# Sulfur pentafluoride

| CAS number: | 5714-22-7 |
| --- | --- |
| Synonyms: | Disulfur decafluoride, sulphur pentafluoride |
| Chemical formula: | S2F10 |

Workplace exposure standard (amended)

| TWA: | **—** |
| --- | --- |
| STEL: | **—** |
| Peak limitation: | **—** |
| Notations: | **—** |
| IDLH: | **1 ppm** |
| **Sampling and analysis:** N/A | |

## Recommendation and basis for workplace exposure standard

This chemical has been nominated for removal from the *Workplace exposure standards for airborne contaminants* due to a lack of evidence that it is used or generated in Australian workplaces or that it presents a potential for legacy exposure. Therefore, a TWA is not recommended.

## Discussion and conclusions

Sulphur pentafluoride is produced as a by-product during the synthesis of sulphur hexafluoride. There is lack of evidence that this chemical is used or generated in Australian workplaces or that it presents a potential for legacy exposure.

The critical effects of exposure are respiratory tract irritation, congestion and tissue damage.

No data available in humans and limited data are available from animal studies in primary sources. One-hour inhalation in rats resulted in diffuse pulmonary haemorrhage at 10 ppm and severe pulmonary congestion at 1 ppm. A NOAEC of 0.1 ppm is reported in this study (ACGIH, 2018). Rats exposed by inhalation for 16 to 18 hours at 1 ppm died, with severe lung lesions at 0.5 ppm and lung irritation observed at 0.1 ppm. A NOAEC of 0.01 ppm is reported in this study (ACGIH, 2018).

This chemical has been nominated for removal from the WES list. A TWA is not recommended.

## 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 Peak limitation: 0.01 ppm (0.1 mg/m3) | |
|  |
| ACGIH 2001 TLV-Ceiling: 0.01 ppm (0.10 mg/m3) |
| TLV-Ceiling recommended to minimise the risk of respiratory tract irritation, congestion and tissue damage in exposed workers.  Summary of data:  Produced as a by-product during the synthesis of sulphur hexafluoride.  TLV-Ceiling recommended based on acute NOAEC of 0.01 ppm in rats.  Animal data:   * Exposure at 0.1, 1 and 10 ppm (rats, 1 h, inhalation): * 10 ppm: diffuse pulmonary haemorrhage * 1 ppm: severe pulmonary congestion * NOAEC: 0.1 ppm * Exposure at 1 ppm (rats 16 to ­18 h, inhalation) was fatal: * 0.5 ppm caused severe lesions of the lungs * 0.1 ppm resulted in irritation of the lungs * NOAEC:0.01 ppm * LD50: 5.8 mg/kg (rabbits, iv) death was due to fulminant pulmonary oedema.   Insufficient data to recommend a skin, sensitiser or carcinogen notation. |
| DFG 2006 Not assigned |
| The acute animal experiments alone are not sufficient to derive a MAK value.  Summary of additional data:   * 10 min LC50: 9,5­19 ppm (mice), 1,9­28 ppm (rats), 3,8­57 ppm (guinea pigs and rabbits), 86 ppm (monkeys). |
| SCOEL NA NA |
| No report. |
| OARS/AIHA NA NA |
| No report. |
| HCOTN 2001 TWA: 0.1 mg/m3 |
| The committee considers the toxicological data base too poor to justify recommendation of a HBROEL. |

### 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 |
| **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: | 127.05 |
| --- | --- |
| Conversion factors at 25°C and 101.3 kPa: | 1 ppm = 10.39 mg/m3; 1 mg/m3 = 0.096 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*](http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations) on the ACGIH website.

Deutsche Forschungsgemeinschaft (DFG) (2005) Dischwefeldecafluorid (Schwefelpentafluorid) – MAK value documentation.

Health Council of the Netherlands (HCOTN) (2001) Disulfur decafluoride. Health-based calculated occupational cancer risk values. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/022.

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