 Alkyl sulfonic acids (liquid) or Aryl sulfonic acids (liquid) (with not more than 5% free sulfuric acid)) (UN Recommendation on the Transport of Dangerous Goods).
10 Pyrophoric solids	Not classified (solid)	—	—	—	Classified into Class 8 (UN#2585 Alkyl sulfonic acids (solid) or Aryl sulfonic acids (solid) (with not more than 5% free sulfuric acid)) (UN Recommendation on the Transport of Dangerous Goods).
11 Self-heating substances and mixtures	Classification not possible	—	—	—	No data available
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	—	—	—	Containing no metals or metalloids (B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At)
13 Oxidizing liquids	Not classified (liquid)	—	—	—	No data available, though being organic compounds containing oxygen bound to the elements other than carbon and hydrogen. Classified into Class 8 (UN#2586 Alkyl sulfonic acids (liquid) or Aryl sulfonic acids (liquid) (with not more than 5% free sulfuric acid)) (UN Recommendation on the Transport of Dangerous Goods).
14 Oxidizing solids	Not classified (solid)	—	—	—	Organic compounds containing oxygen bound to the elements other than carbon and hydrogen. Classified into Class 8 (UN#2585 Alkyl sulfonic acids (solid) or Aryl sulfonic acids (solid) (with not more than 5% free sulfuric acid)) (UN Recommendation on the Transport of Dangerous Goods).
15 Organic peroxides	Not applicable	—	—	—	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Classification not possible	—	—	—	Classification not possible due to lack of data. Classified into "Corrosive Substances" by the UN Recommendations on the Transport of Dangerous Goods. However, the category includes skin corrosivity, and it is unclear whether the substance is classified as "metal" corrosive (UN#2585 Alkyl sulfonic acids (solid) or Aryl sulfonic acids (solid) (with not more than 5% free sulfuric acid), UN#2586 Alkyl sulfonic acids (liquid) or Aryl sulfonic acids (liquid) (with not more than 5% free sulfuric acid)).

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 4	Exclamation mark	Warning	Harmful if swallowed	Based on the LD50 value of 502mg/kg calculated from the testing data of rat LD50 (oral route) of 404mg/kg (males), 409mg/kg (females), 659mg/kg (males), 670mg/kg (females), 760mg/kg (females) and 873mg/kg (males) (CERI-NITE Hazard Assessment No.5 (2005)). (LAS mixtures with carbon chain lengths of 10-14; no data available on undecylbenzenesulfonic acid per se).
1 Acute toxicity (dermal)	Classification not possible	—	—	—	No data available
1 Acute toxicity (inhalation: gas)	Not applicable	—	—	—	Due to the fact that the substance is "liquid" or "solid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	—	—	—	No data available
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	—	—	—	No data available
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Based on the description in the report on human epidemiological studies (CERI-NITE Hazard Assessment No.5 (2005)): "24 hour application of 1% aqueous solution of LAS induced moderate irritation." The substance is thus considered a moderate irritant (LAS mixtures with carbon chain lengths of 10-14; no data available on undecylbenzenesulfonic acid per se).
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	Based on the description in the report on rabbit eye irritation tests (CERI-NITE Hazard Assessment No.5 (2005)): "Application of 5% solution produced severe congestion and edema." The substance is thus considered a severe irritant (LAS mixtures with carbon chain lengths of 11-13; no data available on undecylbenzenesulfonic acid per se).
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Category 1	(Respiratory sensitization) — (Skin sensitization) Exclamation mark	(Respiratory sensitization) — (Skin sensitization) Warning	(Respiratory sensitization) — (Skin sensitization) May cause an allergic skin reaction	Respiratory sensitization: No data available Skin sensitization: Based on the description in the report on guinea pig skin sensitization tests (CERI Hazard Data 2001-20 (2002) and CERI-NITE Hazard Assessment No.5 (2004)): "Skin sensitization: positive" (linear alkylbenzenesulfonate and its salts (the carbon chain length unknown): No data available on undecylbenzenesulfonic acid per se).

5	Germ cell mutagenicity	Classification not possible	—	—	—	Classification not possible due to the insufficiency of data (no definite data are available regarding undecylbenzenesulfonic acid per se). As for linear alkylbenzene sulphonate (LAS) and its salts [carbon chain lengths of 10–14 and their mixtures], no data are available on germ cell mutagenicity tests in vivo, whereas multi-generation mutagenicity tests (dominant lethal tests), somatic cell mutagenicity tests in vivo (micronucleus tests, chromosome aberration tests) and Ames assay gave negative results, described in NTP DB (Access on June, 2006), CERI-NITE Hazard Assessment No.5 (2005) and EHC 169 (1996).
6	Carcinogenicity	Classification not possible	—	—	—	Classification not possible based on expert judgment in the absence of existing classification together with the absence of definite data on undecylbenzenesulfonic acid per se. CERI-NITE Hazard Assessment No.5 (2005) presents some data regarding carcinogenicity studies on linear alkylbenzene sulphonate (LAS) and its salts [carbon chain lengths of 10–14 and their mixtures].
7	Toxic to reproduction	Classification not possible	—	—	—	Classification not possible due to the insufficiency of data (no definite data are available regarding undecylbenzenesulfonic acid per se). As for linear alkylbenzene sulphonate (LAS) and its salts [carbon chain lengths of 10–14 and their mixtures], there was no evidence of adverse effects on the parental animals and the offspring observed in oral studies, whereas decreased fertility and increased incidence of malformation in the offspring were observed at doses inducing parental toxicity in dermal studies, described in CERI-NITE Hazard Assessment No.5 (2005) and EHC 169 (1996).
8	Specific target organs/systemic toxicity following single exposure	Classification not possible	—	—	—	Classification not possible in the absence of data on undecylbenzenesulfonic acid per se. Note: As for linear alkylbenzene sulphonate (LAS) and its salts [carbon chain lengths of 10–14 and their mixtures], "clinical symptoms include confusion, vomiting, pharyngeal and oral pains, and the tendency of blood pressure to decrease" (NITE Initial Risk Assessment No.5 (2005)).
9	Specific target organs/systemic toxicity following repeated exposure	Classification not possible	—	—	—	Classification not possible due to the fact that the only available data are those for mixtures of C10–14.
10	Aspiration hazard	Classification not possible	—	—	—	No data available

Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 2	—	—	Toxic to aquatic life	It was classified into Category 2 from 48 hours LC50=1.15mg/L of the crustacea (Daphnia magna) (EHC169 (1996)). [NOTE]Since it may show same behavior of sodium salt in the environment, it was classified by the data of sodium undecylbenzenesulfonate(C11).
11 Hazardous to the aquatic environment (chronic)	Not classified	—	—	—	Since there was rapidly degrading (the decomposition of p-n-dodecylbenzenesulfonic acid sodium salt by BOD: 73% (Existing Chemical Safety Inspections Data)) and the bio-accumulation was low (log Kow=2.51(PHYSPROP Database, 2005)), it was classified into Not classified. [NOTE]Since it may show same behavior of sodium salt in the environment, it was classified by the data of undecylbenzenesulfonic acid sodium salt(C11).