SAFETY DATA SHEET

SDS # PCLR06152018	Preparation Date: May 18, 2015 Updated: June 15 2018

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	anatase titanium dioxide bound in an aqueos solution
Product Code:	PURETi CLEAR™
Formula:	N/A - Mixture
Product Use:	Photocatalytic Glass Coating – Industrial Use only

SUPPLIER INFORMATION:

Address:
PURETi Group LLC
10931 Reed Hartman
Hwy, Unit C
Cincinnati, OH 45242

United Kingdom Distributor Address:
Pure Clear Coatings Ltd
Kemp House
128 City Road
London
EC1V 2NX
Email: info@pureclearcoatings.co.uk
Phone: 0203 929 2052

2. HAZARDS IDENTIFICATION

GHS/CLP CLASSIFICATION AND LABELING FOR PRODUCT:

CLP Status		
Pictogram	**Classification**	**Signal Word and Hazard Statements**
None	Not classified	None

EU (per EEC Directive 1999/45/EEC):
Danger Symbols: None
Phrases: None

OSHA REGULATORY STATUS: This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.122)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

HAZARD RATINGS:
Hazardous Materials Identification System (HMIS):EL

Degree of hazard (0 = low, 4 = extreme)

Health: 0 Flammability: 0 Reactivity: 0 Personal Protection: None

LABEL ELEMENTS:

EMERGENCY OVERVIEW

Not Classified

Warning
Keep out of reach of children

Appearance	Aqueous solution	**Physical State**	Liquid	**Odor**	Mild

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

POTENTIAL ENVIRONMENTAL EFFECTS: None known.

Hazards not otherwise classified (HNOC) Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Wt%
Water	7732-18-5	94.5 – 100
Titanium dioxide (anatase TiO2 bound in a stable aqueos product matrix)	13463-67-7	0.1 – 0.5
Dipropylene glycol monomethyl ether (DPGME)	34590-94-8	1 – 5

4. FIRST AID MEASURES

PROCEDURES

Eye Contact: In case of contact, flush eyes with plenty of water for at least 15 minutes. If irritation persists, get medical attention.

Skin Contact: In case of skin irritation or allergic reactions, get medical attention.

Inhalation: If symptoms of lung irritation occur (coughing, wheezing or breathing difficulty), remove from exposure area to fresh air immediately. Get medical attention if condition persists.

Ingestion: If swallowed, immediately give person large amounts of water. Get medical attention. Induce vomiting only if instructed by a physician.

Note to Physicians: None known. Use general supportive care.

5. FIRE FIGHTING MEASURES

Unusual Fire and Explosion Hazards: None known.

Extinguishing Media: No restrictions. If there is fire close by, use media suitable for safely extinguishing other burning materials

Special Firefighting Procedures: Cool closed containers exposed to fire with water spray.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Ensure adequate ventilation is provided. Prevent contact with skin and eyes.

Emergency Procedures: Remove all sources of ignition. Avoid contact with skin and eyes.

Methods and Materials for Containment:	Mop off spilled product and dispose according to good hygene and safety practice.
Cleanup Procedures:	Refer to Section 13 for disposal considerations.

7. HANDLING AND STORAGE

Handling:	Transport in original container in accordance with good industrial hygiene and safety practice and in well-ventilated areas. Avoid contact with eyes and skin. No eating, drinking or smoking in areas where this product is handled, stored or processed. Keep container tightly closed when not in use.
Storage:	DO NOT FREEZE. Store at room temperature, protected from direct sunlight in a dry ventilated area. Keep container tightly closed and sealed until ready for use. Store in original packaging, plastic materials, stainless steel or glass. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
Other Precautions:	None known

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits:

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH
Titanium dioxide 13463-67-7	TWA: 10 mg/m3	TWA: 15 mg/m3 total dust (vacated) TWA: 10 mg/m3 total dust	IDLH: 5000 mg/m3
Dipropylene glycol monomer ether 34590-94-8	TWA: 600 mg/m3 STEL: 900 mg/m3	-	IDLH: 900 mg/m3

Engineering Controls:	General exhaust ventilation (GEV) sufficient to maintain air concentrations below occupational safety standards.
Eye/Face Protection:	None required under normal use. If conditions exist that may result in prolonged direct exposure, wear safety glasses.
Skin Protection:	None required under normal use. If conditions exist that may result in prolonged direct contact with skin, wear gloves and long sleeve clothes.
Respiratory Protection:	None required under normal use. If conditions exist that may result in prolonged direct exposure and to concentrations higher than the applicable exposure limits, respiratory protection should be worn.
General Hygiene Considerations:	Handle in accordance with good hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value	Property	Value
Appearance:	Light yellow opaque	*Initial Boiling Point (°F):*	No data
Odor:	No data	*Boiling Range (°F):*	No data
Odor Threshold:	No data	*Melting/Freezing point (°F):*	No data

Property	Value	Property	Value
Molecular Weight:	N/A – Mixture	*Specific gravity (g/cc):*	~1.0
Physical State:	Liquid	*Viscosity (cps):*	No data
pH:	6.0-8.5	*Flash Point (°F):*	Does not Flash
Vapor Pressure (mm Hg):	No data	*Decomposition Temperature:*	No data
Solubility in Water (20 °C):	Miscible with water	*Flammability:*	Not flammable
Volatiles, Percent by volume:	No data	*Upper/Lower Flammability Limits:*	Not flammable
Vapor Density (air = 1):	No data	*Auto-ignition Temperature:*	Not flammable
Evaporation Rate:	No data	*Octanol/water partition coefficient:*	No data

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of use. Stable at ambient temperature.
Reactivity:	None known.
Conditions to Avoid:	Freezing conditions.
Materials to Avoid:	Substances that react with water and strong oxidizing agents.
Hazardous Decomposition Products:	None known.
Hazardous Polymerization:	Will not occur.
Hazardous Reaction Conditions:	None known.

11. TOXICOLOGICAL INFORMATION

Information on likely routs of exposure

Product Information	Product does not present an acute toxicity hazard based on known/supplied information
Inhalation	As a nuisance dust, prolonged exposures of ultrafine TiO2 powder above recommended levels may cause adverse effects on the lung
Eye contact	No data available
Skin contact	Titanium dioxide does not penetrate either intact or abraded human skin
Ingestion	No data available

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Titanium dioxide 13463-67-7	>5000 mg/kg (rat)	-	>6,82 mg/L (rat) 4 h
Dipropylene glycol monomer ether 34590-94-8	>5000 mg/kg bw (rat)	>275 ppm (7-hour, rat, vapor)	>275 ppm (7-hour, rat, vapor)

Information on toxicological effects

Symptoms	No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	Titanium dioxide was not classifiable as a skin corrosive or irritant based on in vivo test results for titanium dioxide submitted in the European Union (REACH) joint submission

registration dossier for the substance.
DPGME was found to be not irritating when tested on rabbits according to Organisation for Economic Co-operation and Development (OECD) Testing Guideline (TG) 404. Undiluted DPGME was applied to skin and wrapped with occlusive coverings for either 5 minutes or 2 hours. Mean erythema and edema scores were 0 at 24 and 48 h and 5 days post application.

Serious eye damage/irritation

Titanium dioxide was not classifiable as an eye irritant based on in vivo test results for titanium dioxide submitted in the European Union (REACH) joint submission registration dossier for the substance.
In a study consisting of 10 human male volunteers, 0.04 mL of a 20% (v/v) aqueous solution of DPGME was applied to the left eye using a micrometer syringe euipped with a soft polythene delivery tube. Treatment produced mild transient sensory irritation and hyperemia of conjunctiva, both of which were fully reversible within 2 hours. Based on the test results, DPGME was determined to be not irritating.

Sensitization

No data exist for the product as a whole; data are for constituents. In a human patch test, undiluted DPGME was applied to the skin (back) of 100 male and 100 female volunteers, wrapped under occlusive dressing, and allowed to remain in direct contact with the skin for a period of 5 days. At the end of this period, the patches were removed and any irritation noted. Three weeks later, DPGME was applied again to the backs of the same subjects and allowed to remain in contact with the skin for a period of 48 hours. No positive reactions were observed among any of the human volunteers, indicating that DPGME was not sensitizing in this study.

Germ Cell Mutagenicity

No data exist for the product as a whole; date are for constituents. Several *in vitro* genotoxicity assays are available for DPGME, all reporting negative results both with and without metabolic activation. In a bacterial reverse mutation assay (Ames test) with the bacterial species *Salmonella typhimurium*, DPGME was found to be negative for inducing reverse mutations and in an *in vitro* mammalian chromosome aberration test with Chinese hamster lung cells, DPGME was negative for inducing chromosomal aberrations. Finally, DPGME was negative in a yeast cytogenetic assay testing *Saccharomyces cerevisiae*.

Carcinogenicity

Titanium dioxide in its solid fine powder form is listed by IARC as possibly carcinogenic to humans (Group 2B). However, the IARC monograph states that titanium dioxide bound to other products or matrix such as coatings and paint does not pose significant exposure risk. PURETi Clear is an aqueous solution of bound titanium dioxide in a stable product matrix used as a photocatalytic glass surface coating, and is never in a powder form.

The IARC listing is based on inadequate evidence of carcinogenicity in humans and evidence in only one experimental animal (Rat). In lifetime inhalation studies of rats, airborne respirable-size powder titanium dioxide particles have been shown to cause lung tumors at concentrations associated with substantial particle lung burdens and consequential pulmonary overload and inflammation. However, other laboratory animals such as mice and hamsters did not develop lung tumors under similar testing with titanium dioxide. Furthermore, human epidemiology studies do not suggest an association between occupational exposure to titanium dioxide and risk for cancer.

NIOSH did not find sufficient data to classify Titanium dioxide as a potential occupational carcinogen, and has set an REL of 0.3mg/m3 for ultra fine and 2.4 mg/m3 for fine titanium dioxide powder. Independent test by NIOSH found the total exposure to be an order of magnitude below the set REL during application of PURETi Clear.

Titanium Dioxide is not listed as a possible carcinogen by the National Toxicology Program (NTP), the American Conference of Governmnetal Industrial Hygienist (ACGIH), or the OSHA.

Reproductive Toxicity	No known effect based on information supplied
STOT – single exposure	No known effect based on information supplied
STOT – repeated exposure	Repeated inhalation exposures in rats to poorly soluble dusts such as titanium dioxide lead to a pattern of pulmonary effects including inflammation and fibrosis that are not observed in other rodent species, nonhuman primates, or humans under similar conditions. Therefore, titanium dioxide is not classifiable for repeated exposure.
Aspiration Hazard	No known effect based on information supplied

Numerical Measures of toxicity

Unknown acute toxicity	No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity Effects:	Titanium dioxide is of low acute aquatic toxicity
Persistence and degradability:	Titanium dioxide is persistent and inert mineral product. Not degradable
Bioaccumulative potential:	Does not bioaccumulate
Mobility:	Solids from slurry will settle

13. DISPOSAL CONSIDERATIONS

Disposal Methods:	Dispose of in accordance with local regulations. Discharging waste into rivers and drains is forbidden. Consult the manufacturer or supplier for information regarding recovery and recycling of the product.
Physical/chemical Properties that May Affect Disposal Activities:	None known
Special Precautions for Landfills or Incineration Activities:	Contaminated packages are not considered hazardous for disposal into sanitary landfill or industrial waste disposal landfill. Please review appropriate national and local waste regulations.

14. TRANSPORT INFORMATION

DOT:	Proper shipping name not regulated Class: None Packaging group: None
IMDG:	UN-Number: None Packaging group: None Proper shipping name not regulated Class: None
ICAO/IATA:	Class: None Packaging group: None Proper shipping name not regulated UN/ID No.: None

15. REGULATORY INFORMATION

Inventory Status:	United States Toxic Substances Control Act Section 8(b) Inventory (TSCA) European Inventory of Existing Commercial Chemical Substances (EINECS)

CERCLA:	Not listed			
CWA:	Not listed			
CAA:	Not listed			
RCRA:	Not listed			
SARA 313:	Not listed			
SARA 312 Hazard Class:	Health: Acute – No Chronic – No	Fire: No	Reactivity: No	Release of Pressure: gcghgfcNo
SARA 302 EHS List:	Not listed			

US State Regulations:

Chemical Name	California Proposition 65
Titanium Dioxide 13463-67-7	Listed

Compliance with federal, provincial/state, and local environmental regulations is the responsibility of the owner.

16. OTHER INFORMATION

PRECAUTIONARY STATEMENTS (GHS/CLP):

Prevention
None
Response
None
Storage
None
Disposal
None

PREPARED BY: PURETi Group

NOTICE:

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