

CALCIUM HYDROXIDE

CAS number: 1305-62-0

Synonyms: Hydrated lime, slaked lime, calcium dihydroxide, calcium hydrate, carboxide, caustic lime, lime milk, lime water

Chemical formula: Ca(OH)_2

Workplace exposure standard (amended)

TWA: 1 mg/m³

STEL: 4 mg/m³

Peak limitation: —

Notations: —

IDLH: —

Sampling and analysis: There is uncertainty regarding quantification of the recommended value with currently available sampling and/or analysis techniques.

Recommendation and basis for workplace exposure standard

The TWA of 1 mg/m³ is recommended to protect for localised irritant effects in exposed workers.

As moderate corrosive effects are also reported, a STEL of 4 mg/m³ is recommended to protect for these effects during short term exposures.

Discussion and conclusions

The major use of calcium hydroxide is in mortar, plaster, cement and other building materials.

It is a known irritant to skin, eyes and respiratory tract (ACGIH, 2018, DFG, 2016, SCOEL 2008). Limited data are available for calcium hydroxide. As calcium oxide hydrolyses to calcium hydroxide, data from studies using calcium oxide are used for this evaluation.

Exposure at 2.5 mg/m³ for 30 minutes results in mild nasal irritation in humans. An additional study reported a NOAEC of 2 mg/m³ for eye, nose and throat irritation following a 20 minute exposure. As evidence suggests that irritation may occur after 30 minutes, there is a small degree of uncertainty regarding this NOAEC. Given the uncertainty, a TWA of 1 mg/m³ is recommended to protect for irritant effects in workers. A STEL of 4 mg/m³ is considered protective for the irritant effects reported after short-term exposures.

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.

There are insufficient data to recommend a skin notation.

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	1991	TWA: 5 mg/m³
ACGIH	2001	TLV-TWA: 5 mg/m³
<p>TLV-TWA recommended to minimise the potential for ocular, dermal and respiratory tract irritation.</p> <p>Summary of data:</p> <p>Used commonly in mortar, plaster, cement and other building and paving materials.</p> <p>Used in lubricants, drilling fluids, and pesticides, in the manufacture of paper pulp, in dehairing hides, and in water treatment.</p> <p>Human data:</p> <ul style="list-style-type: none"> Moderately caustic irritant to respiratory tract, eyes and all exposed body surfaces Absence of reports of adverse health effects in the industrial setting. <p>Animal data:</p> <ul style="list-style-type: none"> LD₅₀: 7,340 mg/kg (rats, oral). <p>Insufficient data to recommend skin, SEN, or carcinogenicity notations or STEL.</p>		
DFG	2012	MAK: 1 mg/m³ (inhalable fraction)
<p>MAK recommended to protect for irritant effects due to alkalinity.</p> <p>Summary of additional data:</p> <ul style="list-style-type: none"> Limited data are available therefore the data for calcium oxide (which hydrolyses to the hydroxide) are used to evaluate local effects LOAEC of 2.5 mg/m³ for mild nasal irritation in humans after 30 min of exposure to calcium oxide NOAEC of 2 mg/m³ for irritation of the eyes, nose and throat in humans after 20 min exposure to calcium oxide As irritative effects are demonstrated to manifest even after 30 min of exposure, it cannot be excluded that 2 mg/m³ produces irritation Therefore, MAK of 1 mg/m³ is considered sufficient to protect for irritation Not genotoxic <i>in vitro</i> and systemic carcinogenicity is unlikely. 		
SCOEL	2008	TWA: 1 mg/m³; STEL: 4 mg/m³
<p>TWA and STEL are recommended to prevent sensory irritation.</p> <p>No additional data.</p>		
OARS/AIHA	NA	NA
No report		
HCOTN	2004	TWA: 5 mg/m³ (total dust)
<p>TWA considered an administrative OEL and the HCOTN considers the toxicological data insufficient to justify recommendation of a health-based OEL.</p>		

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	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:	74.09
Conversion factors at 25°C and 101.3 kPa:	1 ppm = Number mg/m ³ ; 1 mg/m ³ = Number ppm
This chemical is used as a pesticide:	<input type="checkbox"/>
This chemical is a biological product:	<input type="checkbox"/>
This chemical is a by-product of a process:	<input checked="" type="checkbox"/>
A biological exposure index has been recommended by these agencies:	<input type="checkbox"/> ACGIH <input type="checkbox"/> DFG <input type="checkbox"/> 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](#) on the ACGIH website.

Deutsche Forschungsgemeinschaft (DFG) (2016) Calcium hydroxide – MAK value documentation.

EU Scientific Committee on Occupational Exposure Limits (SCOEL) (2008) Recommendation from the Scientific Committee on Occupational Exposure Limits for Calcium oxide (CaO) and calcium hydroxide (Ca(OH)₂). SCOEL/SUM/137.

Health Council of the Netherlands (HCOTN) (2004) Calcium hydroxide. Health-based reassessment of administrative occupational exposure limits. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/096.