

Substance Name: Diboron trioxide

EC Number: 215-125-8

CAS Number: 1303-86-2

MEMBER STATE COMMITTEE

SUPPORT DOCUMENT FOR IDENTIFICATION OF

DIBORON TRIOXIDE

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

Adopted on 24 May 2012

¹ CMR means carcinogenic, mutagenic or toxic for reproduction.

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Substance Name(s): Diboron trioxide

EC Number(s): 215-125-8

CAS number(s): 1303-86-2

The substance is identified as substance meeting the criteria of Article 57 (c) of Regulation (EC) 1907/2006 (REACH) owing to its classification as toxic for reproduction category 1 B² which corresponds to classifications as toxic for reproduction category 2³.

Summary of how the substance meets the criteria as category 1B reproductive toxicant.

Diboron trioxide is covered by Index number 005-008-00-8 of Regulation (EC) No 1272/2008 as amended and adapted to technical and scientific progress by Regulation (EC) No 790/2009, as of 1 December 2010, and classified in Annex VI, Part 3, Table 3.1 (list of harmonised classification and labelling of hazardous substances) as toxic for reproduction, Repr. 1B (H360FD: "May damage fertility. May damage the unborn child."). The corresponding classification in Annex VI, part 3, Table 3.2 (the list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC) of Regulation (EC) No 1272/2008 is toxic for reproduction, Repr. Cat. 2 (R60: "May impair fertility." R61: "May cause harm to the unborn child").

Therefore, this classification of diboron trioxide in Regulation (EC) No 1272/2008 as amended and adapted to technical and scientific progress by Regulation (EC) No 790/2009 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: Yes

² Classification in accordance with Regulation (EC) No 1272/2008 Annex VI, part 3, Table 3.1 List of harmonised classification and labelling of hazardous substances as amended and adapted to technical and scientific progress by Regulation (EC) No 790/2009.

³ Classification in accordance with Regulation (EC) No 1272/2008, Annex VI, part 3, Table 3.2 List of harmonised classification and labelling of hazardous substances (from Annex I to Council Directive 67/548/EEC) as amended and adapted to technical and scientific progress by Regulation (EC) No 790/2009.

Justification

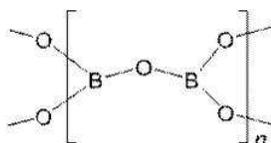
1 Identity of the substance and physical and chemical properties

1.1 Name and other identifiers of the substance

Table 1: Substance identity

EC number:	215-125-8
EC name:	diboron trioxide
CAS number (in the EC inventory):	1303-86-2
CAS number:	1303-86-2
CAS name:	Boron oxide (B ₂ O ₃)
IUPAC name:	diboron trioxide
Index number in Annex VI of the CLP Regulation	005-008-00-8
Molecular formula:	B ₂ O ₃
Molecular weight range:	≥ 69.62 g/mol
Synonyms:	<i>Boric oxide</i>

Structural formula:



1.2 Composition of the substance

Name: Diboron trioxide

Description: mono-constituent substance

Degree of purity: > 97 % w/w⁴

Further details on the composition of the substance are available in the technical dossier (confidential).

⁴ Based on the minimum typical content indicated in the registration dossiers (downloaded on 13/10/2011)

Table 2: Constituents

Constituents	Typical concentration	Concentration range	Remarks
<i>Diboron trioxide</i>	> 97 % w/w ⁴		

Table 3: Impurities

Impurities	Typical concentration	Concentration range	Remarks
<i>confidential</i>			

Table 4: Additives

Additives	Typical concentration	Concentration range	Remarks
<i>confidential</i>			

1.3 Physicochemical properties

The physico-chemical properties were taken from the lead registration dossier for boric oxide and are considered acceptable by the dossier submitter.

Table 5: Overview of physicochemical properties

Property	Value	Remarks
Physical state at 20°C and 101.3 kPa	<i>white odourless crystalline solid</i>	
Melting/freezing point	<i>> 633 K</i>	<i>Decomposition occurred</i>
Boiling point	<i>Not determined since melting point is above 300 °C</i>	
Vapour pressure	<i>Not determined since melting point is above 300 °C</i>	
Water solubility	<i>Technically not feasible</i>	<p><i>Boric oxide reacts quickly with water to form boric acid.</i></p> $B_2O_3(s) + 3H_2O(l) \rightarrow 2H_3BO_3(aq)$ <p><i>The EU Annex V definition of solubility is the saturation mass concentration of the substance in water at a given temperature. Given that boric oxide reacts with water it would be technically impossible to determine the saturation mass concentration of boric oxide. Any attempt to determine the solubility would in effect be measuring the solubility of boric acid. In saturated aqueous boric acid, boric oxide will immediately react with water and crystallise out as solid boric acid. In conclusion, it is therefore technically impossible to determine the solubility of boric oxide as a discrete species.</i></p>
Partition coefficient n-octanol/water (log value)	<i>Not determined since a partition coefficient is not required if the substance is inorganic</i>	
Dissociation constant	<i>The dissociation constant for boric oxide as such cannot be determined because boric oxide is converted into boric acid/borate upon dissolution in water</i>	
Flash point	<i>According to Annex VII, section 7.9, column 2 of Regulation No. 1907/2006, flash-point is not required if the substance is inorganic. Diboron trioxide is an inorganic substance, therefore the test is not required.</i>	
Flammability Flammability upon ignition (solids, gases):	<i>A study performed according to EU Method A.10 (Flammability (Solids)), the United</i>	

	<i>4, Division 4.2.</i>	<i>(Test N4).</i>
Oxidising properties	<i>The material meets all criteria for exemption from testing and has a structure not at all conducive with that required to exhibit oxidising tendencies.</i>	

2 Harmonised classification and labelling

Diboron trioxide is covered by Index number 005-008-00-8 of Regulation (EC) No 1272/2008 (as amended and adapted to technical and scientific progress by Regulation (EC) No 790/2009 as of 1 December 2010) in Annex VI, Part 3, Table 3.1 (list of harmonised classification and labelling of hazardous substances) as follows:

Table 6: Classification according to Annex VI, Part 3, Table 3.1 (list of harmonised classification and labelling of hazardous substances) of Regulation (EC) No 1272/2008

Index No	International Chemical Identification	Classification		Labelling			Specific Conc. Limits, M-factors
		Hazard Class and Category Code	Hazard statement Code	Pictogram, Signal Word Code	Hazard statement Code	Suppl. Hazard statement Code(s)	
005-008-00-8	diboron trioxide; boric oxide	Repr. 1B	H360FD	GHS08 Dgr	H360FD		Repr. 1B; H360FD: C ≥ 3,1 %

Hazard statement code: H360FD: May damage fertility. May damage the unborn child.

Diboron trioxide is covered by Index number 005-008-00-8 of Regulation (EC) No 1272/2008 (as amended and adapted to technical and scientific progress by Regulation (EC) No 790/2009 as of 1 December 2010) in Annex VI, Part 3, Table 3.2 (list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC) as follows:

Table 7: Classification according to Annex VI, Part 3, Table 3.2 (list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC) of Regulation (EC) No 1272/2008

Index No	Chemical name	Classification	Labelling	Concentration Limits
005-008-00-8	diboron trioxide; boric oxide	Repr.Cat. 2; R60-61	T R: 60-61 S: 53-45	Repr. Cat. 2; R60-61: C ≥ 3,1 %

Risk phrases: R60-61: May impair fertility. May cause harm to the unborn child

3 Environmental fate properties

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

4 Human health hazard assessment

See section 2 on Harmonised Classification and Labelling.

5 Environmental hazard assessment

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

6 Conclusions on the SVHC Properties

6.1 PBT, vPvB assessment

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

6.2 CMR assessment

Diboron trioxide is covered by Index number 005-008-00-8 of Regulation (EC) No 1272/2008 as amended and adapted to technical and scientific progress by Regulation (EC) No 790/2009, as of 1 December 2010, and classified in Annex VI, Part 3, Table 3.1 (list of harmonised classification and labelling of hazardous substances) as toxic for reproduction, Repr. 1B (H360FD: "May damage fertility. May damage the unborn child."). The corresponding classification in Annex VI, part 3, Table 3.2 (the list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC of Regulation (EC) No 1272/2008 is toxic for reproduction, Repr. Cat. 2 (R60:"May impair fertility." R61: "May cause harm to the unborn child").

Therefore, this classification of diboron trioxide in Regulation (EC) No 1272/2008 as amended and adapted to technical and scientific progress by Regulation (EC) No 790/2009 shows that it meets the criterion for classification as toxic for reproduction in accordance with Article 57 (c) of REACH.

6.3 Substances of equivalent level of concern assessment

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

7 References

REACH. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=oj:l:2006:396:0001:0849:en:pdf>

EU, 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.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:353:0001:1355:en:PDF>