CALCIUM SILICATE

CAS number:	1344-95-2
Synonyms:	Silicic acid calcium salt, calcium monosilicate, calcium hydrosilicate, calcium metasilicate, calcium orthosilicate
Chemical formula:	Ca_2SiO_4

Workplace exposure standard (retained)

TWA:	**10 mg/m³ (inhalable dust)**
STEL:	**—**
Peak limitation:	**—**
Notations:	**—**
IDLH:	**—**
Sampling and analysis:	The recommended value is readily quantifiable through currently available sampling and analysis techniques.

Recommendation and basis for workplace exposure standard

A TWA of 10 mg/m³ is recommended to protect for irritation and respiratory effects associated with nuisance dusts in exposed workers.

Discussion and conclusions

Calcium silicate is used by consumers, in cosmetic and personal care products, formulation, repackaging and manufacturing.

Very limited toxicological information is identified within the sources. A NOAEC of 1 mg/m³ was reported using data for the structurally similar synthetic amorphous silica (ECHA, 2019). There is no evidence of skin sensitising and carcinogenicity potential (ECHA, 2019).

There is limited evidence to support changing the current TWA. However, the recommended TWA is expected to be protective for the irritation and respiratory effects associated with exposure to calcium silicate and other similar nuisance dusts.

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 available to recommend a skin notation.

APPENDIX

Primary sources with reports

Source	Year set	Standard
SWA	***1991***	***TWA: 10 mg/m³ inhalable dust***
Value is for 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	***NA***	***NA***
No report.		

Secondary source reports relied upon

Source		Year	Additional information
NICNAS	✓	Unknown	• Not considered to pose an unreasonable risk to the health of workers based on the Tier I assessment.

ECHA	✓	2019	• Irritation of respiratory tract considered most sensitive endpoint
			• Assumed to have similar non-toxic effects after acute exposure as synthetic amorphous silica
			• No robust experimental data about inhalation toxicity available for calcium silicate
			  ○ only 1 high concentration level tested; so a NOAEL cannot be derived
			• short term and sub-chronic NOAEC of 1 mg/m³ (respirable) derived from read across with synthetic amorphous silica
			  ○ time- and dose-related inflammation response in animals
			  ○ no tissue reaction observed after 5 doses, 6 h/d at 1 mg/m³ (species not specified)
			  ○ slight reversible collagen stimulation and no significant increase in lung weight (considered adaptive) after 13 w at 1.3 mg/m³ (species not specified)
			• No evidence of skin sensitising potential
			• No evidence of carcinogenic potential
			• No mutagenic activity in standard test systems under valid conditions.

Source		Year	Additional information
US NIOSH	✓	2016	• NIOSH REL TWA 10 mg/m^3 (total dust) and TWA 5 mg/m^3 (respirable fraction) • OSHA PEL TWA 15 mg/m^3 (total dust) and TWA 5 mg/m^3 (respirable fraction) • Irritation eyes, skin, upper respiratory system listed as symptoms.

Carcinogenicity — non-threshold based genotoxic carcinogens

Is the chemical mutagenic? No

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	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:	116.2
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:	☐
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

European Chemicals Agency (ECHA) (2019 update) Silicic acid, calcium salt – REACH assessment.

National Industrial Chemicals Notification and Assessment Scheme (NICNAS) (date unknown) Silicic acid, calcium salt: Human health tier I assessment – IMAP report.

US National Institute for Occupational Safety and Health (NIOSH) (2016). Calcium silicate: Pocket Guide to Chemical Hazards.