# Tert-butyl chromate (as CrO3)

| CAS number: | 1189-85-1 |
| --- | --- |
| Synonyms: | bis(tert-Butyl)chromate, chromic acid,  di-tert-butyl ester |
| Chemical formula: | C8H18CrO4 |

Workplace exposure standard (retained)

| TWA: | **—** |
| --- | --- |
| STEL: | **—** |
| Peak limitation: | **0.1 mg/m3** |
| Notations: | **Sk.** |
| IDLH: | **15 mg/m3** |
| Sampling and analysis: | The recommended value is readily quantifiable through currently available sampling and analysis techniques. |

## Recommendation and basis for workplace exposure standard

A peak limitation of 0.1 mg/m3 is recommended to protect for dermal and respiratory tract irritation in exposed workers.

## Discussion and conclusions

Tert-butyl chromate is primarily used in specialty reactions as an organic source of chromium.

Limited toxicological data exist in humans and animals. A case study of a single worker working with paper containing five per cent tert-butyl chromate reported giddiness and abdominal discomfort. Rats exposed repetitively for an unknown number of days for 30 to 60 minutes to a mixture of tert‑butyl chromate and butyl alcohol vapours at an unspecified concentration died after developing respiratory and behavioural changes and skin irritation.

The available animal data suggest severe adverse effects following skin and respiratory irritation. However, the data are insufficient to conclude whether these effects occur after prolonged exposure or at high concentrations. Based on the limited data available, the recommended peak limitation is expected to protect workers from irritation of the skin and respiratory tract and other respiratory effects.

## Recommendation for notations

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

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

A skin notation is recommended based on reported fatalities in animals following skin contact.

# Appendix

### Primary sources with reports

| Source Year set Standard |
| --- |
| SWA 1991 TWA: 0.1 mg/m3 Peak limitation | |
|  |
| ACGIH 2001 TLV-Ceiling: 0.1 mg/m3 |
| The TLV-Ceiling is recommended to reduce the potential for dermal and respiratory tract irritation.  Human data:   * A case study of a single worker exposed to paper containing 5% tert-butyl chromate complained of giddiness and abdominal discomfort (no further information) * Reported a study suggesting workplace atmospheric concentrations should not exceed 1 µg/L (0.001 mg/m3) to avoid skin contamination.   Animal data:   * Rats exposed repetitively (unknown number of days) for 30–60 min to an unspecified concentration of a mixture of tert-butyl chromate and butyl alcohol vapours died after developing respiratory and behavioural changes and skin irritation * autopsy showed epithelial exudation in alveoli and haemorrhaging and fat deposition in liver * Mild narcosis and rapid respiration reported (inhalation study; no further information) * Skin contact resulted in necrosis and death (no further information) * basis for the recommendation of a Skin notation.   Insufficient evidence to recommend sensitisation or carcinogen notations. |
| 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 | Skin |
| 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 |
| --- |
| A skin notation is recommended based on reported animal death following skin contact. |

### IDLH

| Is there a suitable IDLH value available? | Yes |
| --- | --- |

## Additional information

| Molecular weight: | 230.22 |
| --- | --- |
| 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

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.