

SAFETY DATA SHEET



Ti-Pure™ R-103 Titanium Dioxide Pigment

Version 12.1	Revision Date: 2025/01/23	SDS Number (Internal): 1575815-00027	Date of last issue: 2025/01/22 Date of first issue: 2017/04/27
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1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Ti-Pure™ R-103 Titanium Dioxide Pigment

SDS-Identcode : 130000030905

Recommended use of the chemical and restrictions on use

Recommended use : Colouring agent
Pigment

Restrictions on use : For industrial use only.

Manufacturer or supplier's details

Company : Chemours Korea Inc.

Address : 12FL, Majestarcity Tower 1, 12, Seocho-daero 38-gil, Seocho-gu, Seoul 06655, Korea

Telephone : 82-2-2015-5000

Emergency telephone number : 080-880-0454

Telefax : 82-2-2015-5091

2. HAZARDS IDENTIFICATION

GHS Classification

This material is not classified as hazardous under the Article 104 of the Occupational Safety and Health Act (OSHA). It is not regulated for the MSDS creation and labeling by the provision of Article 110 Paragraph 1 of the OSHA.

GHS label elements

This material is not classified as hazardous under the Article 104 of the Occupational Safety and Health Act (OSHA). It is not regulated for the MSDS creation and labeling by the provision of Article 110 Paragraph 1 of the OSHA.

Hazard pictograms : Not applicable

Signal word : Not applicable

Hazard statements : Not applicable

Precautionary statements : **Prevention:**
P264 Wash skin thoroughly after handling.

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Disposal:

P501 Dispose of contents/ container according to waste-related laws

Other hazards which do not result in classification

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	Common Name	CAS-No.	Concentration (% w/w)
Titanium dioxide	No data available	13463-67-7	$\geq 90 - \leq 100$
Aluminium hydroxide	No data available	21645-51-2	$\geq 1 - < 10$
Aluminum oxide	No data available	1344-28-1	$\geq 0.1 - < 1$
Trimethylolpropane	No data available	77-99-6	$\geq 0.3 - < 1$
aluminium fluoride	No data available	7784-18-1	$\geq 0.1 - < 1$
Silicon dioxide, amorphous	Silica	7631-86-9	< 0.1

4. FIRST AID MEASURES

General advice	: In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
In case of eye contact	: Flush eyes with water as a precaution. Get medical attention if irritation develops and persists.
In case of skin contact	: In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
If inhaled	: If inhaled, remove to fresh air. Get medical attention.
If swallowed	: If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.

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Most important symptoms and effects, both acute and delayed	: irritant effects
Protection of first-aiders	: First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
Notes to physician	: Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

Suitable and unsuitable extinguishing media

Suitable extinguishing media : Not applicable
Will not burn

Unsuitable extinguishing media : Not applicable
Will not burn

Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Metal oxides

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

Environmental precautions : Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.

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Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up : Sweep up or vacuum up spillage and collect in suitable container for disposal.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

7. HANDLING AND STORAGE

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation : Use only with adequate ventilation.

Advice on safe handling : Do not swallow.
Avoid contact with eyes.
Avoid prolonged or repeated contact with skin.
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage : Keep in properly labelled containers.
Store in accordance with the particular national regulations.

Materials to avoid : No special restrictions on storage with other products.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Titanium dioxide	13463-67-7	TWA	10 mg/m3	KR OEL
		TWA (Respirable particulate matter)	2.5 mg/m3 (Titanium dioxide)	ACGIH
Aluminium hydroxide	21645-51-2	TWA	2 mg/m3 (Aluminium)	KR OEL
		TWA (Res-	1 mg/m3	ACGIH

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		pirable particulate matter)	(Aluminium)	
Aluminum oxide	1344-28-1	TWA	10 mg/m3	KR OEL
		TWA (Respirable particulate matter)	1 mg/m3 (Aluminium)	ACGIH
aluminium fluoride	7784-18-1	TWA	2.5 mg/m3 (Fluorine)	KR OEL
		TWA	2.5 mg/m3 (Fluorine)	ACGIH

Other ingredients, which are listed in section 3 but not listed in this section, do not have established occupational exposure limit values.

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
aluminium fluoride	7784-18-1	Fluoride (Fluorine)	Urine	Prior to shift (16 hours after exposure ceases)	2 mg/l	ACGIH BEI
		Fluoride (Fluorine)	Urine	End of shift (As soon as possible after exposure ceases)	3 mg/l	ACGIH BEI

Engineering measures : Ensure adequate ventilation, especially in confined areas.
Minimize workplace exposure concentrations.

Personal protective equipment. Among the following personal protective equipment, the PPEs which require safety certification need to be certified by KOSHA.

Respiratory protection : Use respiratory protection (dust mask) unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Filter type : Particulates type

Eye protection : Wear the following personal protective equipment:
Safety glasses

Hand protection

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Material	: Chemical-resistant gloves
Remarks	: Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.
Skin and body protection	: Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential. Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).
Hygiene measures	: If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: crystalline
Colour	: white
Odour	: odourless
Odour Threshold	: No data available
pH	: No data available
Melting point/freezing point	: 1,843 °C
Initial boiling point and boiling range	: 3,000 °C
Flash point	: Not applicable
Evaporation rate	: Not applicable
Flammability (solid, gas)	: Will not burn

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Not expected to form explosive dust-air mixtures.

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapour pressure : Not applicable

Solubility(ies)
Water solubility : insoluble

Relative vapour density : Not applicable

Relative density : 3.6 - 4.3

Partition coefficient: n-octanol/water : Not applicable

Auto-ignition temperature : No data available

Decomposition temperature : The substance or mixture is not classified self-reactive.

Viscosity
Viscosity, kinematic : Not applicable

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Molecular weight : No data available

Particle characteristics
Particle size : No data available

10. STABILITY AND REACTIVITY

Chemical stability and possibility of hazardous reactions : Reactivity:
Not classified as a reactivity hazard.
Chemical stability:
Stable under normal conditions.
Possibility of hazardous reactions:
None known.

Conditions to avoid : None known.

Incompatible materials : None.

Hazardous decomposition : No hazardous decomposition products are known.

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products

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Skin contact
Ingestion
Eye contact

Health hazard information

Acute toxicity

No data available

Components:

Titanium dioxide:

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 425
Acute inhalation toxicity	: LC50 (Rat): > 6.82 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	: Acute toxicity estimate (Rat): > 2,000 mg/kg Method: Expert judgement Assessment: The substance or mixture has no acute dermal toxicity

Aluminium hydroxide:

Acute oral toxicity	: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 423 Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	: LC50 (Rat): > 5.09 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity Remarks: Based on data from similar materials

Aluminum oxide:

Acute oral toxicity	: LD50 (Rat): > 10,000 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	: LC50 (Rat): > 5.09 mg/l Exposure time: 4 h Test atmosphere: dust/mist

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Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Based on data from similar materials

Trimethylolpropane:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 0.85 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

aluminium fluoride:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 420
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 0.53 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Silicon dioxide, amorphous:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 2.08 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation

No data available

Components:

Titanium dioxide:

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation

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Aluminium hydroxide:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Aluminum oxide:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Trimethylolpropane:

Species	:	Rabbit
Result	:	No skin irritation

aluminium fluoride:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Silicon dioxide, amorphous:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Serious eye damage/eye irritation

No data available

Components:

Titanium dioxide:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405

Aluminium hydroxide:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405

Aluminum oxide:

Species	:	Rabbit
Result	:	No eye irritation

Trimethylolpropane:

Species	:	Rabbit
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Result : No eye irritation

aluminium fluoride:

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

Silicon dioxide, amorphous:

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

Respiratory or skin sensitisation

Respiratory sensitisation

No data available

Skin sensitisation

No data available

Components:

Titanium dioxide:

Test Type : Buehler Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative

Test Type : Local lymph node assay (LLNA)
Exposure routes : Skin contact
Species : Mouse
Method : OECD Test Guideline 429
Result : negative

Exposure routes : Inhalation
Species : Mouse
Result : negative

Exposure routes : Inhalation
Species : Humans
Result : negative

Aluminium hydroxide:

Test Type : Maximisation Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative

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Aluminum oxide:

Exposure routes	: Skin contact
Species	: Guinea pig
Result	: negative

Trimethylolpropane:

Test Type	: Local lymph node assay (LLNA)
Exposure routes	: Skin contact
Species	: Mouse
Method	: OECD Test Guideline 429
Result	: negative

aluminium fluoride:

Test Type	: Local lymph node assay (LLNA)
Exposure routes	: Skin contact
Species	: Mouse
Method	: OECD Test Guideline 429
Result	: negative

Carcinogenicity

No data available

Product:

Remarks : In lifetime inhalation studies rats were exposed for 2 years to respectively 10, 50 and 250 mg/m³ of respirable TiO₂. Slight lung fibrosis was observed at 50 and 250 mg/m³ levels. Microscopic lung tumours were also observed in 13 percent of the rats exposed to 250 mg/m³, an exposure level that caused lung overloading and impairment of rat lungs clearance mechanisms.

In further studies, these tumours were found to occur only under particle overload conditions in a uniquely sensitive species, the rat, and have little or no relevance for humans. The pulmonary inflammatory response to TiO₂ particles exposure was also found to be much more severe in rats than in other rodent species.

In February 2006, IARC has re-evaluated Titanium dioxide as pertaining to Group 2B: "possibly carcinogenic to humans", based upon inadequate evidence in humans and sufficient evidence in experimental animals for the carcinogenicity of titanium dioxide. IARC evaluation guidelines consider the generation of tumours, in 2 different studies within the same animal species, to be adequate criteria for an assessment of sufficient evidence.

The conclusions of several epidemiology studies on more than 20000 TiO₂ industry workers in Europe and the USA did not suggest a carcinogenic effect of TiO₂ dust on the human lung. Mortality from other chronic diseases, including other respira-

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tory diseases, was also not associated with exposure to TiO₂ dust.

Based upon all available study results, Chemours scientists conclude that titanium dioxide will not cause lung cancer or chronic respiratory diseases in humans at concentrations experienced in the workplace.

Components:

Titanium dioxide:

No data available

Species	: Rat
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 2 Years
Result	: negative

Species	: Rat
Application Route	: Ingestion
Exposure time	: 105 weeks
Result	: negative

Species	: Mouse
Application Route	: Ingestion
Exposure time	: 103 weeks
Result	: negative

Carcinogenicity - Assessment	: Weight of evidence does not support classification as a carcinogen
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Aluminium hydroxide:

No data available

Species	: Rat
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 86 weeks
Result	: negative
Remarks	: Based on data from similar materials

Aluminum oxide:

No data available

Carcinogenicity - Assessment	: Weight of evidence does not support classification as a carcinogen
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Trimethylolpropane:

No data available

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aluminium fluoride:

No data available

Silicon dioxide, amorphous:

No data available

Species	:	Rat
Application Route	:	Ingestion
Exposure time	:	103 weeks
Result	:	negative

Carcinogenicity - Assessment	:	Weight of evidence does not support classification as a carcinogen
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Germ cell mutagenicity

No data available

Components:

Titanium dioxide:

No data available

Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative
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Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Test Type: comet assay
Method: OPPTS 870.5140
Result: positive

Genotoxicity in vivo	:	Test Type: In vivo mammalian alkaline comet assay Species: Rat Application Route: intratracheal Method: OECD Test Guideline 489 Result: negative
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Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 474
Result: negative

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Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)

Species: Mouse

Application Route: Intraperitoneal injection

Method: OECD Test Guideline 475

Result: negative

Test Type: Transgenic rodent germ cell gene mutation assay

Species: Mouse

Application Route: Intravenous injection

Method: OECD Test Guideline 488

Result: negative

Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Aluminium hydroxide:

No data available

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro

Result: positive

Remarks: Based on data from similar materials

Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)

Result: equivocal

Remarks: Based on data from similar materials

Test Type: in vitro micronucleus test

Result: positive

Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 474
Result: negative

Aluminum oxide:

No data available

Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

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Trimethylolpropane:

No data available

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

aluminium fluoride:

No data available

Silicon dioxide, amorphous:

No data available

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Rat
Application Route: Ingestion
Result: negative

Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Reproductive toxicity

No data available

Components:

Titanium dioxide:

No data available

Effects on fertility : Test Type: One-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 443
Result: negative

Effects on foetal development : Test Type: Prenatal development toxicity study (teratogenicity)
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

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Aluminium hydroxide:

No data available

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative
Remarks: Based on data from similar materials

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat
Application Route: Ingestion
Result: negative

Aluminum oxide:

No data available

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity, Based on data from similar materials

Trimethylolpropane:

Suspected of damaging fertility or the unborn child.

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: positive

Effects on foetal development : Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 443
Result: positive

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, based on animal experiments., Some evidence of adverse effects on development, based on animal experiments.

aluminium fluoride:

No data available

Silicon dioxide, amorphous:

No data available

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat

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Application Route: Ingestion
Result: negative

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

STOT - single exposure

No data available

Components:

Titanium dioxide:

Exposure routes : Skin contact
Assessment : No significant health effects observed in animals at concentrations of 2000 mg/kg bw or less

Exposure routes : Ingestion
Assessment : No significant health effects observed in animals at concentrations of 2000 mg/kg bw or less

Exposure routes : inhalation (dust/mist/fume)
Assessment : No significant health effects observed in animals at concentrations of 5.0 mg/l/4h or less

STOT - repeated exposure

No data available

Components:

Titanium dioxide:

Exposure routes : Ingestion
Assessment : No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Exposure routes : inhalation (dust/mist/fume)
Assessment : No significant health effects observed in animals at concentrations of 0.2 mg/l/6h/d or less.

Exposure routes : Ingestion
Assessment : No significant health effects observed in animals at concentrations of 200 mg/kg bw or less.

Aluminum oxide:

Assessment : No significant health effects observed in animals at concentrations of 0.2 mg/l/6h/d or less.

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Repeated dose toxicity

Components:

Titanium dioxide:

Species	: Rat, male and female
NOAEL	: 24,000 mg/kg
LOAEL	: > 24,000 mg/kg
Application Route	: Ingestion
Exposure time	: 28 Days
Method	: OECD Test Guideline 407
Remarks	: No significant adverse effects were reported

Species	: Rat, male and female
NOAEL	: 0.01 mg/l
LOAEL	: 0.5 mg/l
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 24 Months
Method	: OECD Test Guideline 453
Remarks	: No significant adverse effects were reported

Species	: Rat, male and female
NOAEL	: 962 mg/kg
LOAEL	: > 962 mg/kg
Application Route	: Ingestion
Exposure time	: 90 Days
Method	: OECD Test Guideline 408
Remarks	: No significant adverse effects were reported

Aluminium hydroxide:

Species	: Rat
NOAEL	: > 100 mg/kg
Application Route	: Ingestion
Exposure time	: 364 Days
Method	: OECD Test Guideline 426
Remarks	: Based on data from similar materials

Species	: Rat
NOAEL	: > 0.2 mg/kg
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 12 Months
Remarks	: Based on data from similar materials

Aluminum oxide:

Species	: Rat
NOAEL	: 141 mg/kg
LOAEL	: > 141 mg/kg
Application Route	: Ingestion
Exposure time	: 28 d
Remarks	: No significant adverse effects were reported

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Based on data from similar materials

Species	: Rat
NOAEL	: 0.070 mg/l
LOAEL	: > 0.07 mg/l
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 180 d
Method	: OECD Test Guideline 413
Remarks	: No significant adverse effects were reported

Based on data from similar materials

Trimethylolpropane:

Species	: Rat
NOAEL	: 67 mg/kg
Application Route	: Ingestion
Exposure time	: 90 Days

aluminium fluoride:

Species	: Dog
LOAEL	: 105 mg/kg
Application Route	: Ingestion
Exposure time	: 1 yr
Remarks	: Based on data from similar materials

Species	: Rat
NOAEL	: 0.007 mg/l
Application Route	: Inhalation
Exposure time	: 28 Days
Method	: OECD Test Guideline 412

Silicon dioxide, amorphous:

Species	: Rat
NOAEL	: 1.3 mg/m3
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 13 Weeks

Aspiration toxicity

No data available

Components:

Titanium dioxide:

No aspiration toxicity classification

Experience with human exposure

No data available

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Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Titanium dioxide:

Toxicity to fish	: LC50 (Fish): > 1,000 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 LC50 (Marine species): > 10,000 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia sp. (water flea)): > 1,000 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 EC50 (No species specified): > 1,000 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 EC50 (Skeletonema costatum (marine diatom)): > 10,000 mg/l Exposure time: 72 h Method: ISO 10253 NOEC (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l Exposure time: 3 d Method: OECD Test Guideline 201 NOEC (Skeletonema costatum (marine diatom)): 5,600 mg/l Exposure time: 3 d Method: ISO 10253

Aluminium hydroxide:

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Toxicity to fish : LL50 (*Salmo trutta* (brown trout)): > 100 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EL50 (*Daphnia magna* (Water flea)): > 100 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EL50 (*Selenastrum capricornutum* (green algae)): > 100 mg/l
Exposure time: 96 h

Aluminum oxide:

Toxicity to fish : LC50 (*Pimephales promelas* (fathead minnow)): Exposure time: 96 h
Remarks: No toxicity at the limit of solubility
Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : LC50 (*Ceriodaphnia dubia* (water flea)): Exposure time: 48 h
Remarks: No toxicity at the limit of solubility
Based on data from similar materials

Toxicity to algae/aquatic plants : EC50 (*Pseudokirchneriella subcapitata* (green algae)): Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: No toxicity at the limit of solubility
Based on data from similar materials

NOEC (*Pseudokirchneriella subcapitata* (green algae)): Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: No toxicity at the limit of solubility

Toxicity to fish (Chronic toxicity) : NOEC (*Pimephales promelas* (fathead minnow)): Exposure time: 7 d
Remarks: No toxicity at the limit of solubility
Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): Exposure time: 21 d
Method: OECD Test Guideline 211
Remarks: No toxicity at the limit of solubility
Based on data from similar materials

Ecotoxicology Assessment

Acute aquatic toxicity : No toxicity at the limit of solubility

Chronic aquatic toxicity : No toxicity at the limit of solubility

Trimethylolpropane:

Toxicity to fish : LC50 (*Oryzias latipes* (Orange-red killifish)): > 1,000 mg/l
Exposure time: 96 h

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- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 13,000 mg/l
Exposure time: 48 h
- Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 1,000 mg/l
Exposure time: 72 h
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 21 d
- Toxicity to microorganisms : EC50: > 1,000 mg/l
Exposure time: 3 h
- aluminium fluoride:**
- Toxicity to fish : LL50 (Brachydanio rerio (zebrafish)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 7.6 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: No toxicity at the limit of solubility
- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (algae)): > 7.6 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: No toxicity at the limit of solubility
- NOEC (Pseudokirchneriella subcapitata (algae)): 1.7 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: No toxicity at the limit of solubility
- Silicon dioxide, amorphous:**
- Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 10,000 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 24 h
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 10,000 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

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NOEC (Desmodesmus subspicatus (green algae)): 10,000 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

Persistence and degradability

Components:

Trimethylolpropane:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 6 %
Exposure time: 28 d

Bioaccumulative potential

Components:

Titanium dioxide:

Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)
Bioconcentration factor (BCF): 352

Aluminum oxide:

Bioaccumulation : Remarks: The product may be accumulated in organisms.
Based on data from similar materials

Trimethylolpropane:

Partition coefficient: n-octanol/water : log Pow: -0.47

Mobility in soil

No data available

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of contents and container according to wastes control act.

Do not dispose of waste into sewer.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

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Disposal precautions

Dispose of contents and container according to wastes control act.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	: Not applicable
Proper shipping name	: Not applicable
Class	: Not applicable
Subsidiary risk	: Not applicable
Packing group	: Not applicable
Labels	: Not applicable
Environmentally hazardous	: no

IATA-DGR

UN/ID No.	: Not applicable
Proper shipping name	: Not applicable
Class	: Not applicable
Subsidiary risk	: Not applicable
Packing group	: Not applicable
Labels	: Not applicable
Packing instruction (cargo aircraft)	: Not applicable
Packing instruction (passenger aircraft)	: Not applicable

IMDG-Code

UN number	: Not applicable
Proper shipping name	: Not applicable
Class	: Not applicable
Subsidiary risk	: Not applicable
Packing group	: Not applicable
Labels	: Not applicable
EmS Code	: Not applicable
Marine pollutant	: no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

Refer to section 15 for specific national regulation.

Special precautions for user

Not applicable

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15. REGULATORY INFORMATION

National regulatory information

Regulation under the Occupational Safety and Health Act

Harmful Substances Prohibited from Manufacturing

Not applicable

Harmful Substances Required Permission for Manufacture

Not applicable

Harmful Agents to be kept below Occupational Exposure Limits

Chemical name	CAS-No.
Titanium dioxide	13463-67-7
Aluminum (Soluble salts)	21645-51-2
α-Alumina	1344-28-1
Fluorides	7784-18-1

Harmful Agents Required to be kept below Permission Levels

Not applicable

Hazardous substances requiring management

Chemical name	CAS-No.	Threshold limits (%)
Titanium dioxide	13463-67-7	>= 1 %
Aluminum and its compounds	21645-51-2	>= 1 %

Special Management Materials

Not applicable

Controlled Substances Subject to Environment Monitoring

Chemical name	CAS-No.	Threshold limits (%)
Titanium dioxide	13463-67-7	>= 1 %
Aluminum and its compounds	21645-51-2	>= 1 %
Aluminum and its compounds	1344-28-1	>= 1 %
Mineral dusts	1344-28-1	
Silica	7631-86-9	

Controlled Substances Subject to Health Examination

Chemical name	CAS-No.	Threshold limits (%)
Mineral dusts	13463-67-7	
Aluminum and its compounds	21645-51-2	>= 1 %
Aluminum and its compounds	1344-28-1	>= 1 %
Mineral dusts	1344-28-1	

Hazardous Substances Subject to Process Safety Management (PSM) Reporting Obligation

Not applicable

K-OSHA Hazardous Substances (Occupational Safety and Health Regulations, Table 1)

Not applicable

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K-OSHA Hazardous Substances (Occupational Safety and Health Regulations, Table 9)

Not applicable

Regulation under the Chemicals Control Act

Toxic Chemicals

Not applicable

Restricted Chemicals

Not applicable

Prohibited Chemicals

Not applicable

Toxic Release Inventory

Chemical name	CAS-No.	Group	Threshold limits (%)
Aluminium and its compounds	21645-51-2	Group II	$\geq 1\%$

Accident Precaution Chemicals

Not applicable

Dangerous Substances Safety Management Act

Not Applicable to Dangerous Materials

Wastes Control Act

Industrial general wastes

Follow article 13 of the act to dispose the product waste

16. OTHER INFORMATION

Other information : Ti-Pure™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC. Chemours™ and the Chemours Logo are trademarks of The Chemours Company. Before use read Chemours safety information. For further information contact the local Chemours office or nominated distributors. These products may not be directly added to food, pharmaceuticals, cosmetics, or cigarette papers/filters for tobacco products. Do not use or resell Chemours™ materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless agreed to by Seller in a written agreement covering such use. For further information, please contact your Chemours representative. An electrostatic charge can potentially build up when pouring or conveying product from plastic bags. Do not use plastic bags in the presence of flammable or explosive vapors. In the manufacture of titanium dioxide, product is packaged at

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temperatures of approximately 100 to 120°C (212 to 248°F). When pigment is shipped shortly after manufacture, it may stay hot for a very long time depending on ambient temperatures and inventory storage practices. Use caution while handling hot pigment to prevent burns to personnel. Use caution in solvent applications to prevent ignition of solvent.

Further information

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Issuing date : 2017/04/27

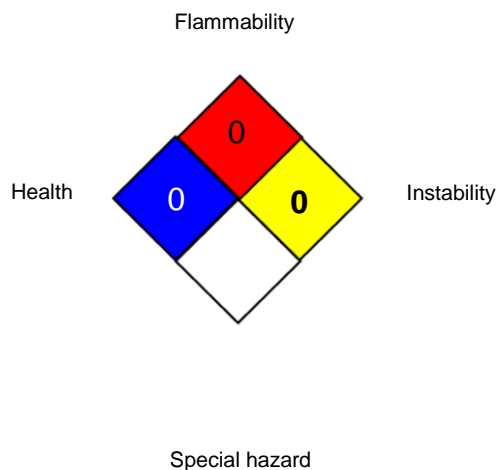
Revision number and date

Number of Revision : 26

Revision Date : 2025/01/23

Date format : yyyy/mm/dd

NFPA:



Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)
KR OEL : Harmful Agents to be kept below Occupational Exposure Limits

ACGIH / TWA : 8-hour, time-weighted average
KR OEL / TWA : Time Weighted Average

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AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

KR / EN

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Decree of the Ministry of Environment Under the Act on the Registration and Evaluation, Etc. of Chemical Substances [Annex No. 26]

Chemical Safety Information(Risk Information)

Provider	Company name: Chemours Korea Inc.		Business Reg. No.: 220-88-81323	
	Name : Rim Young Kyu (Company Rep.)		Name of Person in charge and Contact no.: Kwack Woo Yong (email : tyler.kwack@chemours.com)	
	Address : 12FL, Majestarcity Tower 1, 12, Seocho-daero 38-gil, Seocho-gu, Seoul, Korea (Business location)			
Chemical information	Chemical name(generic name)	Titanium dioxide		
	Identification No. (CAS No., etc.)	13463-667-7	Trade name	
	Registration number(※ May be omitted for hazardous substance which is not registered)	04-2112-03750	Usage	10. coloring agent
	Whether hazardous chemical substance is contained	<input type="checkbox"/> Toxic substance <input type="checkbox"/> Authorization substance <input type="checkbox"/> Restricted substance <input type="checkbox"/> Prohibited substance <input type="checkbox"/> designated substance according to Article 10, Paragraph 2, Item1 of K-REACH by MOE <input type="checkbox"/> classified substance due to presence of physical risk[], health hazard[], environmental hazard[] according to annex 7 of K-REACH		
※ In the case of trade secret under Article 2, Paragraph 2 of the Unfair Competition Prevention and Trade Secret Act, such as the relevant chemical substance's chemical composition and amount of the chemical substance contained, it's required to mark relevant information is trade secret				
Risk in-	Item	Description		
	usage (identified usage in supply chain)	<ul style="list-style-type: none"> Industrial/expert/consumer usage : 10. Coloring agent - coloring agent mixed in plastic, paper, ink, paint or fabric in order to make color 		

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formation			
	Manufacturing process(working environment)	hours and frequency of use	<ul style="list-style-type: none">Annual used days : about 300 days (continuously• frequently)
		used amount per hour of task	<ul style="list-style-type: none">Daily average usage amount : about 85,500 kg/day
		other working conditions related to relevant use	<ul style="list-style-type: none">Non-dispersive use: non-dispersive exposure could be occurred in the process of raw material feeding, however worker work after they wear proper PPE for prevention of exposure and work in a place where scrubber and local ventilation equipment is placed in order to minimize exposure
	measures to reduce risk	reduction measure regarding human exposure(including exposure rout)	<ul style="list-style-type: none">Dermal, inhalation :when worker use registered substance, they wear PPE(working cloth, protection mask of which protection rate is 90% or more, industrial glove and protection glass)
		reduction measure regarding environmental exposure(including exposure rout)	<ul style="list-style-type: none">Air: not applicableWater : not applicableEarth : not applicableOthers : not applicable
		Waste management measures	<ul style="list-style-type: none">Not applicable
exposure information and instruction for downstream user	estimated exposure under optimal working condition	<ul style="list-style-type: none">No effectiveness level for worker Dermal : 9.62 mg/kg/day, inhalation : 0.04221mg/m3	

Decree of the Ministry of Environment Under the Act on the Registration and Evaluation, Etc. of Chemical Substances [Annex No. 26]

Chemical Safety Information(Risk Information)

Provider

Company name: Chemours Korea Inc.

Business Reg. No.: 220-88-81323

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Chemical information	Name : Rim Young Kyu (Company Rep.)		Name of Person in charge and Contact no.: Kwack Woo Yong (email : tyler.kwack@chemours.com)	
	Address : 12FL, Majestarcity Tower 1, 12, Seocho-daero 38-gil, Seocho-gu, Seoul, Korea (Business location)			
	Chemical name(generic name)	Titanium dioxide		
	Identification No. (CAS No., etc.)	13463-667-7	Trade name	
	Registration number(※ May be omitted for hazardous substance which is not registered)	04-2112-03750	Usage	20. fillers
	Whether hazardous chemical substance is contained	[] Toxic substance [] Authorization substance [] Restricted substance [] Prohibited substance [] designated substance according to Article 10, Paragraph 2, Item1 of K-REACH by MOE [] classified substance due to presence of physical risk[], health hazard[], environmental hazard[] according to annex 7 of K-REACH		

※ In the case of trade secret under Article 2, Paragraph 2 of the Unfair Competition Prevention and Trade Secret Act, such as the relevant chemical substance's chemical composition and amount of the chemical substance contained, it's required to mark relevant information is trade secret

Risk information	Item		Description
	usage (identified usage in supply chain)		<ul style="list-style-type: none"> Industrial/expert/consumer usage : 20. fillers - fillers mixed in plastic, paper, paint or fabric in order to enhance performance of final product
	Manufacturing process(working environment)	hours and frequency of use	<ul style="list-style-type: none"> Annual used days : about 300 days (continuously • frequently)
		used amount per hour of task	<ul style="list-style-type: none"> Daily average usage amount : about 85,500 kg/day
		other working conditions related	<ul style="list-style-type: none"> Non-dispersive use: non-dispersive exposure could be occurred in the process of raw material feeding, however worker work after they wear proper PPE for preven-

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	to relevant use	tion of exposure and work in a place where scrubber and local ventilation equipment is placed in order to minimize exposure
measures to reduce risk	reduction measure regarding human exposure(including exposure rout)	<ul style="list-style-type: none"> • Dermal, inhalation :when worker use registered substance, they wear PPE(working cloth, protection mask of which protection rate is 90% or more, industrial glove and protection glass)
	reduction measure regarding environmental exposure(including exposure rout)	<ul style="list-style-type: none"> • Air: not applicable • Water : not applicable • Earth : not applicable • Others : not applicable
	Waste management measures	<ul style="list-style-type: none"> • Not applicable
exposure information and instruction for downstream user	estimated exposure under optimal working condition	<ul style="list-style-type: none"> • No effectiveness level for worker Dermal : 9.62 mg/kg/day, inhalation : 0.04221mg/m3

Decree of the Ministry of Environment Under the Act on the Registration and Evaluation, Etc. of Chemical Substances [Annex No. 26]

Article I. Chemical Safety Information(Risk Information)

Provider	Company name	Chemours Korea Inc.	Business Reg. No	220-88-81323
	Name :	Sanghee Kim	Name of Person in charge and Contact no.:	Kyungjoon Lee (tel : 02-2015-5010)
	Address	12FL, Majestarcity Tower 1, 12, Seocho-daero 38-gil, Seocho-gu, Seoul, Korea		

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Chemical information	Chemical name	aluminium oxide; alumina		
	Identification (CAS No.)	1344-28-1	Product Name	
	Registration number(※ May be omitted for hazardous substance which is not registered)	04-2405-00573	Usage	20. Filler
	Whether hazardous chemical substance is contained	<input type="checkbox"/> Toxic substance <input type="checkbox"/> Authorization substance <input type="checkbox"/> Restricted substance <input type="checkbox"/> Prohibited substance <input type="checkbox"/> designated substance according to Article 10, Paragraph 2, Item1 of K-REACH by MOE <input type="checkbox"/> classified substance due to presence of physical risk[], health hazard[], environmental hazard[] according to annex 7 of K-REACH		

※ In the case of trade secret under Article 2, Paragraph 2 of the Unfair Competition Prevention and Trade Secret Act, such as the relevant chemical substance's chemical composition and amount of the chemical substance contained, it's required to mark relevant information is trade secret

Risk information	Item		Description
	usage (identified usage in supply chain)		Filler (e.g., enhancing paint functionality like coloration)
	Manufacturing process(working environment)	hours and frequency of use	Worker Activities: Storage, transfer, addition, mixing and dispersion, tinting, packaging, and shipment processes. Environmental Conditions: Annual production days: 240 days.
		used amount per hour of task	Daily average usage amount : 10 -20 kg/day
		other working conditions related to relevant use	Process Conditions for Paint, Ink, and Coating Formulation: - Process Enclosure:

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			Open process. - Ambient Environment: Indoor usage.
		Reduction measure regarding human exposure(including exposure rout)	For Workers: - Wear protective gloves, protective clothing, and respiratory protective equipment to minimize exposure.
	measures to reduce risk	reduction measure regarding environmental exposure(including exposure rout)	Environmental Emission Control: - Utilize dust collectors, absorption and adsorption facilities, bag filters, or scrubbers to reduce atmospheric emissions. - Ensure all wastewater is: - Fully outsourced to a wastewater treatment facility, or - Treated on-site through physical, chemical, or biological methods before being connected to a sewage treatment system to minimize discharge into water bodies.
		Waste management measures	Fully outsource waste disposal to a licensed waste treatment company.
	exposure information and instruction for downstream user	estimated exposure under optimal working condition	No data available

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Ti-Pure™ R-103 Titanium Dioxide Pigment

Version 12.1	Revision Date: 2025/01/23	SDS Number (Internal): 1575815-00027	Date of last issue: 2025/01/22 Date of first issue: 2017/04/27
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Decree of the Ministry of Environment Under the Act on the Registration and Evaluation, Etc. of Chemical Substances [Annex No. 26]

Article II. Chemical Safety Information(Risk Information)

Provider	Company name	Chemours Korea Inc.	Business Reg. No	220-88-81323
	Name :	Sanghee Kim	Name of Person in charge and Contact no.:	Kyungjoon Lee (tel : 02-2015-5010)
	Address	12FL, Majestarcity Tower 1, 12, Seocho-daero 38-gil, Seocho-gu, Seoul, Korea		
Chemical information	Chemical name	Silicon dioxide		
	Identification (CAS No.)	7631-86-9	Product Name	
	Registration number(※ May be omitted for hazardous substance which is not registered)	04-2407-00929	Usage	20. Filer
	Whether hazardous chemical substance is contained	[] Toxic substance [] Authorization substance [] Restricted substance [] Prohibited substance [] designated substance according to Article 10, Paragraph 2, Item1 of K-REACH by MOE [] classified substance due to presence of physical risk[], health hazard[], environmental hazard[] according to annex 7 of K-REACH		

※ In the case of trade secret under Article 2, Paragraph 2 of the Unfair Competition Prevention and Trade Secret Act, such as the relevant chemical substance's chemical composition and amount of the chemical substance contained, it's required to mark relevant information is trade secret

SAFETY DATA SHEET



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Risk information	구분		기술내용
	usage (identified usage in supply chain)		Filler (e.g., enhancing paint functionality like coloration)
	Manufacturing process(working environment)	hours and frequency of use	Worker Activities: Storage, transfer, addition, mixing and dispersion, tinting, packaging, and shipment processes. Environmental Conditions: Annual production days: 240 days.
		used amount per hour of task	Daily average usage amount : 30 - 40 kg/day
		other working conditions related to relevant use	Process Conditions for Paint, Ink, and Coating Formulation: - Process Enclosure: Open process. - Ambient Environment: Indoor usage.
	measures to reduce risk	Reduction measure regarding human exposure(including exposure route)	For Workers: - Wear protective gloves, protective clothing, and respiratory protective equipment to minimize exposure.
		reduction measure regarding environmental exposure(including exposure route)	Environmental Emission Control: - Utilize dust collectors, absorption and adsorption facilities, bag filters, or scrubbers to reduce atmospheric emissions. - Ensure all wastewater is: - Fully outsourced to a wastewater treatment

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			facility, or - Treated on-site through physical, chemical, or biological methods before being connected to a sewage treatment system to minimize discharge into water bodies.
		Waste management measures	Fully outsource waste disposal to a licensed waste treatment company.
	exposure information and instruction for downstream user	estimated exposure under optimal working condition	No data available

Decree of the Ministry of Environment Under the Act on the Registration and Evaluation, Etc. of Chemical Substances [Annex No. 26]

Article III. Chemical Safety Information(Risk Information)

Provider	Company name	Chemours Korea Inc.	Business Reg. No	220-88-81323
	Name :	Sanghee Kim	Name of Person in charge and Contact no.:	Kyungjoon Lee (tel : 02-2015-5010)
	Address	12FL, Majestarcity Tower 1, 12, Seocho-daero 38-gil, Seocho-gu, Seoul, Korea		
Chemical information	Chemical name	aluminium oxide; alumina		

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	Identification (CAS No.)	21645-51-2	Product Name	
	Registration number(※ May be omitted for hazardous substance which is not registered)	04-2409-01633	Usage	20. Filer
	Whether hazardous chemical substance is contained	[] Toxic substance [] Authorization substance [] Restricted substance [] Prohibited substance [] designated substance according to Article 10, Paragraph 2, Item1 of K-REACH by MOE [] classified substance due to presence of physical risk[], health hazard[], environmental hazard[] according to annex 7 of K-REACH		

※ In the case of trade secret under Article 2, Paragraph 2 of the Unfair Competition Prevention and Trade Secret Act, such as the relevant chemical substance's chemical composition and amount of the chemical substance contained, it's required to mark relevant information is trade secret

Risk information	구분		기술내용
	usage (identified usage in supply chain)		Filler (e.g., enhancing paint functionality like coloration)
	Manufacturing process(working environment)	hours and frequency of use	Worker Activities: Storage, transfer, addition, mixing and dispersion, tinting, packaging, and shipment processes. Environmental Conditions: Annual production days: 240 days.
		used amount per hour of task	Daily average usage amount : 40 - 50 kg/day
		other working conditions related to relevant use	Process Conditions for Paint, Ink, and Coating Formulation: - Process Enclosure: Open process. - Ambient Environment: Indoor usage.

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	measures to reduce risk	Reduction measure regarding human exposure(including exposure rout)	For Workers: - Wear protective gloves, protective clothing, and respiratory protective equipment to minimize exposure.
		reduction measure regarding environmental exposure(including exposure rout)	Environmental Emission Control: - Utilize dust collectors, absorption and adsorption facilities, bag filters, or scrubbers to reduce atmospheric emissions. - Ensure all wastewater is: - Fully outsourced to a wastewater treatment facility, or - Treated on-site through physical, chemical, or biological methods before being connected to a sewage treatment system to minimize discharge into water bodies.
		Waste management measures	Fully outsource waste disposal to a licensed waste treatment company.
	exposure information and instruction for downstream user	estimated exposure under optimal working condition	No data available