

SASFORREACH Consortium

SIEF Information Letter 2 Synthetic Amorphous Silica (SAS): Substance Identification & Sameness

Dear SIEF member

In this second letter the Consortium would like to inform you in detail about the Substance Identification & Sameness for Synthetic Amorphous Silica (SAS), EINECS # 231-545-4, CAS # 7631-86-9.

Substance Name: Silicon dioxide
EC Number: 231-545-4
CAS Number: 7631-86-9

Substance Name:

***Synthetic amorphous silica (SAS): pyrogenic silica, precipitated silica, silica gel, colloidal silica.**

*** The detection limit of ≤ 0.3 % by weight is the limit for crystallinity for the registered silicon dioxide.**

Silicon dioxide (CAS 7631-86-9) is a nano structured mono constituent substance including two main manufacturing routes - flame hydrolysis and water based processes:

Synthetic amorphous silica (SAS), CAS No. 112945-52-5, with a purity of ≥ 98.5 w% and SAS, CAS No. 112926-00-8, with a purity of ≥ 95 w%.

Table 1: Impurities

Impurities	Typical concentration	Remarks
Disodium oxide	< 9 ppm	CAS No. 112945-52-5
Chlorides as HCl	< 250 ppm	
Diiron trioxide	< 30 ppm	
Dialuminum trioxide	< 500 ppm	
Titanium dioxide	< 300 ppm	
Diiron trioxide	< 500 ppm	CAS No. 112926-00-8
Disodium oxide	$\leq 2,5$ % (w/w)	
Disodium sulphate	$\leq 4,5$ % (w/w)	

SASFORREACH Consortium Member Companies

Albemarle Europe, Merck Performance Materials SAS, BASF SE, Cabot Corp., Evonik Resource Efficiency GmbH, Grace GmbH & Co. KG, Industrias Químicas del Ebro S.A. (IQE), PPG Industries Chemicals, PQ Corporation, Solvay S.A., Clariant Produkte (Deutschland) GmbH, Wacker Chemie AG, Zeochem AG

Identification:

Synthetic amorphous silica (SAS) is predominantly characterized through the following methods of identification in IUCLID 5:

- Amorphous structure: X-ray diffraction (XRD)
X-ray diffraction diagrams of SAS using CuK α radiation with $\lambda = 0.1542$ nm, 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 (ECETOC 2006).
- Infrared spectroscopy (IR)
- Magnetic Resonance spectroscopy (NMR)
- Primary Particle Size Distribution: Transmission Electron Microscopy (TEM)

The detection limit of ≤ 0.3 % by weight is the limit for the crystalline part of the registered silicon dioxide.

NMR, XRD, IR and TEM are suggested analytical methods for identifying Synthetic Amorphous Silica (SAS).

XRD is a sufficient method to determine the amorphous character of the substance.

In addition the NMR & IR methods listed above may be used to determine the composition e.g. for IUCLID 5 in Chapter 1.2 and 1.4 (company specific).

TEM should be used to investigate the nanostructured properties of SAS.

Please keep in mind, it is the responsibility of the co-registrant to demonstrate substance sameness within the joint registration requirements.

In the following information letters we inform you about the next steps for the registration process.

With kind regards

SASFORREACH Consortium

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