Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH)

Trade name: **BILLIONS™ titanium dioxide pigment (TMP grades)**

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier:

Trade name / designation

BILLIONS™ BLR-601, BILLIONS™ BLR-699, BILLIONS™ BLR-698, BILLIONS™ BLR-895, BILLIONS™ BLR-896, BILLIONS™ TR52, BILLIONS™ TR53, BILLIONS™ LR-961, BILLIONS™ LR-972, BILLIONS™ LR-982, BILLIONS™ R-996

Other means of identification

REACH Registration number:	01-2119489379-17-0041
Synonyms:	Titanium oxide (TiO_2), Pigment White 6
Colour Index Number:	77891
UFI Code:	3200-808V-V000-UND8

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses

Pigment, opacifying agent.

Uses advised against:

Do not use for cosmetics, food additives, drug additives, feed additives or permanent implant applications.

Reasons:

Due to the lack of related experience or data the supplier cannot approve this use.

1.3 Details of the supplier of the safety data sheet:

Supplier:

Name LB Group Co., Ltd.

Address Winder House, Kingfisher Way, Stockton-on-Tees, TS18 3EX, United Kingdom

Name Billions Europe Ltd

Address 18 Rue Jean Mermoz, 75008, Paris, France

Information contact +44 (0)1642 692750 (Only available during office hours 8am-5pm GMT)

E-Mail (competent person) RAPS@lomonbillions.global

Manufacturer:

Name LB Group Co., Ltd.

Address Zhongzhan District, Jiaozuo City, Henan Province, China

Information contact

Domestic +86 391-3126768, 3126553

International +86 21-61392185*8016

Only Representative:

Name Chemical Inspection & Regulation Service Limited

Address Regus Harcourt Centre, Block 4, Co. Dublin, D02 HW77, Ireland

Information contact +353 1 477 3710

1.4 Emergency Telephone Number:

SGS Emergency number: +32 (0)3 575 55 55 (24/7)

Country	National advisory body/Poison Centre	Telephone number (Emergency):
Austria	Gesundheit Österreich GmbH	+43 1 406 43 43
Belgium	Antigif centrum centre antipoisons	+3270 245 245
Bulgaria	Национален токсикологичен информационен център	+359 2 9154 233
Denmark	Bispebjerg hospital	+45 8212 1212
Finland	HUS Helsingin yliopistollinen sairaala	0800 147 111
France	Numéro ORFILA (INRS)	+ 33 (0)1 45 42 59 59
Germany	BfR Bundesinstitut für Risikobewertung	+49 30 184120
Greece	Παιδικό Νοσοκομείο Ρ&Α Κυριάκου	+302107793777
Hungary	Egészségügyi Toxikológiai Tájékoztató Szolgálat (ETTSZ)	+36 1 476 6464
Ireland	National Poisons Information Centre / NHS	111
Italy	Centro nazionale CAV per le informazioni tossicologiche	0382-24444
Luxemburg	Antigif centrum centre antipoisons	+352 80025500
Netherlands	Universitair Medisch Centrum Utrecht	+31(0)30 274 8888
Norway	Norsk helsenett	22 59 13 00
Poland	Bureau for Chemical Substances	+48 42 2538 400
Portugal	Centro de informação antivenenos	+351 800 250 250
Romania	Institutul Național de Sănătate Publică	+40213183606
Slovenia	Center za klinično farmakologijo in toksikologijo, Oddelek za interno medicino, UKC Ljubljana	112
Spain	Instituto Nacional de Toxicología y Ciencias Forenses (INTCF)	+34 915620420
Sweden	Svenskt giftinformationscenter	112
Switzerland	Für medizinische Auskünfte: Schweizerische Toxikologische	+41 44 251 51 51
Turkey		+353 41 980 6916

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture:

Mixture

Classification according to Regulation (EC) No 1272/2008 [CLP]	Classification procedure
Not Classified	In 2020, the European Commission classified titanium dioxide (TiO_2), in powder form containing 1% or more of particles with aerodynamic diameter ≤ 10 µm, as category 2 suspected carcinogen by inhalation. Particle analysis confirms there is no requirement for classification of the above mentioned LB Group TiO_2 pigments - see Section 9 for details. Trimethylolpropane: based on the results of a reproductive toxicity study by the TMP supplier who has self-classified TMP as a suspected reproductive toxicant (Rep. Tox. Cat 2) H361f and H361d. As the level of TMP in LB Group products is below the threshold of 3% no classification in the EU is required. Relevant updates have been made to the SDS.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]

Hazard pictograms
Not Applicable.

Signal word:
Not Applicable.

Hazard statements:
Not Applicable.

Precautionary statements:
Not Applicable.

Supplemental Hazard information:
EUH212 – Warning! Hazardous respirable dust may be formed when used. Do not breathe dust.
EUH066 – Repeated exposure may cause skin dryness or cracking.
EUH210 – Safety Data Sheet available on request.

Special rules for supplemental label elements for certain mixtures:
Not Applicable.

Additional labelling:
Not Applicable.

2.3 Other hazards

Annex XIII: Other hazards which do not result in classification:
Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose, and throat. Avoid breathing dust. Minimize prolonged skin contact to prevent drying, as all fine powders can absorb moisture and natural oils from the surface of the skin, which could lead to skin cracking.

SECTION 3. Composition/information on ingredients

3.1 Substances

Not Applicable.

3.2 Mixtures

Description of the mixture:
Titanium Dioxide Pigment – Powder form

Hazardous ingredients

Substance Name	CAS No.	EC No.	%	REACH No.	Classification according Regulation (EC) No. 1272 [CLP]
Titanium Dioxide (TiO_2)	13463-67-7	236-675-5	87–100	01-2119489379-17-0041	Not Classified
Trimethylolpropane (TMP)	77-99-6	201-074-9	0.1-1	01-2119486799-10-XXXX	Rep. Tox. 2 - H361d H361

Additional information:
There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
Treat symptomatically.

Following inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

Following skin contact
Wash skin with soap and water. If irritation occurs get medical attention.

Following eye contact
Rinse eyes thoroughly for at least 15min with plenty of water, occasionally lifting the upper and lower eyelids. Get medical attention if irritation occurs.

Following ingestion
Rinse out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur. Never give anything by mouth to an unconscious person.

Self-protection of the first aider:
No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms

Following inhalation
Dust may induce mild and temporary upper respiratory irritation with cough and shortness of breath.

Following skin contact
Individuals with sensitive skin may experience skin drying on prolonged or repeated exposure.

Following eye contact
No significant irritation expected other than mechanical irritation.

Following ingestion
No specific data.

Effects

Following inhalation
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to dust may aggravate pre-existing respiratory conditions.

Following skin contact
The product is not an irritant but as with all fine powders can absorb moisture and natural oils from the surface of the skin during prolonged exposure.

Following eye contact
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Following ingestion
No known significant effects or critical hazards.

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor
Treat symptomatically.

Special treatment
No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use an extinguishing agent suitable for the surrounding environment and circumstances.

Unsuitable extinguishing media
None Known.

5.2 Special hazards arising from the substance or mixture

Product is inert, non-flammable and non-combustible. No specific fire or explosion hazard. Avoid generation of dust.
Static discharge can potentially build up during transport and/or when pouring product from plastic bags. In the presence of flammable or combustible materials, a safety assessment should be carried out. For any further information on handling please contact the supplier.

Hazardous combustion products
Decomposition products may include the following materials: metal oxide/oxides. At high temperature decomposition products may include formaldehyde and ethyl acrolein as a result of decomposition of the organic component.

5.3 Advice for fire-fighters

Hazards from the substance or mixture
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard to provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
No action shall be taken involving any personal risk or without suitable training. Avoid generation of dust. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing dust. Put on appropriate personal protective equipment.

For emergency responders
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials.

6.2 Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

Small Spill
Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.

Large Spill
Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

Other information
Even at low concentration, the product renders the discharge in liquid effluent highly visible.

6.4 Reference to other sections
See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

Advice on safe handling
Put on appropriate personal protective equipment (see Section 8). Avoid breathing dust.
Each work environment must be assessed to determine hazards.

Aerosol and dust generation preventions
Avoid generation of dust. Ensure adequate ventilation. Local exhaust ventilation may be necessary. Manual handling guidelines should be adhered to when handling sacks.

Advice on general occupational hygiene

Observe good industrial hygiene practice for chemical handling. Individuals having sensitive skin may find it beneficial to use a barrier cream or moisturizer when excessive or prolonged contact with the skin is likely. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions
Store in accordance with local regulations. Store in original container in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end uses

Recommendations
Intermediate use of titanium dioxide in the manufacture of another substance.
Industrial and Professional use of paints, coatings, inks, dyes, lubricants, detergents, adhesives and sealants.
Industrial and Professional use of titanium dioxide-containing rubber or plastic articles
Industrial use of titanium dioxide in the paper industry.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

OEL - country of origin	Substance Name	CAS-No.	Occupational exposure limit value (mg/m^3)		Form	Source
			Long term	Short term		
Austria	Titanium Dioxide	13463-67-7	5	10		RIS – Limit Value Ordinance 2020
Belgium	Titanium Dioxide	13463-67-7	10	-		Federal Public Service Employment, Labor and Social Dialogue - Annex VI.1-1 list of limit values
Bulgaria	Titanium Dioxide	13463-67-7	10	-	Respirable dust	RB MLSP and MH Ordinance №13 / 2003 (Bulgaria, 8/2007)
Denmark	Titanium Dioxide	13463-67-7	6	-		Beskæftigelsesministeriet-BEK nr 698 af 28/05/2020
Finland	Titanium Dioxide	13463-67-7	10	-	Inorganic dust	Ministry of Social Affairs and Health - Concentrations Known to Be Harmful (538/2018)
France	Titanium Dioxide	13463-67-7	10	-		INRS (France, 2020) - Liste des VLEP françaises
Germany Luxemburg	Titanium Dioxide	13463-67-7	0.3	-	Respirable dust - except ultrafine particles. Multiplied by material density	DFG - List of MAK and BAT Values
Greece	Titanium Dioxide	13463-67-7	10 5	-	Inhalable dust. Respirable dust	PD 90/1999 (Greece, 8/2007)
Hungary	Titanium Dioxide	13463-67-7	-	-		Wolters Kluwer - 5/2020. (II. 6.) ITM rendelet a kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland	Titanium Dioxide	13463-67-7	10 4	-	Inhalable dust. Respirable dust	Health & Safety Authority – Chemical Agents Code of Practice 2020
Italy	Titanium Dioxide	13463-67-7	10	-	Inhalable dust.	Italia. Limiti di esposizione professionale: ACGIH
Netherlands	Titanium Dioxide	13463-67-7	10	-	Expired 01/01/2017	SER-Zoek een grenswaarde
Norway	Titanium Dioxide	13463-67-7	5	-		Lovdata – Regulations on measure values and limit values for physical and chemical factors in the working environment as well as infection risk groups for biological factors (regulations on measure and limit values), 2011/14

Poland	Titanium Dioxide	13463-67-7	10	30		Principles and Methods of Assessing the Working Environment ISSN 1231-868X
Portugal	Titanium Dioxide	13463-67-7	10	-		Diário da República, 1.ª série — N.º 26 — 6 de fevereiro de 2012
Romania	Titanium Dioxide	13463-67-7	10	15		Valori-limită obligatorii de expunere profesională la agenți chimici – Anexa nr. 1 2019060 ((înlocuiește Anexa nr.1 din HG nr.1218/2006, cu modificările și completările ulterioare)
Slovenia	Titanium Dioxide	13463-67-7	10	20	(1) Inhalable dust - part of the total suspended matter inhaled by the worker.	Ministry of Labour, Family, Social Affairs and Equal Opportunities and the Ministry of Health: Rules on the protection of workers from the risks related to exposure to chemical substances at work.
Spain	Titanium Dioxide	13463-67-7	10	-		INSST - Límites de exposición profesional para agentes químicos en EspañA 2019
Sweden	Titanium Dioxide	13463-67-7	5	-	Inhalable dust (defined in Swedish standard SS-EN 481)	Arbetsmiljö Verket - Hygieniska gränsvärden AFS 2018:1
Switzerland	Titanium Dioxide	13463-67-7	3	-	Inhalable dust	SUVA-Limit values at the workplace: Current MAK and BAT values
Turkey	Titanium Dioxide	13463-67-7	15	-	Total dust	Ministry of Family, Labor and Social Services Legislation List: Dust Fighting Regulation 28812 - 2013
UK	Titanium Dioxide	13463-67-7	10 4	-	Inhalable dust. Respirable dust.	EH40/2005 (4th Edition 2020)

Exposure limits at intended use

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

DNEL/PNEC-values

Substance name

Trimethylolpropane (TMP) - CAS No. 77-99-6

DNEL Worker

DNEL type	value	remark
Acute – dermal, local effects	No hazard identified	
Long-term – dermal, local effects	No hazard identified	
Long-term – dermal, systemic effects	0.94 mg/kg bw/day	
Acute – inhalation, local effects	No hazard identified	
Acute – inhalation, systemic effects	No hazard identified	
Long-term – inhalation, local effects	No hazard identified	
Long-term – inhalation, systemic effects	3.3 mg/m^3	Inhalable

8.2 Exposure controls

Appropriate engineering controls

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protective equipment

Eye / Face protection

Suitable eye protection

If operating conditions cause high dust concentrations to be produced, use dust goggles according to EN 166.

Skin protection

Hand protection

Based on available information and the risk assessment carried out, gloves are not required when handling this mixture. However, given good industrial hygiene practices for handling chemical products and to avoid skin dryness during prolonged exposure, protective gloves according to EN374 should be worn. If the product is used in a preparation of several substances, the chemical resistance cannot be calculated in advance and must therefore be checked prior to use.

Check the tightness before wear. Gloves should be well cleaned before being removed, then stored in a well-ventilated location. Pay attention to skin care.
The following materials are suitable for protective gloves (Permeation time >= 8 hours):

Natural rubber/Natural latex - NR (0,5 mm) (use non-powdered and allergen free products)
Polyvinyl chloride - PVC (0,5 mm)

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection measures
Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Individuals having sensitive skin may find it beneficial to use a barrier cream or moisturizer when excessive or prolonged contact with the skin is likely. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

8.2.3 Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state: Solid
Colour: White
Odour: Odourless
Odour threshold: Not Applicable

	Value	Remark
pH	6-10	10% slurry
Melting point/freezing point	1560 -1850°C	
Initial boiling point/boiling range	2500 - 3000°C	
Flash point	Does not flash	The study does not need to be conducted because the main substance is inorganic
Evaporation rate	Not applicable	Data technically impossible to obtain
Flammability (solid, gas)	Not applicable	The product is not flammable
Upper/lower flammability or explosive limits	Not applicable	Not applicable to solids
Vapour pressure	Not applicable	Not applicable to solids
Vapour density	Not applicable	Not applicable to solids
Relative density	Not applicable	
Solubility(ies)	Insoluble in common solvents	The study does not need to be conducted because the main substance is known to be insoluble in water
Partition coefficient: n-octanol/water	Not applicable.	Does not apply to inorganic substances
Auto-ignition temperature	Not applicable	Not applicable to solids
Decomposition temperature	Not applicable	Not a self-reactive mixture and/or known to decompose
Viscosity dynamic and cinematic	Not applicable	Not applicable to solids
Explosive Properties	Not an explosive	Testing can be waived in accordance with REACH Column 2 of Annex VII, 7.11: The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with explosive properties.
Oxidising Properties	Not applicable	Not applicable to solids
Bulk Density (tamped)	0.87 to 1.4 g/cm^3	
Specific Gravity	4.0 to 4.2 g/cm^3	

9.2.2 Other safety characteristics

Aerodynamic diameter	<1%	≤ 10 µm according to EN 15051-2

SECTION 10: Stability and reactivity

10.1 Reactivity
None reasonably foreseeable.

10.2 Chemical stability
The product is stable.

10.3 Possibility of hazardous reactions
None known.

10.4 Conditions to avoid:
Dust formation.

10.5 Incompatible materials:
None known.

10.6 Hazardous decomposition products:
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

At high temperature, decomposition products could include Metal oxides. At high temperature decomposition products may include formaldehyde and ethyl acrolein as a result of decomposition of the organic component.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Toxicokinetics, metabolism and distribution
See section 4 for more information.

Acute toxicity

Animal data

	Effect dose	Value	Species	Method	Exposure time	Remark
Titanium dioxide (CAS No. 13463-67-7)						
Acute oral toxicity	LD50	>5000 mg/kg bw	Rat	OECD 425	*NDA*	Practically Non-Toxic.
Acute dermal toxicity	LD50	>10000mg/kg	Rabbit	*NDA*	*NDA*	Practically Non-Toxic.
Acute inhalative toxicity (dust/mist)	LC50	>6.82 mg/L	Rat	*NDA*	4 hours	Practically Non-Toxic.
Trimethylolpropane (CAS No. 77-99-6)						
Acute oral toxicity	LD50	14700 mg/kg	Rat	*NDA*	*NDA*	Practically Non-Toxic.
Acute dermal toxicity	LD50	>10000 mg/kg	Rabbit	*NDA*	*NDA*	Practically Non-Toxic.
Acute inhalative toxicity (dust/mist)	LC50	>0.85mg/L	Rat	*NDA*	4 hours	Practically Non-Toxic.

Assessment / Classification
Mixture not classified based on available information.

Skin corrosion/irritation

Animal data

	Species	Method	Test	Remark
Titanium dioxide (CAS No. 13463-67-7)	Rabbit	OECD 404	Acute Dermal irritation/corrosion	Non irritant
	Rabbit	OECD 405	Acute Eye irritation/corrosion	Non irritant
Trimethylolpropane (CAS No. 77-99-6)	Rabbit	*NDA*	Dermal irritation/corrosion	Non irritant

Assessment / Classification
Mixture not classified based on available information.

Sensitisation to the respiratory tract/skin

Sensitisation to the respiratory tract

Animal data

	Species	Method	Test	Remark
Titanium dioxide (CAS No. 13463-67-7)	Mouse	*NDA*	Inhalation	Not sensitising

Assessment / Classification
Mixture not classified based on available information.

Skin sensitisation

Animal data

	Species	Method	Test	Remark
Titanium dioxide (CAS No. 13463-67-7)	Guinea pig	OECD 406	*NDA*	Not sensitising
	Mouse	OECD 429	*NDA*	Not sensitising
Trimethylolpropane (CAS No. 77-99-6)	Mouse	OECD 249	*NDA*	Not sensitising

Assessment / Classification
Mixture not classified based on available information.

CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)

Germ cell mutagenicity
In vitro mutagenicity/genotoxicity

	Test	Method	Result/Evaluation	Remark
Titanium dioxide (CAS No. 13463-67-7)	*NDA*	*NDA*	Negative	Not mutagenic in a standard battery of genetic toxicological tests.
Trimethylolpropane (CAS No. 77-99-6)	Bacterial Reverse Mutation Test	OECD 471	Negative	Not mutagenic
	Mammalian Chromosome Aberration Test	OECD 473	Negative	Not mutagenic
	Mammalian Cell Gene Mutation Test	OECD 476	Negative	Not mutagenic

Assessment / Classification
Mixture not classified based on available information.

Carcinogenicity (Cancerogenicity)

Assessment / Classification

Titanium Dioxide: based on the results of chronic inhalation studies (with positive results only in a single species - rat), IARC has concluded that: "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide." but that: "There is sufficient evidence in experimental animals for carcinogenicity of titanium dioxide". IARCs overall evaluation was that "titanium dioxide is possibly carcinogenic to humans (Group 2B)."

In 2020, the European Commission classified titanium dioxide (TiO_2), in powder form containing 1% or more of particles with aerodynamic diameter ≤ 10 µm, as category 2 suspected carcinogen by inhalation. Particle analysis confirms there is no requirement for classification of the above mentioned LB Group TiO_2 pigments - see Section 9 for details.

LB Group has appealed against classification of TiO_2 and has requested its annulment. We believe the classification was adopted in breach of the Commission's duty of care and several principles of EU law, including the principles of legal certainty, proportionality and the right of interested parties to be heard. We stand by the position that there is no reliable, acceptable or available data to suggest TiO_2 causes cancer.

Trimethylolpropane: Based on available data and negative in vitro mutagenicity studies, the classification criteria are not met.

Reproductive toxicity

Animal data

Adverse effects on developmental toxicity

	Effect dose	Value	Exposure route	Species	Method	Result / Evaluation
Titanium dioxide (CAS No. 13463-67-7)	NOAEL	1000 mg/kg bw/day	Oral	Rat	*NDA*	No indication of reproductive toxicity
Trimethylolpropane (CAS No. 77-99-6)	NOAEL	800 mg/kg bw/day	Oral	Rat	OECD 422	No indication of reproductive toxicity
	NOAEL	800 mg/kg bw/day	Oral	Rat	OECD 422	No embryotoxic or teratogenic effects observed

Effects on prenatal toxicity

	Effect dose	Value	Exposure route	Species	Method	Result Evaluation
Trimethylolpropane (CAS No. 77-99-6)	NOEL	100 mg/kg bw/day	Oral	Rat	OECD 414	Developmental toxicity
	NOAEL	>450 mg/kg bw/day	Oral	Rabbit	OECD 414	No embryotoxic or teratogenic effects observed
	LOAEL	74-99mg/kg bw/day	Oral	Rat	OECD 443	Developmental effects

Assessment / Classification

Titanium Dioxide: Based on available data, the classification criteria are not met.

Trimethylolpropane: Based on the results of an Extended One Generation Reproductive Toxicity Study (EOGRTS, OECD 443), which showed some evidence of adverse effects on sexual function and fertility and/or on development on animals, trimethylolpropane (TMP) has been self-classified by the lead registrant and other members of the REACH consortium as a suspected reproductive toxicant (Rep. Tox. Cat. 2) H361f and H361d.

Overall assessment on CMR properties

On 18 February 2020 the European Commission published the classification of titanium dioxide (category 2 suspected carcinogen by inhalation) in the EU Official Journal. LB Group maintains that the manufacture and use of titanium dioxide in its supported applications is safe for workers and consumers, there is no reliable acceptable or available data to suggest that TiO_2 causes cancer in humans.

LB Group received information from its suppliers that TMP has been classified as suspected reproductive toxicant (Category 2). This classification resulted from the REACH evaluation process; a reproductive toxicity study conducted by the TMP registrants revealed evidence of reproductive toxicity.

As the level of TMP in LB Group products are below the threshold of 3%, classification in the EU is not required and therefore, the mixture is not classified.

Specific target organ toxicity (single exposure)

Animal data

	Effect dose	Value	Species	Method	Remark
Titanium dioxide (CAS No. 13463-67-7)					
Oral specific target organ toxicity (single exposure)	*NDA*	*NDA*	*NDA*	*NDA*	Not classified
Inhalative specific target organ toxicity (single exposure)	*NDA*	*NDA*	*NDA*	*NDA*	Not classified
Trimethylolpropane (CAS No. 77-99-6)					
Oral specific target organ toxicity (single exposure)	*NDA*	*NDA*	*NDA*	*NDA*	Not classified
Inhalative specific target organ toxicity (single exposure)	*NDA*	*NDA*	*NDA*	*NDA*	Not classified

Assessment / Classification

Mixture not classified based on available information.

Specific target organ toxicity (repeated exposure)

Animal data

	Effect dose	Value	Species	Method	Remark
Titanium dioxide (CAS No. 13463-67-7)					
Oral specific target organ toxicity (repeated exposure)	*NDA*	*NDA*	*NDA*	*NDA*	Not classified
Dermal specific target organ toxicity (repeated exposure)	*NDA*	*NDA*	*NDA*	*NDA*	Not classified
Inhalative specific target organ toxicity (repeated exposure)	*NDA*	*NDA*	*NDA*	*NDA*	Not classified
Trimethylolpropane (CAS No. 77-99-6)					
Oral specific target organ toxicity (repeated exposure)	NOAEL	200 mg/kg bw/day	Rat	OECD 422	Not classified

Assessment / Classification

Mixture not classified based on available information.

Aspiration hazard

Experimental data
Based on available data, the classification criteria are not met.

Assessment / Classification
Mixture not classified based on available information.

Symptoms related to the physical, chemical and toxicological characteristics:
In case of ingestion
No specific data

In case of skin contact:
Individuals with sensitive skin may experience skin drying on prolonged or repeated exposure.

In case of inhalation:
Dust may induce mild and temporary upper respiratory irritation with cough and shortness of breath.

In case of eye contact:
No significant irritation expected other than mechanical irritation.

11.2 Information on other hazards

Potential acute health effects
In case of ingestion
No known significant effects or critical hazards.

In case of skin contact:
The product is not irritant but as with all fine powders can absorb moisture and natural oils from the surface of the skin during prolonged exposure.

In case of inhalation:
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to dust may aggravate pre-existing respiratory conditions.

In case of eye contact:
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes due to mechanical irritation.

11.2.1 Endocrine disrupting properties
This product does not contain any known or suspected endocrine disruptors.

SECTION 12: Ecological information

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

12.1 Toxicity:

Aquatic toxicity

Acute (short-term) fish toxicity

	Effect dose	Value	Test duration	Species	Method
Titanium dioxide (CAS No. 13463-67-7)	LC50	>10000mg/L	96 hours	Fish	OECD 203
	LC50	>1000mg/L	96 hours	Fish	OECD 203
Trimethylolpropane (CAS No. 77-99-6)	LC50	>1000mg/L	96 hours	Fish	

Acute (short-term) toxicity to crustacea

	Effect dose	Value	Test duration	Species	Method
Titanium dioxide (CAS No. 13463-67-7)	LC50	>1000mg/L	48 hours	Daphnia magna	OECD 202
Trimethylolpropane (CAS No. 77-99-6)	EC50	13000 mg/L	48 hours	Daphnia magna	*NDA*

Acute (short-term) toxicity to algae and cyanobacteria

	Effect dose	Value	Test duration	Species	Method
Titanium dioxide (CAS No. 13463-67-7)	EC50	61mg/L	*NDA*	Pseudokirchneriella subcapitata	OECD 201
Trimethylolpropane (CAS No. 77-99-6)	EC50	>1000 mg/L	72 hours	Pseudokirchneriella subcapitata	*NDA*

Toxicity to microorganisms

	Effect dose	Value	Test duration	Species	Method
Titanium dioxide (CAS No. 13463-67-7)	EC50	>10000mg/L	3 hours	Activated sludge	OECD 209
Trimethylolpropane (CAS No. 77-99-6)	EC50	>10000mg/L	3 hours	Activated sludge	*NDA*

Assessment / Classification

Mixture not classified based on available information.

12.2 Persistence and degradability

Biodegradation

Trimethylolpropane (CAS No. 77-99-6)			
Value	**Test duration**	**Method**	**Remark**
100%	28 days	OECD Test No. 302B: Inherent Biodegradability: Zahn-Wellens/ EVPA Test	Inherently biodegradable

Assessment / Classification
Titanium Dioxide is an inorganic metal oxide, therefore this does not apply.
Trimethylolpropane is readily biodegradable and does not bioaccumulate.

12.3 Bioaccumulative potential

Bioconcentration factor (BCF)

Substance Name	Partition Coefficient
Trimethylolpropane (TMP)	-2.37

Assessment / Classification
No bioaccumulation potential.

12.4 Mobility in soil
Soil/water partition coefficient: Not available.
Mobility: The product has low mobility in soil. Insoluble in water.

12.5 Results of PBT and vPvB assessment
Not classified as PBT substance / Not classified as vPvB substance

12.6 Endocrine disrupting properties
This product does not contain any known or suspected endocrine disruptors.

12.7 Other adverse effects
No data available.

Additional ecotoxicological information
No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Directive 2008/98/EC (Waste Framework Directive)

After intended use
To the present knowledge of the supplier, this product is not considered a hazardous waste as defined by EU Directive 91/689 / EEC.
Disposal via a licensed disposal company. Dispose in compliance with local and national regulations.
Other waste codes specific to industrial sectors and treatments may be applicable after use of the product.

Remark
This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Other disposal recommendation
Even minor sewage disposal is discouraged as the product renders the discharge in liquid effluent highly visible.

SECTION 14: Transport information

	Land transport (ADR/RID)	Inland waterway transport (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN number or ID number	Not Regulated.	Not Regulated.	Not Regulated.	Not Regulated.
14.2 UN Proper shipping name	Not applicable.	Not applicable.	Not applicable.	Not applicable.
14.3 Transport hazard class(es)	Not applicable.	Not applicable.	Not applicable.	Not applicable.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Germany non-hazardous to water (nwg)

Other EU regulations

Information according to 1999/13/EC about limitation of emissions of volatile organic compounds (VOC-guideline)

Directive 2004/42/CE on the limitation of emissions of volatile organic compounds
We do not intentionally introduce[i] substances listed in the EU regulation 2004/42/EC in the manufacture of our titanium dioxide pigments.

Regulation (EC) No. 842/2006 on certain fluorinated greenhouse gases.
We do not intentionally introduce[i] substances listed in the EU regulation (EC) No. 842/2006 in the manufacture of our titanium dioxide pigments.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer
We do not intentionally introduce[i] substances listed in the EU regulation 1005/2009 of 16 September 2009 on substances that deplete the ozone layer in the manufacture of our titanium dioxide pigments.

Substances of Very High Concern
We do not intentionally introduce[i] any substance listed in the REACH Candidate List of Substances of Very High Concern (SVHC) for Authorization published by the European Chemicals Agency (ECHA) https://echa.europa.eu/candidate-list-table.

For any further queries, please do not hesitate to contact your LB Group representative or RAPS@lomonbillions.global

REACH

	Only Representative Details	Registration /Pre-registration No.
GB	LB Group Co., Ltd. Address: Winder House, Kingfisher Way, Stockton-on-Tees, TS18 3EX, UK Information contact: +44 (0)1642 692750	DUIN: UK-20-1978340473-4-0000
Korea	Chemical Inspection & Regulation Service Limited (CIRS) Address: Regus Harcourt Centre, Block 4, Co. Dublin, D02 HW77, Ireland Information contact: +353 1 477 3710	Titanium Dioxide K1906-113771
		Trimethylolpropane K1906-113775
Turkey (KKDIK)	Chemleg Danışmanlık Ltd. Şti. (CHEMLEG) Address: Altıntepe, İstasyon Yolu Sokağı No:3, 34840 Maltepe/İstanbul, Turkey Information contact: +90 216 706 13 07	Trimethylolpropane 05-0000207580-44- 0000
		Trimethylolpropane 05-0000207580-44- 0000

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS	Complies
ENCS	Complies
IECSC	Complies
INSQ	Complies
KECL	Complies
PICCS	Complies
AICS	Complies
NZIoC	Complies
TCSI	Complies
NCI	Complies
UK REACH	Complies
Korea REACH	Complies
KKDIK	Complies

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out

SECTION 16: Other information

16.1 Indication of changes

Marked on the SDS. Significant change from previous version is denoted with a double bar.

16.2 Abbreviations and acronyms

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS No.	Chemical Abstract Service number
CLP	Classification Labelling and Packaging
EC No.	European Community number
EC50	Median effective concentration
EN	European Norm
EU	European Union
DNEL	Derived No-Effect Level
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median Lethal Concentration
LD50	Median Lethal Dose
NDA	No Data Available
NOAEL	No Observed Adverse Effect Level
NOEL	No Observed Effect Level
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
TWA	Time Weighted Average
vPvB	Very Persistent and very Bioaccumulative

16.3 Key literature references and sources for data
IUCLID Dossier. ECHA website. Supplier SDS. Internal Risk Assessments.

16.4 Classification for mixtures and used evaluation method according to regulation (EC) 1207/2008 [CLP]
See Section 2.1 (classification).

16.5 Relevant H- and EUH-phrases
EUH212 - Warning! Hazardous respirable dust may be formed when used. Do not breathe dust.
EUH 066 – Repeated exposure may cause skin dryness or cracking.
EUH210-Safety Data Sheet available on request.
H361f Suspected of damaging fertility.
H361d Suspected of damaging the unborn child.

16.6 Further information
Titanium Dioxide: based on the results of chronic inhalation studies (with positive results only in a single species - rat), IARC has concluded that: "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide." but that: "There is sufficient evidence in experimental animals for carcinogenicity of titanium dioxide". IARCs overall evaluation was that "titanium dioxide is possibly carcinogenic to humans (Group 2B)."
Trimethylolpropane: based on the results of a reproductive toxicity study by the TMP supplier who has self-classified TMP as a suspected reproductive toxicant (Rep. Tox. Cat 2) H361f and H361d.
As the level of TMP in LB Group products is below the threshold of 3% no classification in the EU is required. Relevant updates have been made to the SDS.

16.7 Key literature references and sources for data
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS - European Inventory of Existing Commercial Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
INSQ - National Inventory of Chemical Substances of Mexico
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals
TCSI - Taiwan Chemical Substance Inventory
NCI - Vietnam National Chemical Database System
KKDIK – Turkey Reach
European Food Safety Authority (EFSA)
IFA: Occupational exposure limit values (OEL): Foreign and EU Limits
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
World Health Organization

Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH)

Notice to the reader

LB Group Co., Ltd. is the result of the merger of Henan Billions Chemicals Co., Ltd with Sichuan Lomon Titanium Industry Co., Ltd. Billions Europe is a wholly-owned subsidiary of LB Group Co., Ltd.

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, nothing herein is to be construed as a warranty, express or otherwise.

In all cases, it is the responsibility of the user to determine the applicability of such information and recommendations and the suitability of any product for its own particular purpose.

The product may present hazards and should be used with caution. while certain hazards are described in this publication, no guarantee is made that these are the only hazards that exist.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

[i]*Under various environmental protection and product safety regulations, directives, standards and initiatives "intentionally introduced" means "deliberately utilised during the manufacture of the components and/or for the formulation of a material or component where its continued presence is desired in the final product to provide a specific property, appearance or quality."*