# Diethyl ketone

| CAS number: | 96-22-0 |
| --- | --- |
| Synonyms: | 3-Pentanone, pentan-3-one, DEK, dimethylacetone, metacetone, methacetone, propione |
| Chemical formula: | C5H10O |

Workplace exposure standard (amended)

| TWA: | **200 ppm (705 mg/m3)** |
| --- | --- |
| STEL: | **300 ppm (1,057 mg/m3)** |
| 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 200 ppm (705 mg/m3) is recommended to protect for irritation and bronchoconstriction in exposed workers.

A STEL of 300 ppm (1,057 mg/m3) is recommended to protect for acute irritant effects and bronchoconstriction in acutely exposed workers.

## Discussion and conclusions

Diethyl ketone is used as a solvent, in organic synthesis, and in pharmaceuticals.

No human data were identified for diethyl ketone. Data from studies with the isomer methyl propyl ketone (MPK) studies are considered by the ACGIH (ACGIH, 2018) to be applicable to development of a TLV-TWA for diethyl ketone. Occupational exposure to MPK is associated with eye and upper respiratory tract irritation. Narcosis and irritation are reported in animal studies. MPK produced short-term bronchoconstriction in one volunteer exposed at 200 ppm and in two of four volunteers tested at 400 ppm. Ocular irritation at 400 ppm for 15 seconds is also reported (ACGIH, 2018).

Due to the absence of data, the recommended TWA and STEL have been adopted directly from the current TLV-TWA of ACGIH (2018) which was based on isomer methyl propyl ketone and the TLV‑STEL based on homologous series of ketones. These concentrations are considered protective of irritation effects and bronchoconstriction in exposed workers.

## 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.

A skin notation is not recommended based on the available data.

# Appendix

### Primary sources with reports

| Source Year set Standard |
| --- |
| SWA 1991 TWA: 200 ppm (705 mg/m3) | |
|  |
| ACGIH 2001 TLV-TWA: 200 ppm (705 mg/m3); TLV-STEL: 300 ppm (1057 mg/m3) |
| TLV-TWA and TLV-STEL recommended to minimise the potential for eye and upper respiratory tract irritation and narcosis.  Summary of data:  Human data:   * No published data identified * Occupational exposure to MPK is associated with eye and upper respiratory tract irritation; narcosis and irritation are identified with experimental animal exposures * Data from MPK considered by ACGIH to be applicable to development of a TLV for diethyl ketone * MPK - short-term irritant effect of bronchoconstriction in 1 volunteer exposed to 200 ppm and 2 of 4 volunteers at 400 ppm; ocular irritation reported at 400 ppm MPK for 15 sec * Odour threshold of 2 ppm.   Animal data:   * LD50:2.14 g/kg (rats, oral) * Inhalation of 8,000 ppm for 4 h lethal to 4/6 rats.   TLV–TWA adopted from MPK.  TLV-STEL based on homologous series of ketones. |
| DFG NA NA |
| No report. |
| SCOEL NA NA |
| No report. |
| OARS/AIHA NA NA |
| No report. |
| HCOTN 2004 TWA: 200 ppm (705 mg/m3) |
| Summary of additional data:   * LD50: 2,100 mg/kg (rats, dermal) |

### Secondary source reports relied upon

NIL.

### Carcinogenicity — non-threshold based genotoxic carcinogens

| Is the chemical mutagenic? | No |
| --- | --- |
| **The chemical is not a non-threshold based genotoxic carcinogen.** |  |

## Notations

| Source | Notations |
| --- | --- |
| SWA | — |
| HCIS | NA |
| NICNAS | NA |
| EU Annex | NA |
| ECHA | — |
| ACGIH | — |
| DFG | NA |
| SCOEL | NA |
| HCOTN | — |
| 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 |
| --- |
| |  |  |  |  | | --- | --- | --- | --- | | Adverse effects in human case study: |  |  |  | | Dermal LD50 ≤1000 mg/kg: | no |  |  | | Dermal repeat-dose NOAEL ≤200 mg/kg: |  |  |  | | Dermal LD50/Inhalation LD50 <10: |  |  |  | | *In vivo* dermal absorption rate >10%: |  |  |  | | Estimated dermal exposure at WES >10%: |  |  |  | |  |  |  | **a skin notation is not warranted** | |

### IDLH

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

## Additional information

| Molecular weight: | 86.13 |
| --- | --- |
| Conversion factors at 25°C and 101.3 kPa: | 1 ppm = 3.5 mg/m3; 1 mg/m3 = 0.28 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.

Health Council of the Netherlands (HCOTN) (2004) Pentan-3-one. Health-based calculated occupational cancer risk values. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/107.