

Industry Consortium SAS FOR REACH

Information Letter 2 a

Substance Identity Profile for Synthetic Amorphous Silica (SAS)

[EC no.: 231-545-4; EC name: silicon dioxide, chemically prepared]

Date: November 25, 2020

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Member Companies

Albemarle Europe, BASF SE, Cabot Corp., Evonik Operations GmbH, Grace GmbH, IQE S.A., PPG Ind. Inc., PQ Corporation, Rhodia Operations S.A.S., Clariant Produkte Deutschland GmbH, Wacker Chemie AG, Zeochem AG

1. Introduction

This report is the substance identity profile for Synthetic Amorphous Silica (SAS) (EC no. 231-545-4; EC name: silicon dioxide, chemically prepared). SAS exists as a nanostructured material consisting of agglomerates and aggregates which are composed of primary particles fused together; except for nanoparticle of colloidal silica in dispersion. The report contains general information of the substance and compositional data in order to ensure the sameness of samples from different suppliers (manufacturers or importers). Individual companies are responsible for providing their own analytical data and appropriate method descriptions as part of their registration submission (IUCLID Section 1.4).

Please keep in mind, it is the responsibility of the co-registrant to demonstrate substance sameness within the joint registration requirements. The consortium is not providing analytical data.

2. Available information for Synthetic Amorphous Silica (SAS)

2.1 General Information

EC name: Silicon dioxide, chemically prepared

CAS name: Silica

Table 1: General Information of Synthetic Amorphous Silica (SAS)

Date		July 2019
Type of Substance	Composition	mono constituent substance
	Origin	inorganic
CAS numbers		7631-86-9, 112926-00-8, 112945-52-5
Reference EC number		231-545-4
EC name		Silicon Dioxide, chemically prepared
Synonyms		Synthetic amorphous silica Amorphous silica Fumed silica Pyrogenic silica Precipitated amorphous silica Silica, Amorphous Silica gel Silica gel and precipitated silica crystalline free Silicon dioxide (amorphous) Colloidal silica (this list is not exhaustive)
Other International chemical name		Silicon dioxide
Abbreviation		Silica
Molecular formula		SiO ₂
SMILES		[Si](=O)=O
InChi		1S/O2Si/c1-3-2

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Structural formula	$O = Si = O$
Molecular weight [g/mol]	60.084
Optical activity	no optical activity
Specific surface area	$\geq 4 \text{ m}^2/\text{g} \leq 1000 \text{ m}^2/\text{g}$

2.2 Substance Composition

Table 2: Substance Composition of Synthetic Amorphous Silica

Substance Composition*		Remarks
Purity	$\geq 95.0 \%$ (w/w)	
Impurities		Remarks
Soluble ionizable salts, like sodium sulphate or sodium chloride	$< 5.0 \%$ (w/w)	Only for the wet manufacturing route
If hazardous impurities are present, any impact on safe use, PBT assessment and classification and labelling relating to impurities must be evaluated by the registrants in its own company-specific part of the registration dossier.		

* Guidance Document “identification and naming under REACH” (Version 2.1, 2017) page 55: << No differentiation is made between technical, pure or analytical grades of the substance. This means that the “same” substance may have a different purity/impurity profile depending on its grade. However, well defined substances should contain the same main constituent(s) and the only impurities allowed are those derived from the production process (for details see Chapter 4.2) and additives which are necessary to stabilize the substance. >>

2.3 Impurities that affect Classification and Labelling

Table 3: Other impurities that affect Classification and Labelling of Synthetic Amorphous Silica

EC number	EC name	Typical Concentration	comment
-	-	-	-

None of the impurities contribute to the classification and labelling of the substance.

3. Analytical Data

Synthetic amorphous silica (SAS) is predominantly characterized through the following methods of identification:

- Amorphous structure: X-ray diffraction (XRD)

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X-ray diffraction diagrams of SAS, show only a broad halo, revealing an X-ray amorphous structure. The detection limit for crystallinity by X-ray is in the maximum order of 0.3% by weight or below.

- Infrared spectroscopy (IR – drift unit)
- Magnetic Resonance spectroscopy – solid state NMR Si²⁹
- Constituent Particle Size Distribution

SAS is a nanomaterial according to European Commission recommendation 2011/696/EU and the status should be determined according to methods given in the latest JRC science for policy report (An overview of concepts and terms used in the European Commission's definition of nanomaterial, 2019)

The detection limit of ≤ 0.3 % by weight is the limit for the crystalline part of the registered silicon dioxide, chemically prepared, including impurities.

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