# Welding fumes (not otherwise classified)

| CAS number: | — |
| --- | --- |
| Synonyms: | — |
| Chemical formula: | — |
| Structural formula: | — |

Workplace exposure standard (amended)

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

## Recommendation and basis for workplace exposure standard

A TWA not recommended.

## Discussion and conclusions

Welding fumes are produced as by-products of the welding process.

These fumes produce acute, chronic and carcinogenic exposure risks and are heavily dependent on the welding process, materials and the resulting constituents of the fumes.

These include aluminium, cadmium, hexavalent chromium, manganese, iron oxide, vanadium, zinc and copper as well as solder pyrolysis products (rosins). In addition, gases including phosphine, ozone, and nitrogen dioxide may be present.

Critical effects of exposure can include irritation of the upper respiratory tract (nose and throat), tightness in the chest, asphyxiation, asthma, metal fume fever, lung damage, bronchitis, cancer, pneumonia and emphysema.

Given the significant composition variability in welding fumes, a gravimetrically determined WES that can adequately protect workers cannot be determined. It is recommended that the TWA of 5 mg/m3 be withdrawn and the respective workplace exposure standards of the individual constituents in the fumes be used to determine worker exposure.

## 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: 5 mg/m3 | |
| No documentation available. WES derived for acute issues for metal fume fever; however, analysis for metals (Zn, Cu, Mn) can provide this information. |
| ACGIH NA NA |
| No report.  TLV-TWA for total particulates withdrawn in 2003 noting “the composition and quantity are both dependant on the alloy being welded and the process and electrodes used”. Individual constitutes in the fume to be compared to relevant TLVs. |
| 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? | No |
| --- | --- |
| **The chemical is not a non-threshold based genotoxic carcinogen.** |  |

## Notations

| Source | Notations |
| --- | --- |
| SWA | — |
| HCIS | NA |
| NICNAS | NA |
| EU Annex | NA |
| ECHA | NA |
| ACGIH | NA |
| DFG | NA |
| SCOEL | NA |
| HCOTN | NA |
| IARC | Carcinogenicity – Group 1 |
| 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? | No |
| --- | --- |

## Additional information

| Molecular weight: | N/A |
| --- | --- |
| Conversion factors at 25°C and 101.3 kPa: | 1 ppm = N/A; 1 mg/m3 = N/A |
| 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  Refer to individual chemical constituents |

## 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.

International Agency for Research on Cancer (IARC) (2018) Welding, molybdenum trioxide, and indium tin oxide. IARC Monographs on the evaluation of the carcinogenic risk to humans - 118.