

## Stofdocument deel A

CAS-nr: 7637-07-2

**Boriumtrifluoride** BF<sub>3</sub>

VN-nr: 1008

GEVI: 268

**Synoniemen:** trifluorboraan, boortrifluoride, boorfluoride (Engels: boron trifluoride)

Interventiewaarden		10 min.	30 min.	1 uur	2 uur	4 uur	8 uur
Voorlichtingsrichtwaarden	<b>VRW (mg/m<sup>3</sup>)</b>	2,5	2,5	2,5	2,5	2,5	2,5
Alarmeringsgrenswaarden	<b>AGW (mg/m<sup>3</sup>)</b>	53	37	29	23	18	9.2
Levensbedreigende waarden	<b>LBW (mg/m<sup>3</sup>)</b>	160	110	88	70	55	28
Datum vaststelling: 28-11-2008		1 mg/m <sup>3</sup> = 0,355 ppm; 1 ppm = 2,82 mg/m <sup>3</sup>					
<b>Explosiegrens:</b> geen data			<b>Geur:</b> Gerapporteerd als penetrante, verstikkende geur en als prettige, zure geur				
			<b>LOA:</b> niet afgeleid				
<b>Fysisch-chemische eigenschappen</b>							<b>Overige informatie</b>
<b>Uiterlijk:</b> Kleurloos gas. Vormt nevels aan de lucht.		Molecuulmassa: 67,8 g/mol					Publieke grenswaarde: niet afgeleid MAK: niet afgeleid TLV-TWA: 3 mg/m <sup>3</sup> (ceiling)
<b>Brand:</b> Niet brandbaar		Zuurgraad: geen data					
<b>Relatieve dichtheid van verzadigd damp-lucht mengsel:</b> 2,4		LogKow: geen data					
		Wateroplosbaarheid: Reactie					
		Verzadigde dampdruk: geen data					
<b>Toxicologische eigenschappen</b>							
<b>Effecten bij inhalatoire blootstelling</b>				<b>Toxiciteit bij eenmalige, inhalatoire blootstelling</b>			
<u>Onder VRW:</u> geen effecten				<ul style="list-style-type: none"> <li>Boriumtrifluoride werkt irriterend op de ogen en luchtwegen. Ernstige irritatie aan de luchtwegen door boriumtrifluoride kan leiden tot ontstekingen, ademhalingsmoeilijkheden, longoedeem en sterfte.</li> <li>Inhalatie van hoge concentraties boriumtrifluoride kan aanleiding geven tot oedeemvorming van de larynx en glottis, met het risico van verstikking.</li> <li>Boriumtrifluoride kan waarschijnlijk type I inhalatoire intoxicatie veroorzaken.</li> <li>Blootstelling aan Boriumtrifluoride kan longoedeem en chemische pneumonitis veroorzaken. De verschijnselen hiervan kunnen vertraagd optreden en versterkt worden door lichamelijke inspanning.</li> </ul>			
<u>VRW → AGW:</u> lichte tot matige irritatie aan keel en bovenste luchtwegen							
<u>AGW → LBW:</u> matige tot ernstige irritatie aan ogen en luchtwegen, benauwdheid, glottis- en larynxoedeem							
<u>Boven LBW:</u> Chemische pneumonitis, longoedeem, sterfte							
<b>Effecten bij blootstelling aan vloeistof</b>				<b>Carcinogeniteit</b>			
<u>Huidcontact:</u> bijtend, roodheid, branderig gevoel, pijn				IARC classificatie: niet geclassificeerd			
<u>Oogcontact:</u> bijtend, roodheid, pijn, slecht zien				CRP: n.v.t.			
<b>Beknopte medische informatie</b>							
<b>Ontsmetting damp</b>							
<i>algemeen:</i> frisse lucht, rust, halfzittende houding en direct spoedeisende medische hulp inzetten.							
<i>ogen:</i> minimaal 15 min. spoelen met water (evt. contactlenzen verwijderen), dan naar oogarts brengen, blijven spoelen tijdens vervoer.							
<b>Ontsmetting vloeistof</b>							
<i>huid:</i> verontreinigde kleding uittrekken, minimaal 20 min. spoelen met veel water of douchen en arts raadplegen.							
<i>ogen:</i> minimaal 15 min. spoelen met water (evt. contactlenzen verwijderen), dan naar oogarts brengen, blijven spoelen tijdens vervoer.							
<i>inslikken:</i> n.v.t. (gas)							
<b>Specifieke behandeling en materialen:</b> geen.							
Neem contact op met het NVIC (Tel: 030 - 274 8888) voor informatie met betrekking tot medisch handelen							

## Stofdocument deel B

CAS-nr: 7637-07-2

**Boron trifluoride** BF<sub>3</sub>

UN-nr: 1008

### Basis for the Dutch Intervention Values

**VRW:** AEGL value is adopted, 2h value added

**AGW:** AEGL value adopted (except 10 min value for which time scaling was applied), 2hr value added

**LBW:** AEGL value adopted (except 10 min value for which time scaling was applied), 2hr value added

Date: 28-11-2008

AEGL document: Final, 2009

### Dutch Intervention Values (mg/m<sup>3</sup>)

	10 min	30 min	1 h	2 h	4 h	8 h	End point
<b>VRW</b>	2.5	2.5	2.5	2.5	2.5	2.5	Threshold of irritation
<b>AGW</b>	53	37	29	23	18	9.2	(one-third of LBW values)
<b>LBW</b>	160	110	88	70	55	28	Threshold of lethality in animals

### Derivation of the Dutch Intervention Values

**VRW:** The VRW is based on a NOAEL for irritation. Rats exposed for 4 hours to boron trifluoride hydrate vapour/aerosol at a concentration of 24.6 mg/m<sup>3</sup> had no abnormal findings, while rats exposed to the next higher concentration of 74.4 mg/m<sup>3</sup> had histopathological changes in the larynx and tracheal bifurcation indicative of irritation. The concentration of 24.6 mg/m<sup>3</sup> therefore represents a threshold for notable irritation and is the point of departure for the VRW derivation. A total uncertainty factor of 10 was applied. The irritation is a direct contact effect; therefore, an interspecies uncertainty factor of 3 was applied because the mechanism of action is not expected to vary among species. An intraspecies uncertainty factor of 3 was applied because the mechanism of action is not expected to vary greatly in subpopulations. The derived value was set equal at all time points because the endpoint is a threshold level for mild irritation.

**AGW:** Acute toxicity data meeting the definition of an AGW defined endpoint was not available. Therefore, the LBW values were divided by 3 to obtain a reasonable estimate. Dividing the LBW values by 3 is reasonable based on the steep dose-response curve for lethality: 3/10 rats died at 1010 mg/m<sup>3</sup>, while 9/10 rats died at 1540 mg/m<sup>3</sup>. In contrast to the 10 minute AEGL-2 value, time scaling was also applied for the 10 minute AGW value.

The resulting AGW values are supported by the histopathological findings in rats exposed for 4 hours to 74.4 mg/m<sup>3</sup> that were indicative of mild irritation only. Considering that this is an effect less severe than the AGW a total uncertainty factor of 3 would have sufficed, leading to a comparable 4 h AGW.

**LBW:** The LBW derivation is based on 4-hour lethality data in rats, with a calculated BMCL<sub>05</sub> value of 553 mg/m<sup>3</sup> (exposures were to liquid aerosols of boron trifluoride dihydrate; concentrations reported are based on boron trifluoride). Because boron trifluoride is a corrosive irritant, an interspecies uncertainty factor of 3 and an intraspecies uncertainty factor of 3 were applied because the mechanism of action (irritation) is not expected to vary greatly among species or among subpopulations, respectively. An intraspecies uncertainty factor of 3 is also supported by the steep dose-response curve for lethality, which indicates there is not much variability in the response within a population. Because the irritation occurring at the LBW level is no longer mild, but rather severe irritation leading to death, the point of departure is not set equal across all time-points. Time scaling was performed using  $C^n * t = k$ , with the default values of  $n = 1$  and  $n = 3$  for extrapolation to longer and shorter exposure durations, respectively. In contrast to the 10 minute AEGL-3 value, time scaling was also applied for the 10 minute LBW value.

**Additional toxicological information (including relevant results of a general literature search, if any)**

No definitive data were found addressing any aspects of boron trifluoride toxicity in humans.

Clinical signs observed in rats during a 4 hour exposure to 1000-1500 mg/m<sup>3</sup> boron trifluoride included reduced activity, closed eyes, excessive lacrimation, and excessive oral and nasal discharge. The high concentration group also exhibited gasping. Four-hours post exposure, clinical signs of respiratory distress (dry rales, moist rales, gasping) and/or irritation (excessive oral and nasal discharge and lacrimation) were noted in most of the exposed animals. Mortality was observed in all dosage groups.

No data were found regarding the potential for boron trifluoride exposure to cause developmental or reproductive effects in humans or experimental animals.

H314: Causes severe skin burns and eye damage; H330: Fatal if inhaled.

**Carcinogenicity and derivation of the CRP value**

IARC classification: not classified

No carcinogenic risk potency (CRP) was derived.

No data were found regarding the potential for boron trifluoride to cause cancer in humans or in experimental animals.

**Odour and derivation of the LOA value**

Odour: Reported as a pungent, suffocating odour and as a pleasant, acrid odour.

No LOA was derived due to lack of reliable data.

**Other standards and guidelines (1h values in mg/m<sup>3</sup>, unless otherwise indicated)**

<b>VRW level</b> 2.5	<b>AEGL-1</b> 2.5	<b>ERPG-1</b> 2	<b>IDLH:</b> 71 mg/m <sup>3</sup> (30 minutes)
<b>AGW level</b> 29	<b>AEGL-2</b> 29	<b>ERPG-2</b> 30	
<b>LBW level</b> 88	<b>AEGL-3</b> 88	<b>ERPG-3</b> 100	