

Substance Name: Sodium peroxometaborate

EC Numbers: 231-556-4

CAS numbers: 7632-04-4

SUPPORT DOCUMENT FOR IDENTIFICATION OF

SODIUM PEROXOMETABORATE

**AS A SUBSTANCE OF VERY HIGH CONCERN BECAUSE OF ITS
CMR¹ PROPERTIES**

¹ CMR means carcinogenic, mutagenic or toxic for reproduction

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Substance Name: Sodium peroxometaborate

EC Numbers: 231-556-4

CAS numbers: 7632-04-4

- The substance is identified as a substance meeting the criteria of Article 57 (c) of Regulation (EC) 1907/2006 (REACH) owing to its classification as toxic for reproduction category 1B.

Summary of how the substance(s) meet(s) the criteria set out in Article 57 of the REACH Regulation

Sodium peroxometaborate is covered by Index numbers 005-017-00-7, 005-017-01-4, of Regulation (EC) No 1272/2008 in Annex VI, Part 3, Table 3.1 (the list of harmonised classification and labelling of hazardous substances) for reproductive toxicity, Rep. 1B (H360Df: "May damage the unborn child. Suspected of damaging fertility").

Therefore this classification of the substance in Regulation (EC) No 1272/2008 shows that it meets the criteria for classification as toxic for reproduction in accordance with Article 57(c) of REACH.

Registration dossiers submitted for the substance?

No

JUSTIFICATION

1 IDENTITY OF THE SUBSTANCE AND PHYSICAL AND CHEMICAL PROPERTIES

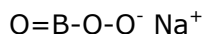
1.1 Name and other identifiers of the substance

Table 1: Substance identity

EC number:	231-556-4
EC name:	sodium peroxometaborate
CAS number (in the EC inventory):	7632-04-4
CAS numbers:	12040-72-1 ^a 10332-33-9 ^b 13517-20-9 ^c 10486-00-7 ^d 37244-98-7 ^e
CAS names:	Perboric acid (HBO(O ₂)), sodium salt (1:1)
IUPAC name:	sodium peroxometaborate
Index number in Annex VI of the CLP Regulation	005-017-00-7, 005-017-01-4,
Molecular formula:	BHO ₃ .Na *
Molecular weight range:	81.80 *
Synonyms:	Perboric acid (HBO(O ₂)), sodium salt (9CI); Perboric acid (HBO ₃), sodium salt (8CI); Sodium perborate (NaBO ₃) (6CI,7CI); Perborn; Sodium borate (NaBO ₃); Sodium perborate; Sodium peroxoborate

* The molecular and structural information provided here is theoretical and the information in the literature indicates that the substance is not well-defined. It is supposed to consist of sodium borate and a boron oxygen radical. Note: Ullmann specifies that the substance can be produced by the "dehydration" of the dimeric salts commonly referred to as the sodium perborate monohydrate or tetrahydrate. This reference to "dehydration" may be confusing as chemical transformations other than crystalline water removal are involved.

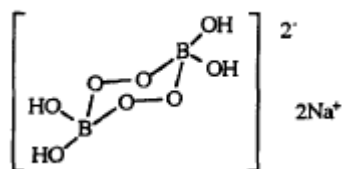
Structural formula (from EU RAR 2007a):



According to EU RAR (2007a) the peroxoboron anions have a dimeric structure, i.e. they exist either in anhydrous form or as hexahydrate.

This means that there may be in reality only 2 types of structures:

- The dimeric cyclic structure with 2 peroxy bridges:



This structure has historically been referred to as the "sodium perborate monohydrate" (empirical formula $\text{NaBO}_3 \cdot 1\text{H}_2\text{O}$). These old name and formula do however not take into account the dimeric cyclic nature of the substance. The same structure may also have been wrongly represented by the empirical formula $\text{NaBO}_2 \cdot \text{H}_2\text{O}_2$.

In reality, there would not be any crystalline water in "sodium perborate monohydrate". Hydrates of that dimeric structure also exist. For instance, what was historically known as "sodium perborate tetrahydrate" (empirical formula $\text{NaBO}_3 \cdot 4\text{H}_2\text{O}$) is in fact the hexahydrate of the dimeric structure.

- The "dehydrated" form of sodium perborate. It is obtained from the "sodium perborate monohydrate" (which is not a true hydrate as explained above). The empirical formula is NaBO_3 . This structure is presented in the EU RAR (2007a) as not well-defined. It is supposed to consist of sodium borate and a boron oxygen radical.

However, it is still customary to use the "old" formulas and nomenclature of "sodium perborate monohydrate" and "sodium perborate tetrahydrate". Several other CAS numbers exist for e.g. disodium salt perborate compounds. These are, however, not described in this Annex XV dossier.

All perboric acids, sodium salt compounds are available in different forms divided into the following two types of compounds. The classification differs slightly for the two types of compounds:

- containing < 0.1 % (w/w) of particles with an aerodynamic diameter of below 50 μm
- containing \geq 0.1 % (w/w) of particles with an aerodynamic diameter of below 50 μm

This Annex XV dossier also covers the remaining 5 CAS numbers, which all have the same harmonised classification as reproductive toxicant as the registered CAS number and a very similar structure. This is in line with the provisions of the Commission roadmap on substances of very high concern², which states that there might be cases in which non registered substances can still be considered relevant for identification. One example might be a substance that is currently not produced or used in Europe, but might be used as an alternative to another relevant SVHC. This exemption is particularly relevant when the most appropriate approach is the category approach (i.e., analogous substances).

1.2 Composition of the substance

UVCB

1.3 Physico-chemical properties

Not relevant for the identification of the substance as SVHC in accordance with Article 57(c).

²<http://register.consilium.europa.eu/doc/srv?!=EN&t=PDF&gc=true&sc=false&f=ST%207664%202013%20INIT&r=http%3A%2F%2Fregister.consilium.europa.eu%2Fpd%2Fen%2F13%2Fst07%2Fst07664.en13.pdf>

2 HARMONISED CLASSIFICATION AND LABELLING

Sodium peroxometaborate is subject to harmonised classification with Repr 1B, H360Df with various specific concentration limits

PBS are reactive oxidants and liberate hydrogen peroxide in aqueous solution under formation of sodium borate/ boric acid, which is considered to be the cause of the induction of the adverse effects on development and fertility.

The classification as Rep 1B and the specific concentration limits of PBS depend on the content of boron in the substances. This is similar to the classification of the borates and their hydrated forms, where the classification as Rep 1B, H360Df and the specific concentration limits, depending on the boron content of the substances. The specific concentration limits are listed below.

Table 2: Classification according to part 3 of Annex VI, Table 3.1 of Regulation (EC) No 1272/2008

005-017-00-7	sodium perborate; [1] sodium peroxometaborate; [2] sodium peroxoborate; [containing < 0,1 % (w/w) of particles with an aerodynamic diameter of below 50 µm]	239-172-9 [1] 231-556-4 [2]	15120-21-5 [1] 7632-04-4 [2]	Oxid. Sol. 2 Repr. 1B Acute Tox. 4 * STOT SE 3 Eye Dam. 1	H272 H360Df H302 H335 H318	GHS03 GHS05 GHS08 GHS07 Dgr	H272 H360Df H302 H335 H318		Repr. 1B; H360Df: C ≥ 9 % Repr. 1B; H360Df: 6,5 % ≤ C < 9 % Eye Dam. 1; H318: C ≥ 22 % Eye Irrit. 2; H319: 14 % ≤ C < 22 %
005-017-01-4	sodium perborate; [1] sodium peroxometaborate; [2] sodium peroxoborate; [containing ≥ 0,1 % (w/w) of particles with an aerodynamic diameter of below 50 µm]	239-172-9 [1] 231-556-4 [2]	15120-21-5 [1] 7632-04-4 [2]	Oxid. Sol. 2 Repr. 1B Acute Tox. 3 * Acute Tox. 4 * STOT SE 3 Eye Dam. 1	H272 H360Df H331 H302 H335 H318	GHS03 GHS06 GHS05 GHS08 Dgr	H272 H360Df H331 H302 H335 H318		Repr. 1B; H360Df: C ≥ 9 % Repr. 1B; H360Df: 6,5 % ≤ C < 9 % Eye Dam. 1; H318: C ≥ 22 % Eye Irrit. 2; H319: 14 % ≤ C < 22 %

3 ENVIRONMENTAL FATE PROPERTIES

Not relevant.

4 HUMAN HEALTH HAZARD ASSESSMENT

With respect to CMR effects sodium peroxometaborate is subject to harmonised classification with Repr 1B, H360Df with various specific concentration limits).

Sodium peroxometaborate is a reactive oxidant and liberates hydrogen peroxide in aqueous solution under formation of sodium borate/ boric acid which is considered to be the cause of the induction of the adverse effects on development and fertility.

The classification as Repr 1B and the specific concentration limits of PBS depend on the content of boron in the substances. This is similar to the classification of the borates and their hydrated forms, where the classification as Repr 1B, H360Df and the specific concentration limits, depend on the boron content of the substances (see chapter 2).

5 ENVIRONMENTAL HAZARD ASSESSMENT

Not relevant.

6 CONCLUSIONS ON THE SVHC PROPERTIES

6.1 PBT, vPvB assessment

Not relevant.

6.2 CMR assessment

Sodium peroxometaborate is classified with Repr 1B, H360Df.

6.3 Substances of equivalent level of concern assessment

Not relevant.

REFERENCES

- CLP Regulation 1272/2008. "Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006".
- ECHA C&L inventory database, 2013: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
- EU RAR (2007a). European Risk Assessment Report on perboric acid, sodium salt (CAS 11138-47-9). European Chemicals Bureau.