DIFLUORODIBROMOMETHANE

CAS number: 75-61-6

Synonyms: Dibromodifluoromethane, DFBM, freon 12B2

Chemical formula: CBr_2F_2

Structural formula: —

Workplace exposure standard (retained)

TWA: **100 ppm (858 mg/m^3)**

STEL: **—**

Peak limitation: **—**

Notations: **—**

IDLH: **2,000 ppm**

Sampling and analysis: The recommended value is quantifiable through available sampling and analysis techniques.

Recommendation and basis for workplace exposure standard

A TWA of 100 ppm (858 mg/m^3) is recommended to protect for respiratory irritation, narcosis and liver toxicity in exposed workers.

Given the limited data available from the primary sources, it is recommended that a review of additional sources be conducted at the next scheduled review.

Discussion and conclusions

Difluorodibromomethane is used as a as a fire extinguishing agent and in dyes, pharmaceuticals and quaternary ammonium compounds (ACGIH 2018).

A sub-chronic inhalation study in rats and dogs identified a NOAEC of 350 ppm for respiratory tract irritation, liver damage and central nervous system (CNS) effects. The ACGIH (2018) TLV-TWA was based on this NOAEC (ACGIH 2018).

The current TWA is recommended to be retained. However, due to limited animal data and no human studies it is recommended that a priority review be undertaken at the next scheduled review of the WES.

Recommendation for notations

Not classified as a carcinogen according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Not classified as a skin sensitiser or respiratory sensitiser according to the GHS.

There are insufficient data to recommend a skin notation.

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	***1991***	***TWA: 100 ppm (858 mg/m^3)***
ACGIH	***2001***	***TLV-TWA: 100 ppm (858 mg/m^3)***

TLV-TWA recommended to minimise the risk of respiratory tract irritation, narcosis and liver toxicity in exposed workers.
Summary of data:
Animal data:
• Exposure to vapour heated to 800ºC is fatal at 55,000 ppm (rats, 15 min), 4,000 ppm produced pulmonary damage, irritation and oedema
• Exposure to ≈2,300 ppm (rats and dogs, inhalation) daily for 6 wk, resulted in fatalities to >50% of animals
  ○ symptoms included intoxication, weakness, dizziness, pulmonary congestion and damage to the liver and CNS
• NOAEL: 350 ppm (rats and dogs, daily, 6 mo, inhalation) for respiratory tract irritation, liver damage and CNS effects
  ○ TLV-TWA based on this NOAEL with no explanation of derivation.
 	
Insufficient data to recommend a carcinogen, skin or sensitiser notation.		

DFG	***2007***	***Not assigned***
The previous MAK value of 100 mL/m^3 was set in 1958. For the derivation of a MAK, suitable data in humans or from animal studies are not available. The MAK value is therefore suspended.		
SCOEL	***NA***	***NA***
No report.		
OARS/AIHA	***NA***	***NA***
No report.		
HCOTN	***NA***	***NA***
No report.		

Secondary source reports relied upon

NIL.

Carcinogenicity — non-threshold based genotoxic carcinogens

Is the chemical mutagenic?	Insufficient data
Is the chemical carcinogenic with a mutagenic mechanism of action?	Insufficient data

Is the chemical mutagenic?	Insufficient data

Insufficient data are available to determine if the chemical is a non-threshold based genotoxic carcinogen.

Notations

Source	Notations
SWA	—
HCIS	NA
NICNAS	NA
EU Annex	NA
ECHA	NA
ACGIH	—
DFG	—
SCOEL	NA
HCOTN	NA
IARC	NA
US NIOSH	NA

NA = not applicable (a recommendation has not been made by this Agency); — = the Agency has assessed available data for this chemical but has not recommended any notations

Skin notation assessment

Insufficient data to assign a skin notation.

IDLH

Is there a suitable IDLH value available?	Yes

Additional information

Molecular weight:	209.82
Conversion factors at 25°C and 101.3 kPa:	1 ppm = 8.59 mg/m^3; 1 mg/m^3 = 0.116 ppm
This chemical is used as a pesticide:	☐
This chemical is a biological product:	☐
This chemical is a by-product of a process:	☐
A biological exposure index has been recommended by these agencies:	☐ ACGIH ☐ DFG ☐ SCOEL

Workplace exposure standard history

Year	Standard
Click here to enter year	

References

American Conference of Industrial Hygienists (ACGIH®) (2018) TLVs® and BEIs® with 7th Edition Documentation, CD-ROM, Single User Version. Copyright 2018. Reprinted with permission. See the *TLVs® and BEIs® Guidelines section* on the ACGIH website.

Deutsche Forschungsgemeinschaft (DFG) (2007) Dibromdifluormethan – MAK value documentation.

US National Institute for Occupational Safety and Health (NIOSH) (1994) Immediately dangerous to life or health concentrations – difluorodibromomethane.