

CALCIUM CARBONATE

CAS number: 471-34-1

Synonyms: Limestone, marble, whiting, carbon acid calcium salt (1:1), atomite, aragomite, calcite, chalk

Chemical formula: CaCO_3

Structural formula:

Workplace exposure standard (retained)

TWA: 10 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

The TWA of 10 mg/m³ is recommended to reduce the risk of irritation and nuisance effects in exposed workers.

Discussion and conclusions

Calcium carbonate is primarily used in the manufacture of quicklime and Portland cement. It is of low acute and chronic toxicity. A risk of silicosis exists if quartz is present in airborne lime dust concentrations.

Limited evidence exists to establish a dose-response in humans. One study in workers presented evidence for a potential association with development of bronchitis following exposure to lime dust; while no respiratory effects associated with occupational exposure in another study. HCOTN (2003) considers the toxicological database to be insufficient to derive a health-based TWA and have based their recommended administrative OEL on nuisance dust (HCOTN, 2003). Based on the data available, this approach is considered protective of the effects of calcium carbonate dust.

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: 10 mg/m³
This value is for inspirable (inhalable) dust containing no asbestos and less than 1% crystalline silica.		
ACGIH	NA	NA
No report.		
DFG	NA	NA
No report.		
SCOEL	NA	NA
No report.		
OARS/AIHA	NA	NA
No report.		
HCOTN	2003	TWA: 10 mg/m³
TWA considered by the HCOTN as an administrative OEL and is based for nuisance dusts. The toxicological database is considered insufficient to recommend a health-based TWA.		
Summary of data:		
Used primarily in the manufacture of quicklime and Portland cement.		
Human data:		
<ul style="list-style-type: none"> Pure calcium carbonate dust is not considered toxic although there is a risk of silicosis if contaminated with quartz Exposure of 107 workers to lime dust did not result in increased prevalence of respiratory symptoms, pulmonary abnormalities or chest radiograph abnormalities compared to 58 matched control workers (no further information) A study of 161 limestone quarry workers suggested an association between lime dust exposure and the development of bronchitis (no further information) Large, regular oral doses can result in hypercalcaemia and alkalosis (no further information). 		
Animal data:		
<ul style="list-style-type: none"> Moderate irritation of skin in rabbits following dermal contact; severe irritation of eyes in rabbits following instillation LD₅₀: 6,450 mg/kg (oral, rats) No data from mutagenicity or genotoxicity studies identified Decreased foetal weights and delayed skeletal and dental calcification in rats and mice at high dietary levels. 		

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	—
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:	100.1
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 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

Health Council of the Netherlands (HCOTN) (2003) Calcium carbonate. Health-based Reassessment of Administrative Occupational Exposure Limits. The Hague: Health Council of the Netherlands; publication no. 2000/15OSH/061.