# Petaerythritol

| CAS number: | 115-77-5 |
| --- | --- |
| Synonyms: | 2,2-bis(hydroxymethyl)-1,3-propanediol, tetrakis(hydroxymethyl)methane, tetramethylolmethane |
| Chemical formula: | C5H12O4 |
| Structural formula: | — |

 Workplace exposure standard (retained)

| TWA: | **10 mg/m3 (inhalable)** |
| --- | --- |
| STEL: | **—** |
| Peak limitation: | **—** |
|  Notations: | **—** |
| IDLH: | **—** |
| **Sampling and analysis:** The recommended value is quantifiable through available sampling and analysis techniques.  |

## Recommendation and basis for workplace exposure standard

A TWA of 10 mg/m3 is recommended to protect for possible gastrointestinal tract (GIT) irritation in exposed workers.

## Discussion and conclusions

Pentaerythritol is used primarily in the manufacture of the high explosive pentaerythritol tetranitrate and in the production of pharmaceuticals, insecticides, lubricants and paint-swelling agents.

It is relatively non-toxic. Irritation of the GIT is reported in rats at high doses. It may produce a nuisance effect at high airborne concentrations

Limited data are available in humans. Potential effects on blood glucose in humans reported in a study on metabolism. No changes in body weights, mortality, haematologic parameters and gross and microscopic histopathology reported in rats exposed at 11,000 mg/m3 in an acute inhalation study. No adverse effects in rats, dogs and guinea pigs exposed at 8,000 mg/m3 for 90 days were reported. Severe diarrhoea is reported in rats dosed at 5 g/kg (no further information provided). A NOAEL of greater than 1,000 mg/kg/day is reported in a 28-day gavage study in rats.

Given the limited available data, the current TWA of 10 mg/m3 by SWA is recommended to be retained to protect for gastrointestinal effects in exposed workers as ACGIH (2018) is only other primary source.

## 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: 10 mg/m3 |
| This value is for inspirable dust containing no asbestos and less than 1% crystalline silica. |
| ACGIH 2013 TLV-TWA: 10 mg/m3 (Inhalable particulate matter) |
| TLV-TWA recommended to minimise the potential for irritation of the gastrointestinal tract seen in rats at high doses.Summary of data:Human data:* Limited data in humans
* Potential effects on blood glucose identified in metabolism study.

Animal data:* LD50: 22.5 g/kg (guinea pigs, oral)
* NOAEL of >1,000 mg/kg/d in rats based on biochemical and haematological parameters; 28 d gavage study; controls receive saline; no further information
* No changes in body weight, mortality, haematologic parameters and gross and microscopic histopathology in rats exposed at 11,000 mg/m3 in an acute study; no further information
* Rats dosed at 5 g/kg demonstrated severe diarrhoea; no further information
* Rats, dogs and guinea pigs exposed at 8,000 mg/m3 for 6 h/d 90 d; no adverse effects on body weight, mortality, haematologic parameters and gross and microscopic pathological studies.

Insufficient data to recommend skin, sensitiser or carcinogenicity notation or TLV-STEL. |
| DFG NA NA |
| No report. |
| 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 |
| **Insufficient data are available to determine if the chemical is a non-threshold based genotoxic carcinogen.** |

## Notations

| Source | Notations  |
| --- | --- |
| SWA | NA |
| HCIS | NA |
| NICNAS | NA |
| EU Annex | NA |
| ECHA | NA |
| ACGIH | NA |
| DFG | NA |
| 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

| Calculation  |
| --- |
| Insufficient data to assign a skin notation. |

### IDLH

| Is there a suitable IDLH value available? | No |
| --- | --- |

## Additional information

| Molecular weight: | 136.15 |
| --- | --- |
| Conversion factors at 25°C and 101.3 kPa:  | 1 ppm = Number mg/m3; 1 mg/m3 = Number 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

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