



Name: CORE / Composition / Boundary compo - nano cerium dioxide / CeriumDioxide-MàJ2017_Sub_>1000t_RhodiaOperations_RhodiaLead / cerium dioxide / 1306-38-3

Legal entity owner:

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FLEXIBLE_RECORD: Boundary composition - nano cerium dioxide

UUID: 747c84cb-9213-4350-b097-07608f776aab

Dossier UUID:

Author: cudicini

Date: 2019-12-18T11:39:07.289+01:00

Remarks:

General Information

Name

Boundary composition of cerium dioxide

Type of composition

boundary composition of the substance

State / form

solid: nanoform

Description

Methods of manufacture of substance:

The production is performed using conventional closed stirred reactors, filters for solid/liquid separation, furnace and kilns for calcination, grinders for particle size adjustment.

Justification for deviations

Attached description / justification

Related composition(s)

Related composition

Reference to related composition(s)

Degree of purity

\geq 80

\leq 100

% (w/w)

Constituents

Reference substance

[cerium dioxide](#) / [cerium dioxide](#) / [1306-38-3](#) / [215-150-4](#)

EC number

215-150-4

EC name

EC Inventory

CAS number

1306-38-3

CAS name

IUPAC name

cerium dioxide

Typical concentration

>= 80 % (w/w)

Concentration range

>= 80 <= 100 % (w/w)

Remarks

Impurities

Additives

Characterisation of nanoforms**Type of information reported**

set of nanoforms

Justification for reporting set of similar nanoforms

JUSTIFICATION FOR REPORTING SET OF SIMILAR NANOFORMS

The information reported below reflect the state of the collected information from most of the co-registrants. However, all the information for the following sections (particle size, shape, crystallinity, surface functionalisation or treatment, specific surface area) are not yet identified.

1. PARTICLE SIZE

From the information collected up to now, it is considered that the different nanoforms can be grouped into one set because no difference were observed in dissolution rate/solubility, toxicokinetic behaviour and (eco)toxicity (based on available data and published studies (e.g. Yokel RA et al., 2012, 2013, 2014; Geraets et al., 2012; Gosens et al., 2014; Lahive et al., 2014 or Angel et al., 2015) which have tested several members of the set of nanoforms. A detailed justification will be provided later on and will include all the necessary evidences.

2. SHAPE

2.1 From the information collected up to now, all the nanoforms in the set contain particles with only one shape.

3. CRYSTALLINITY

3.2. From the information collected up to now, all the nanoforms in the set contain particles with one specific crystal structure.

4. SURFACE FUNCTIONALISATION OR TREATMENT

4.1 From the information collected up to now, all the nanoforms in the set are without surface functionalisation or treatment.

5. SPECIFIC SURFACE AREA

From the information collected up to now, it is considered that the different nanoforms can be grouped into one set because no difference were observed in dissolution rate/solubility, toxicokinetic behaviour and (eco)toxicity despite some variations in the specific surface area (BET ranging from 2 to 500 m²/g with spheroidal primary particle size varying typically from 1 to 100 nm and more than 50 %

being between 1-100nm diameter. A detailed justification will be provided later on and will include all the necessary evidences.

Attached information

Cross-reference

Shape

Shape flags

Shape description

Shape category

spheroidal

Shape

other: Pseudo-spherical

Pure shape

yes

Typical composition**Range**

\geq 95 \leq 100 %

Remarks

The information reported reflect the state of the collected information from most of the co-registrants. However, all the information for shape are not yet identified.

Justification for set containing multiple shape categories or shapes

Particle size distribution and range

Particle size distribution and range flags

Particle size distribution and range

Shape category

spheroidal

Percentile**Percentile**

D10

Typical value**Range**

\geq 1 \leq 20 nm

Remarks

The information reported reflect the state of the collected information from most of the co-registrants. However, all the information for particle size distribution and range are not yet identified.

Percentile

D50

Typical value**Range**

>= 2 <= 40 nm

Remarks

The information reported reflect the state of the collected information from most of the co-registrants. However, all the information for particle size distribution and range are not yet identified.

Percentile

D90

Typical value**Range**

>= 5 <= 100 nm

Remarks

The information reported reflect the state of the collected information from most of the co-registrants. However, all the information for particle size distribution and range are not yet identified.

Typical length**Range of length****Typical lateral dimension 1****Range of lateral dimension 1****Typical lateral dimension 2****Range of lateral dimension 2****Typical aspect ratio (:1)****Range of aspect ratio (:1)****Additional information****Fraction of constituent particles in the size range 1-100 nm**

>= 50 <= 100 %

Crystallinity

Crystallinity flags

Structures

Structure

crystalline

Name**Pure structure****Typical composition****Range**

>= 90 <= 100 %

Crystal system

other: Cubic

Bravais lattice

face - centred cubic

Description

The information reported reflect the state of the collected information from most of the co-registrants. However, all the information for structure are not yet identified.

Specific surface area

Specific surface area flags

Typical specific surface area

Range of specific surface area

>= 2 <= 500 m²/g

Typical volume specific surface area**Range of volume specific surface area****Skeletal density****Remarks**

The information reported reflect the state of the collected information from most of the co-registrants. However, all the information for specific surface area are not yet identified.

Surface functionalisation / treatment

Surface functionalisation / treatment flags

Surface treatment applied

no

Does the set contain both treated and non-surface treated nanoforms?

no

Surface treatments

Characterisation of polymers

Polymer molecular weight

Number average molecular weight (NAMW)

Weight average molecular weight (WAMW)

Polydispersity index

Percentage of low molecular weight species (< 1,000 g/mol)

Percentage of low molecular weight species (< 500 g/mol)

Reactive functional groups

Polymer contains only low concern reactive functional groups

false

Reactive functional groups - moderate concern

Reactive functional group

Reactive functional groups - high concern

Reactive functional group

Combined functional group equivalent weight

Combined functional group equivalent weight (FGEW_{combined})

Remarks

References

REFERENCE_SUBSTANCE: cerium dioxide

UUID: IUC4-9d70d5c8-1f3d-320c-96e4-f245d76436f8

Dossier UUID:

Author: cbonnefo

Date: 2017-03-10T13:36:18.028+01:00

Remarks:

General information

Reference substance name

cerium dioxide

Inventory

Inventory name

cerium dioxide

Inventory

EC

Inventory number

215-150-4

CAS number

1306-38-3

Molecular formula

CeO₂

Description

No inventory information available

Justification

Reference substance information

EU: REACH

IUPAC name

cerium dioxide

Description

The given information is based on IUCLID4 chapter 1.1.0 General Substance Information and the IUCLID4 Substance Definition.

The crystalline structure of cerium dioxide is cubic.

Synonyms

CAS information

CAS number

1306-38-3

CAS name

Related substances**Identifiers of related substances****Group / category information**

Molecular and structural information

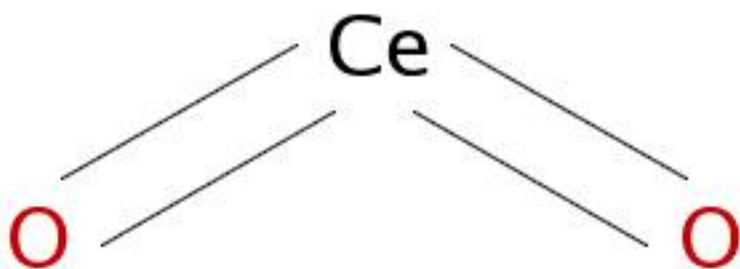
EU: REACH

Molecular formula

CeO₂

Molecular weight

172.14

SMILES notation**InChI****Structural formula**

Remarks

Chemical structure files