

[GPS Safety Summary](#)



Synthetic amorphous silica

[Chemical Identity](#)

<i>Brand names</i>	Tixosil, Zeosil	<i>CAS number(s)</i>	7631-86-9; 112926-00-8
<i>Chemical name (IUPAC)</i>	Silicon dioxide	<i>Molecular formula</i>	SiO₂
<i>Synonyms</i>	SAS, pyrogenic (fumed) silica, precipitated silica, silica gel	<i>Molecular weight</i>	60.08g/mol

[Applications](#)

Synthetic amorphous silica (SAS) is used in a wide range of applications such as reinforcing fillers in rubber and tires, free-flow or anti-caking agents in powder materials, and carrier for liquid active ingredients in human and animal nutrition. Many consumer products such as toothpaste or food and feed products as well as technical rubber goods contain SAS.

[Safety Assessment, Exposure and Risk Management Recommendations](#)

[Physical and chemical properties](#)

Property	Result
Physical state	Solid
Form	Powder; granules
Colour	White
Melting point	> 1700°C
Flammability	Non flammable
Vapour pressure	Not applicable
Water solubility	Slightly soluble

[Health effects](#)



SAS is not classified as dangerous for human health based on available data. For industrial uses, safety measures must be observed. For details, please refer to the Safety Data Sheet.

For consumer applications, SAS is formulated according to appropriate safety requirements.

[Environmental effects](#)



SAS is an inorganic substance of slight water solubility. It is not considered as dangerous for the environment, based on available data. Emissions in the air are not expected. Disposal, treatment or recycling must comply with applicable regulations to preserve environment.

[Regulatory information and certifications](#)

[Classification and labelling](#)

EU regulation (EC) 1272/2008 (CLP)

SAS is not classified as dangerous regarding physical and chemical hazards, and it is not classified for human health or for environment, according to the regulation criteria.

[Registration and certification](#)

**EU regulation on chemicals (EC) 1907/2006 (REACH)
ISO 9001: 2008 certified**

GPS Safety Summary

This Product Safety Summary is intended to provide a general overview of the chemical substance in the context of ICCA Global Product Strategy. The information on the Summary is basic information and is not intended to provide emergency response information, medical information or treatment information. The summary should not be used to provide in-depth safety and health information. In-depth safety and health information can be found on the (extended) Safety Data Sheet (e)SDS for the chemical substance.

Synthetic amorphous silica

General Statement

Crystalline and/or amorphous silica is ubiquitous on the earth in soils and sediments, and in living organisms.

Synthetic amorphous silica (SAS) in its pure form is a colourless to white inorganic substance obtained from a process essentially using sand. It is not classified as dangerous for human health and for environment, based on available data.

SAS is used in a wide range of industrial applications and products. SAS is also used in consumer products including cosmetics, foods and pharmaceuticals.

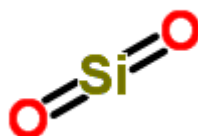
SAS should not be confused with crystalline silica which has significant adverse health effects due to its specific structure.

Chemical Identity

Name:	Synthetic amorphous silica
Brand names:	Tixosil, Zeosil*
Chemical name (IUPAC):	Silicon dioxide
Synonyms:	SAS, pyrogenic (fumed) silica, precipitated silica, silica gel, colloidal silica, surface-treated silica
CAS number(s):	7631-86-9 [= general CAS No. for silicon dioxide which includes all forms of silicas (e.g. also crystalline and natural forms)] 112926-00-8 [= CAS No. for silica gel and precipitated silica, crystalline-free]
EC number:	231-545-4
Molecular formula:	SiO ₂

*These brand names relate to precipitated silica only as Rhodia is a producer of precipitated silica.

Structure:



Uses and applications

Two principally different process technologies are used for the manufacture of SAS: the thermal route which leads to the formation of pyrogenic SAS and the wet route yielding precipitated SAS, SAS gel or SAS sol (SAS particles dispersions).

SAS is used in a variety of applications for industrial, professional and consumer use, e.g.:

Market	SAS function
Tyres, shoe soles, technical rubber goods, silicones	Use as reinforcing filler for elastomers
Human and animal nutrition	Use as carrier for liquid active ingredients; use as free flow agent for powders
Oral care (toothpaste)	Use as cleaning/polishing agent; use as thickening agent
Paper, paint	Use as whiteness agent; to improve printability
Building, membranes	Miscellaneous functions

Physical/Chemical Properties

Phys/Chem Safety Assessment

Property	Value
Physical state	Solid at 20°C
Form	Powder; granules
Colour	White
Odour	Odourless
Molecular weight	60.08 g/mol
Melting Point	> 1700°C at atmospheric pressure
Boiling Point	> 1700°C at atmospheric pressure
Flash point	Not applicable to solid and to inorganic substances
Flammability	Non flammable
Explosive properties	Non explosive
Self-ignition temperature	Not auto-flammable
Vapour pressure	Not applicable
Water solubility	15 - 68 mg/l at 20°C, slightly soluble
Octanol Water partition coefficient (log Kow)	Not applicable to inorganic substances

Regarding physical and chemical hazards, SAS is not classified according to regulation (EC) 1272/2008.

Health Effects

Human Health Safety Assessment

Effect Assessment	Result
Acute Toxicity Oral/inhalation/dermal	Not classified for acute toxicity based on several oral, dermal or inhalation data

Irritation / corrosion Skin/eye	May cause skin dryness or cracking not resulting in classification May cause dust related mechanical irritating effect on eyes and respiratory tract, not resulting in classification
Sensitisation	Not expected to cause skin sensitisation
Toxicity after repeated exposure Oral/inhalation/dermal	Not classified for repeated toxicity based on several oral, dermal or inhalation data
Genotoxicity / Mutagenicity	Not classified for either mutagenicity or genotoxicity
Carcinogenicity	Not classified for carcinogenicity
Toxicity for reproduction	Not classified for reproduction toxicity

All these results are based on available data. Regarding toxicological hazard, SAS is not classified according to EC 1272/2008 regulation criteria.

Environmental Effects

Environment Safety Assessment

Effect Assessment	Result
Aquatic Toxicity	Not harmful to aquatic organisms

Fate and behaviour	Result
Biodegradation	Not applicable to inorganic substances
Bioaccumulation potential	Not considered to be bioaccumulative
PBT / vPvB conclusion	Not applicable to inorganic substances

Based on available data, SAS is not classified as dangerous for the environment, according to regulation (EC) 1272/2008.

Exposure

Human health

Considering the whole life-cycle of the substance, workers and consumers may come in contact with SAS or products containing SAS.

The most relevant route of exposure for workers is inhalation. In order to control possible risks during the handling of the substance (during (un)loading, mixing, sampling, analysis or maintenance operations), the exposure must be kept as low as possible and at a safe level (strictly below occupational exposure limits, where applicable) by the use of appropriate risk management measures such as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

Consumers may come in contact with products containing SAS when using cosmetics or food and feed products where it is formulated according to appropriate safety requirements. However, no direct contact with SAS is to be expected when using consumer products such as technical rubber goods, tires, shoes, etc., as the substance is included into a matrix in these products.

Environment

Based on its physical and chemical properties, when SAS is released into the environment, it will be distributed mainly into soil/sediment, slightly into water and probably not at all into air.

It is expected to combine indistinguishably with the soil or sediment due to its similarity with inorganic soil/sediment matter and will be subjected to natural processes under environmental conditions (dissolution, sedimentation).

Risk Management Recommendations

Human health

For industrial uses of SAS substance, workers must be well informed and trained and must refer to the Safety Data Sheet.

In order to control possible risks during the handling of the substance (during (un)loading, mixing, sampling, analysis or maintenance operations), an adequate and efficient Local Exhaust Ventilation (LEV) should be provided at each point of dust emission. Good housekeeping practices should be maintained in work areas. Dust should not be allowed to accumulate and should be cleaned regularly. Where situations arise such that dust levels cannot be reduced significantly below the occupational exposure limits, then a respirator with an approved filter should be used. Since exposure to SAS may result in skin dryness and mechanical irritating effects on eyes, suitable gloves, protective clothing and safety glasses should be worn. General industrial hygiene measures are required to ensure safe handling of the substance: Use well-maintained PPE; wash hands and skin following contact; do not eat, drink or smoke at the workplace.

For consumer uses, SAS is formulated according to appropriate regulations to ensure safe use of the final product.

Environment

Based on available data, SAS presents a low risk for adverse effects to the environment.

All effluent releases that may contain significant amounts of the substance must be directed to a waste water treatment plant. Any discharge of the product in the environment must be avoided and disposal, treatment or recycling of industrial waste must comply with applicable regulations.

State Agency Review

SAS has been registered under:	EU regulation (EC) 1907/2006 (REACH)
SAS has been reviewed under the following regulatory and/or voluntary programmes:	OECD list of High Production Volume chemicals (published in 2006)

SAS complies with the requirements of the European regulations for the use in all applicable consumer applications.

Regulatory Information / Classification and Labelling

Substance classification and labelling according to EU regulation (EC) 1272/2008 (CLP):

Classification

SAS is not classified as dangerous neither for human health nor for the environment.

Labelling

No pictogram, no signal word, no Hazard or Precautionary statement.

Contact information within company

For further information on this substance or Product Safety Summaries in general, please contact:

Rhodia Global Product Strategy: http://www.rhodia.com/en/sustainability/global_product_strategy/index.tcm

Contact: globalproductstrategy@eu.rhodia.com

Additional information

ICCA Global Product Strategy: <http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

(extended) Safety Data Sheet available on demand: http://www.rhodia.com/en/contact/contact_form_business.tcm

Glossary of technical terms: http://www.rhodia.com/en/sustainability/global_product_strategy/glossary/index.tcm

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Disclaimer

The information provided in the present Safety Summary is based on European data available in REACH regulatory dossier (EC N°1907/2006) and is correct to the best of our knowledge, information and belief at the date of its publication. Such information is only intended to provide a general overview of the chemical substance in the context of ICCA Global Product Strategy and is not to be considered as a warranty or specification. It does not replace the safety data sheet and technical sheets. Thus, the information provided in this Safety Summary only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in another manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.