SUBSTANCE IDENTITY PROFILE (SIP) AND ANALYSIS TO PERFORM

Identification:

Substance name: **PERBORIC ACID, SODIUM SALT**
IUPAC name: Sodium perborate
Molecular formula: $NaBO_2(OH)_2$
Molecular Mass: 99,8 g/mol
CAS No.: 11138-47-9
EINECS No.: 234-390-0
Reference: (EU-Risk Assessment Report Perboric acid, sodium salt, 2007)

Substance difinition:

The substance to be registered is Perboric acid, sodium salt as a mono-constituent substance covering all different hydrates (Sodium perborate monohydrate and Sodium perborate tetrahydrate).

Composition:

Parameter	CAS No.	EC No.	Name	Range
Constituent	11138-47-9	234-390-0	Perboric acid, sodium salt	> 90,0 %
Impurities	1330-43-4	215-540-4	Disodium tetraborate	< 2,0 %
Additives (stabilizer)	7487-88-9	231-298-2	Magnesium sulphate	< 1,0 %

Other informations

Technological Process:

Sodium perborate tetrahydrate is produced in a two-stage process with borax, sodium hydroxide and hydrogen peroxide as starting materials. The process is based on the following reaction scheme:

(A) $Na_2B_4O_7$ + 2 NaOH → 4 $NaBO_2$ + H_2O
Borax; Sodium hydroxid; Sodium metaborate; Water

(B) 2 $NaBO_2$ + 2 H_2O_2 + 6 H_2O → $[NaBO_2(OH)_2 \times 3\ H_2O]_2$
Sodium metaborate; Hydrogen peroxide; Water; Sodium perborate tetrahydrate

Reaction (A) is carried out at temperatures between 60 and 95°C. Instead of borax also impure minerals such as kernite and tincal can be used. However, it is then necessary to filter the salt solution. Reaction (B) is carried out at a temperature of about 25°C. At the end of the process the solution is cooled down to 15°C and the precipitated sodium perborate tetrahydrate is separated by filtration. The remaining solution can be fed back to the process to achieve a continous production. However, also a batch technique is possible. Both methods are aimed to give an as attrition-resistant product as possible. Sodium perborate monohydrate is gained from the tetrahydrate by dehydration in a fluidised-bed dryer with warm air or in a vacuum (EU-Risk Assessment Report Perboric acid, sodium salt, 2007).

Remark in IUCLID-chapter 1.2 Composition for impurity Disodium tetraborate, anhydrous:

Cave: Disodium tetraborate EC No. 215-540-4, CAS No.: 1330-43-4 is on the Candidate list of SVHC for the inclusion in Annex XIV (Decision number ED/30/2010); this implies obligations to producers, importers and suppliers to safeguard and report safe use conditions when the substance is contained in articles or mixtures at concentrations above 0.1 % (w/w).

Classification & Labelling:
According to Regulation (EC) 1272/2008, Annex VI.

Recommendation on Analytical Methods for Substance Identification & Determination of Composition/ Purity of PBS:

- Identify the substance qualitatively by FTIR or X-ray diffraction (XRD)
- Analysis of the content of PBS by permanganometric titration of the AvOx
- Analysis of the content of tetraborates by titration with NaOH using mannite to produce the mannite boric acid complex
- Analysis of Mg by ICP or AAS to determine the content of $MgSO_4$

For any further question, you can contact:
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