Sulfamic Acid data for
Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
to
REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT
AND OF THE COUNCIL
of 18 December 2006

A. Data to identity the substance (Annex VI no. 2)
1. Name or order identifier of each substance: Amidosulfonic acid, amidosulfuric acid, aminosulfonic acid, sulfamidic acid
2. Name(s) in the IUPAC nomenclature or other international chemical name(s): Sulfamic acid
3. Other names (usual name, trade name, abbreviation): Sulfamic acid
4. EINECS or ELINCs number (if available and appropriate): EC No. 226-218-8
5. CAS name and CAS number (if available): Sulfamic Acid 5329-14-6
6. Other identity code (if available): NIOSH Registry No. WO 5950000
7. Information related to molecular and structural formula of each substance: H2NSO3H
8. Molecular and structural formula (including Smiles notation, if available): H3NO3S
9. Information on optical activity and typical ratio of (stereo) isomers (if applicable and appropriate): Not applicable
10. Molecular weight or molecular weight range: 97.09
11. Composition of each substance: Sulfamic acid
12. Degree of purity (%): 99.8 % min.
13. Nature of impurities, including isomers and by-products: Ammonium bisulfate, water
14. Percentage of (significant) main impurities: 0.036 wt % of Ammonium bisulfate, 0.05% of water
15. Nature and order of magnitude (ppm, %) of any additives (e.g. establising agents or inhibitors): –
16. Spectral data (ultra-violet, infra-red, nuclear magnetic resonance or mass spectrum): –
17. High-pressure liquid chromatogram, gas chromatogram: –

B. Data on physicochemical properties (Annex VII no. 7)
1. State of the substance at 20°C and 101,3 kPa: Solid
2. Melting/freezing point: 205 °C (401 °F)
3. Boiling point: Decomposes
4. (relative) Density: 2.126 g/cm³ at 25 °C
5. Vapour pressure (mmHg): 0.0078 hPa
6. Surface tension: Not available
7. Water solubility: 17.6 % WT (21.3 g/100 g H₂O) at 20 °C
8. Partition coefficient n-octanol/water: Not tested to inorganic
9. Flash-point: Not relevant
10. Flammability: Non flammable
11. Explosive properties: Non explosive
12. Self-ignition temperature: Not relevant
13. Oxidising properties: Not oxidizing
14. Granulometry: Through 10 mesh

**Further data on physicochemical properties (Annex IX no. 7)**
15. Stability in organic solvents and identity of relevant degradation products: Not tested to inorganic
16. Dissociation constant: 0.101 (at 25 °C)
17. Viscosity: Not applicable

**C. Data on toxicological properties (Annex VII no. 8)**

1. Skin irritation or skin corrosion (the assessment of this endpoint shall comprise the following consecutive steps)
   (1) an assessment of the available human and animal data;
   (2) an assessment of the acid or alkaline reserve;
   (3) in vitro study for skin corrosion;
   (4) in vitro study for skin irritation

   **Data:** Skin irritation test (rabbit): Irritations (OECD 404)
   **Source:** Safety Data Sheet of Merck for Sulfamic acid

2. Eye irritation (the assessment of this endpoint shall comprise the following consecutive steps)
   (1) an assessment of the available human and animal data;
   (2) an assessment of the acid or alkaline reserve;
   (3) in vitro study for eye irritation.

   **Data:** Eye irritation test (rabbit): Severe irritations (OECD 405)
   **Source:** Safety Data Sheet of Merck for Sulfamic acid

3. Skin sensitization (the assessment of this endpoint shall comprise the following consecutive steps)
   (1) an assessment of the available human, animal and alternative data;
   (2) In vivo testing.

   **Data:** No sensitizing effect
   **Source:** Safety Data Sheet of Merck for Sulfamic acid

4. Mutagenicity (in vitro gene mutation study in bacteria)

   **Data:** Ames test: negative
   **Source:** Safety Data Sheet of Merck for Sulfamic acid

5. Acute toxicity (by oral route)

   **Data:** LD$_{50}$ (oral, rat): 3160 mg/kg
   **Source:** Safety Data Sheet of Merck for Sulfamic acid

**Further data on toxicological properties (Annex VIII no. 8)**

6. Skin irritation (in vivo skin irritation)
Data : Irritation
7. Eye irritation (in vivo eye irritation)

Data : Irritation
8. Mutagenicity
8.1. in vitro cytogenicity study in mammalian cells;
8.2 in vitro gene mutation study in mammalian cells

Data : Mammal cell test : micronucleus negative
Source : Safety Data Sheet of Merck for Sulfamic acid

9. Acute toxicity (by inhalation; by dermal route)

Data : After inhalation of dust : Irritation symptoms in the respiratory tract, coughing, dyspnoea
Source : Safety Data Sheet of Merck for Sulfamic acid

10. Repeated dose toxicity (28 days)

Data : Not available

11. Reproductive toxicity (Screening; OECD 421 or 422)

Data : Not available

12. Toxicokinetics (assessment)

Data : Not available

Further data on toxicological properties (Annex IX no. 8)
13. Repeated dose toxicity
13.1. Short term repeated dose toxicity study (28 days)
13.2. Sub-chronic toxicity study (90-day)

Data : Rat : at 20000 ppm delayed growth and slightly reduced food ingestion, as well as weight increase in different relative organs – some animals displayed slight fattiness in kidney tubules (completely reversible). (OECD 408)

Source : Albright & Wilson Ltd. Warley

14. Reproductive toxicity (prenatal developmental toxicity study; two-generation study)

Data : not available

Further data on toxicological properties (Annex X no. 8)
15. Reproductive toxicity (OECD 414; two-generation study)
16. Carcinogenicity study

Data : not available

D. Data on ecotoxicological properties (Annex VII no. 9)

1. Aquatic toxicity
1.1. Short-term toxicity testing on invertebrates, preferred Daphnia;
1.2. Growth inhibition study aquatic plants; algae preferred)

Data : Harmful effect on aquatic organism. May cause long term adverse effects in the aquatic environment. Pseudomonas putida (Bacteria) EC10 ≥ 1000 mg/L/16 h
Source : Safety Data Sheet of Merck for Sulfamic acid

2. Degradation
2.1. Biotic;
2.2. Ready biodegradability

Data : Methods for the determination of biodegradability are not applicable to inorganic substances.

Further data on ecotoxicological properties (Annex VIII no. 9)

3. Short-term toxicity testing on fish

Data : Pimephales promelas LC50: 70.3 mg/l/96 h
Source : Safety Data Sheet of Merck for Sulfamic acid

4. Activated sludge respiration inhibition testing

Data : Not available

5. Degradation (abiotic; hydrolysis as a function of pH.)

Data : Tested in accordance with directive 84/449/EEC, C10 abiotic (hydrolysis). The result for the preliminary test indicate that at pH 4, 7, and 9 less than 10% of the substance had hydrolysed in 120 hours at 50 °C, which according to the Directive equates to a half-life greater than 12 months at 25 °C
Source : Albright & Wilson Ltd. Warley

6 Fate and behaviour in the environment (adsorption/desorption screening)

Data :
further data on ecotoxicological properties (Annex IX no. 9)

7. Aquatic toxicity (long-term testing on invertebrates, preferred Daphnia; fish toxicity tests)

Data : Not available

8. Degradation (biotic, identification of degradation products)

Data : Methods for determination of biodegradability are not applicable to inorganic substances

9. Fate and behaviour in the environment (bioaccumulation; adsorption/desorption; effects on terrestrial organisms; short-term toxicity to invertebrates)

Data : No bioaccumulation is to be expected (log P(o/w<1)
Source : Safety Data Sheet of Merck for Sulfamic acid

10. Effects on soil micro-organisms

Data : Not available

11. Short-term toxicity to plants

Data : Not available

further data on ecotoxicological properties (Annex X no. 9)

12. Degradation (biotic)
Data : Methods for determination of biodegradability are not applicable to inorganic substances

13. Fate and behaviour in the environment (i.e. degradation products)

Data : 1. Hydrolysis is fast in acid environments, very slow to negligible at pH>3
    2. At solution (97 g/litre) was not hydrolysed when stored at room temperature for 8 months
    3. Slowly hydrolysis to ammonium hydrogen sulphate

14. Effects on terrestrial organisms (invertebrates; plants)

Data : To invertebrates: Not available
To plant: Sulphamic acid and some of its salts are reported to have herbicidal properties. Ammonium sulphamate has been recognized as a non-selective weedkiller for more than 30 years
Source : Albright & Wilson Ltd. Warley

15. Long-term toxicity to sediment organism
16. Long – term or reproductive toxicity to birds

Data: Not available

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