# Flour Dust (Cereal)

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

Workplace exposure standard (new)

| TWA: | **0.5 mg/m3** |
| --- | --- |
| 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 0.5 mg/m3 is recommended to protect for respiratory effects and sensitisation in exposed workers.

## Discussion and conclusions

Flour is used to make foods for human or animalconsumption**.** Critical effects of exposure include asthma and effects on respiratory tract and the eyes (i.e. rhinitis, conjunctivitis).

Exposure at 1.35 to 3.57 mg/m3 (total flour dust) isidentified with changes in lung function tests and an increased prevalence of respiratory and asthmatic symptoms. A cross-sectional study identified an increase in the prevalence of chronic bronchitis, work-related wheeze and work-related nasal symptoms for workers exposed at 2 mg/m3or higher. Data indicates sensitisation in bakers following exposures at 0.5 mg/m3 inhalable dust or 0.2 µg/m3 wheat allergen. No duration of exposure is provided (ACGIH, 2018). SCOEL (2008) reports that symptoms in the lower respiratory tract, asthma, as well as sensitisation, are rare in the range of 0.5 to 1.0 mg/m3.

A TWA of 0.5 mg/m3 is recommended as assigned by the ACGIH (2018) and is considered sufficient to reduce the riskof respiratory effects including sensitisation 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. Evidence suggests potential for respiratory sensitisation. A review of the classification by NICNAS is recommended for a RSEN notation.

There are insufficient data to recommend a skin notation.

# Appendix

### Primary sources with reports

| Source Year set Standard |
| --- |
| SWA NA NA | |
|  |
| ACGIH 2014 TLV-TWA: 0.5 mg/m3 |
| TLV-TWA recommended to minimise the potential for wheat flour sensitisation in exposed workers.  Summary of data:  Human data:   * Reported work-related illnesses associated with flour exposure are rhinitis, conjunctivitis, “bakers’ asthma,” and dermatitis * Exposure to 1.35 to 3.57 mg/m3 (total flour dust)identified with changes in lung function tests and an increased prevalence of respiratory and asthmatic symptoms; no further information * Cross-sectional study of 279 bakery workers; increase in prevalence of chronic bronchitis, work-related wheeze, and nasal symptoms ≥2 mg/m3 * Wheat flour sensitisation may occur at 0.5 mg/m3 inhalable dust (or 0.2 μg/m3 wheat allergen).   Animal data:   * Mice exposed at 27 mg/m3 (± 8 mg/m3) for 3, 6, and 10 d; rapid immune modifications of the deep lung, transient inflammatory reactions but absence of notable inflammatory sites in the lung tissue; decrease in the number of B cells. |
| DFG 1995 Not assigned |
| Summary of additional data:   * Wheat flour dust and rye flour dust cause respiratory allergies. |
| SCOEL 2008 Not assigned |
| Summary of additional data:   * Critical effects are effects on respiratory tract and the eyes, such as rhinitis, conjunctivitis and asthma * Health-based OEL not recommended due to sensitisation status * Symptoms may be induced immunologically, mostly mediated by IgE-type antibodies (irreversible), or by irritation (reversible) * Symptoms in the lower respiratory tract, asthma, as well as sensitisation, are rare in the range of 0.5–1.0 mg/m3. |
| 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 | RSEN |
| DFG | Sa (respiratory sensitiser) |
| SCOEL | Sensitisation (respiratory) |
| 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 are available |

### IDLH

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

## Additional information

| Molecular weight: | Insert molecular weight |
| --- | --- |
| 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.

Deutsche Forschungsgemeinschaft (DFG) (1999) Cereal flour dusts (Rye and Wheat) – MAK value documentation.

EU Scientific Committee on Occupational Exposure Limits (SCOEL) (2008) Recommendation from the Scientific Committee on Occupational Exposure Limits for flour dust. SCOEL/SUM/123.