

# Calcium sulfate (respirable fraction)

## MAK Value Documentation, addendum – Translation of the German version from 2023

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### Keywords

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## Abstract

The German Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (MAK Commission) re-evaluated the occupational exposure limit value (maximum concentration at the workplace, MAK value) for calcium sulfate (respirable fraction). In 2012, the general threshold limit value for the respirable fraction (R fraction) of dust was revised, resulting in the concept of “granular biopersistent dusts”. However, due to its proven solubility, calcium sulfate cannot be regarded as biopersistent. Data to derive a specific MAK value (maximum concentration at the workplace) are not available. Therefore, the MAK value and the assignment to Pregnancy Risk Group C for the respirable fraction of calcium sulfate are withdrawn.

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<b>MAK value</b>	<b>not established, see Section II b of the List of MAK and BAT Values (respirable fraction)</b>
<b>Peak limitation</b>	–
<b>Absorption through the skin</b>	–
<b>Sensitization</b>	–
<b>Carcinogenicity</b>	–
<b>Prenatal toxicity</b>	–
<b>Germ cell mutagenicity</b>	–
<b>BAT value</b>	–
<b>Synonyms</b>	anhydrite gypsum
<b>Chemical name (IUPAC)</b>	calcium sulfate
<b>CAS number</b>	7778-18-9: calcium sulfate, anhydrite 10034-76-1: calcium sulfate hemihydrate 10101-41-4; 13397-24-5: calcium sulfate dihydrate, gypsum
<b>Molecular formula</b>	CaSO <sub>4</sub> , calcium sulfate CaSO <sub>4</sub> × ½H <sub>2</sub> O, calcium sulfate hemihydrate CaSO <sub>4</sub> × 2H <sub>2</sub> O, calcium sulfate dihydrate
<b>Molar mass</b>	136.14 g/mol (anhydrous)
<b>Melting point</b>	1450 °C (IFA 2022)
<b>Boiling point</b>	decomposes on heating (1450 °C) (NCBI 2023)
<b>Density</b>	2.96 g/cm <sup>3</sup> (IFA 2022)
<b>Vapour pressure</b>	0 hPa (NCBI 2023)
<b>Solubility</b>	2.4 g/l water at 20 °C (IFA 2022)

## Re-evaluation of the MAK value and the pregnancy risk group

In 2007, the general limit value for dust was established both for the respirable fraction (1.5 mg/m<sup>3</sup>) and for the inhalable fraction (4 mg/m<sup>3</sup>) of calcium sulfate with peak limitation as described in Sections V f) and V g) of the List of MAK and BAT Values (Greim 1999; Hartwig 2013).

In 2012, the general limit value for the respirable fraction (R fraction) was revised, resulting in the concept of “biopersistent granular dusts” with a MAK value of 0.3 mg/m<sup>3</sup> × density for the respirable fraction. The general limit value for dust applies exclusively to dusts whose particles are not systemically bioavailable, that is, insoluble or poorly soluble (Hartwig 2014). However, due to its proven solubility, calcium sulfate cannot be regarded as biopersistent. Data that would enable a specific MAK value to be derived are not available. Therefore, the MAK value and the assignment of the respirable fraction of calcium sulfate to Pregnancy Risk Group C have been withdrawn.

## Notes

### Competing interests

The established rules and measures of the Commission to avoid conflicts of interest ([www.dfg.de/mak/conflicts\\_interest](http://www.dfg.de/mak/conflicts_interest)) ensure that the content and conclusions of the publication are strictly science-based.

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