DCL Hybrid 3RLM

Safety Data Sheet

according to 29 CFR § 1910.1200, Hazard Communication Standard (HCS 2024)
Issue date: 2/26/2013 Revision date: 5/28/2026 Supersedes: 1/15/2026 Version: 6.0

SECTION 1 Identification

1.1. Product identifier

Product form : Mixture
Trade name : DCL Hybrid 3RLM
Product code : 100019, 101029

1.2. Other means of identification

Synonyms : Pigment Yellow 184
Other means of identification : DCC YELLOW 3RLM, DCL-3RLM BISMUTH VANADATE, PY.184

1.3. Recommended use of the chemical and restrictions on use

Use of the substance/mixture : Pigment,Coloring agents

1.4. Supplier's details

Supplier
DCL Corporation (Pigments Services Inc)
1506 Bushy Park Road
Goose Creek, South Carolina
USA, 29445
T +1 416 791-4200
SDS@pigments.com - pigments.com

1.5. Emergency phone number

Emergency number : +1 800 424-9300; +1-703-527-3887 (CHEMTREC, CCN12891) 24 hours, 7 days a week

SECTION 2 Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

Not classified

2.2. Label elements

GHS US labeling

No labeling applicable

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

Other hazards which do not result in classification : Not known.

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
Bismuth vanadium oxide (BiVO4)	CAS-No.: 14059-33-7	-	Not classified
Sulfuric acid, barium salt (1:1)	CAS-No.: 7727-43-7	-	Not classified
trizinc bis(orthophosphate)	CAS-No.: 7779-90-0	<10	Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of hazard classes and H-statements : see section 16

SECTION 4 First aid measures

4.1. Description of necessary first-aid measures

First-aid measures general : If you feel unwell, seek medical advice.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

Personal protection for first-aid responders. : First aid workers will be equipped with suitable personal protective equipment.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects after inhalation : Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure. Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard.

Symptoms/effects after skin contact : None under normal conditions. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/effects after eye contact : None under normal conditions. Dust from this product may cause eye irritation.

Symptoms/effects after ingestion : None under normal conditions.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Other medical advice or treatment : Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard : No fire hazard.

Explosion hazard : No direct explosion hazard.

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material-damage.

For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment.

Emergency procedures : Ventilate spillage area.

For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

Emergency procedures : Evacuate unnecessary personnel.

Environmental precautions : Avoid release to the environment.

6.2. Methods and materials for containment and cleaning up

For containment : Using a clean shovel, put the material in a dry container and cover without compressing it.

Methods for cleaning up : Take up mechanically (preferable by vacuum cleaning or gentle sweeping).

Other information : Dispose of materials or solid residues at an authorized site.

For further information refer to section 13.

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Avoid dust formation. Prevent the build-up of electrostatic charge.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

Additional hazards when processed : Not expected to present a significant hazard under anticipated conditions of normal use.

7.2. Conditions for safe storage, including incompatibilities

Technical measures : Keep in a cool, well-ventilated place away from heat.

Storage conditions : Keep cool. Protect from sunlight.

Specific end uses : Restricted to professional users.

Packaging materials : Always store product in container of same material as original container.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

Sulfuric acid, barium salt (1:1) (7727-43-7)	
USA - ACGIH® - Threshold Limit Values	
Local name	Barium sulfate

Sulfuric acid, barium salt (1:1) (7727-43-7)	
ACGIH® TLV® TWA	5 mg/m³ (Inhalable fraction. The value is for particulate matter containing no asbestos and < 1% crystalline silica)
Remark (ACGIH®)	TLV® Basis: Pneumoconiosis
Regulatory reference	ACGIH 2022
USA - OSHA - Occupational Exposure Limits	
Local name	Barium sulfate
OSHA PEL TWA	15 mg/m³ (Total dust) 5 mg/m³ (Respirable fraction)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1

8.2. Appropriate engineering controls

Appropriate engineering controls : Provide adequate ventilation to minimize dust concentrations. Measure concentrations regularly, and at the time of any change occurring in conditions likely to have consequences on workers exposure.

8.3. Individual protection measures, such as personal protective equipment

Hand protection:

Type	Material	Permeation	Thickness (mm)	Penetration
Protective gloves	Nitrile rubber (NBR)	6 (> 480 minutes)	>0.35mm	
Wear suitable gloves resistant to chemical penetration				

Eye protection:

Chemical goggles or safety glasses

Type	Field of application	Characteristics
Safety glasses	Dust	With side shields

Skin and body protection:

Wear suitable protective clothing

Type
Plastic apron or overall

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

Device	Filter type	Condition
Dust mask	Type P3, Particle filter	Dust protection

Personal protective equipment symbol(s):

SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	:	Solid
Appearance	:	Powder.
Color	:	Yellow
Odor	:	odorless
Odor threshold	:	No data available
pH	:	6 – 9 Suspension
Melting point	:	> 800 °C
Freezing point	:	Not applicable
Boiling point	:	Not applicable
Flash point	:	Not applicable
Relative evaporation rate (butyl acetate=1)	:	Not applicable
Flammability (solid, gas)	:	Not applicable Non flammable.
Vapor pressure	:	Not applicable
Vapor pressure at 50°C	:	Not applicable
Relative vapor density at 20°C	:	Not applicable
Relative density	:	No data available
Solubility	:	practically insoluble. Water: Insoluble
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	> 400 °C
Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	Not applicable
Explosion limits	:	Not applicable
Explosive properties	:	Not explosive.
Oxidizing properties	:	Not applicable.
Particle characteristics	:	No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

SECTION 10 Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Take precautionary measures against static discharge.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition generates : Toxic vapors may be released.

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

Bismuth vanadium oxide (BiVO4) (14059-33-7)	
LD50 oral rat	> 5000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LC50 Inhalation - Rat	> 5.15 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity)

trizinc bis(orthophosphate) (7779-90-0)	
LD50 oral rat	> 5000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LC50 Inhalation - Rat	> 5.7 mg/l air (Equivalent or similar to OECD 403, 4 h, Rat, Male / female, Read-across, Inhalation (dust), 14 day(s))

Sulfuric acid, barium salt (1:1) (7727-43-7)	
LD50 oral rat	> 5000 mg/kg (Equivalent or similar to OECD 401, Rat, Male, Experimental value, Oral, 14 day(s))
LD50 dermal rat	> 2000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, Rat, Read-across, Dermal)

Skin corrosion/irritation : Not classified.
pH: 6 – 9 Suspension

trizinc bis(orthophosphate) (7779-90-0)	
pH	No data available in the literature

Sulfuric acid, barium salt (1:1) (7727-43-7)	
pH	No data available in the literature

Serious eye damage/irritation : Not classified
pH: 6 – 9 Suspension

trizinc bis(orthophosphate) (7779-90-0)	
pH	No data available in the literature

Sulfuric acid, barium salt (1:1) (7727-43-7)	
pH	No data available in the literature

Respiratory or skin sensitization : Not classified
This product contains small amounts of an ingredient which has been reported to cause skin sensitization reactions.

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Sulfuric acid, barium salt (1:1) (7727-43-7)	
NOAEL (chronic,oral,animal/male,2 years)	60 mg/kg body weight Animal: rat, Animal sex: male, Remarks on results: other:
NOAEL (chronic,oral,animal/female,2 years)	75 mg/kg body weight Animal: rat, Animal sex: female, Remarks on results: other:

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Bismuth vanadium oxide (BiVO4) (14059-33-7)	
LOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.0007 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)
NOAEC (inhalation,rat,dust/mist/fume,90 days)	0.0001 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

trizinc bis(orthophosphate) (7779-90-0)	
LOAEL (oral,rat,90 days)	53.8 mg/kg body weight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEL (oral,rat,90 days)	31.52 mg/kg body weight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)

Aspiration hazard : Not classified

DCL Hybrid 3RLM	
Viscosity, kinematic	Not applicable
Sulfuric acid, barium salt (1:1) (7727-43-7)	
Viscosity, kinematic	Not applicable (solid)

Symptoms/effects after inhalation : Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure. Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard.

Symptoms/effects after skin contact : None under normal conditions. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/effects after eye contact : None under normal conditions. Dust from this product may cause eye irritation.

Symptoms/effects after ingestion : None under normal conditions.

SECTION 12 Ecological information

12.1. Ecotoxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

Bismuth vanadium oxide (BiVO4) (14059-33-7)	
LC50 - Fish [1]	> 10000 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	> 100 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
Additional information	Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations

trizinc bis(orthophosphate) (7779-90-0)	
LC50 - Fish [1]	0.169 mg/l (ASTM E729-88, 96 h, Oncorhynchus mykiss, Static system, Fresh water, Read-across, Lethal)
EC50 - Crustacea [1]	0.86 mg/l (EPA 600/4-85/013: Method for measuring the acute toxicity of effluents to freshwater and marine organisms, 48 h, Daphnia magna, Static system, Fresh water, Read-across, GLP)

trizinc bis(orthophosphate) (7779-90-0)	
NOEC chronic algae	0.06 mg/l

Sulfuric acid, barium salt (1:1) (7727-43-7)	
LC50 - Fish [1]	> 174 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Danio rerio, Static system, Fresh water, Experimental value, Lethal)
EC50 - Crustacea [1]	32 mg/l
EC50 72h - Algae [2]	> 30.07 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 96h - Algae [1]	1890.263 mg/l Source: ECOSAR
ErC50 algae	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)

12.2. Persistence and degradability

DCL Hybrid 3RLM	
Persistence and degradability	Not rapidly degradable

Bismuth vanadium oxide (BiVO4) (14059-33-7)	
Persistence and degradability	Not rapidly degradable

trizinc bis(orthophosphate) (7779-90-0)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

Sulfuric acid, barium salt (1:1) (7727-43-7)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

12.3. Bioaccumulative potential

DCL Hybrid 3RLM	
Bioaccumulative potential	Potential to bioaccumulate is low.

Sulfuric acid, barium salt (1:1) (7727-43-7)	
BCF - Fish [1]	1.2 – 74.4 l/kg (Lepomis macrochirus, Fresh water, Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

trizinc bis(orthophosphate) (7779-90-0)	
Surface tension	70.4 mN/m (20 °C, 2.7E-4 %, OECD 115: Surface Tension of Aqueous Solutions)
Ecology - soil	Adsorbs into the soil.

Sulfuric acid, barium salt (1:1) (7727-43-7)	
Surface tension	No data available in the literature

Sulfuric acid, barium salt (1:1) (7727-43-7)	
Ecology - soil	No (test)data on mobility of the substance available.

12.5. Other adverse effects

Ozone : Not classified
Fluorinated greenhouse gases : No

SECTION 13 Disposal considerations

Regional waste regulation : Disposal must be done according to official regulations.
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Product/Packaging disposal recommendations : Comply with applicable regulations for solid waste disposal. Disposal must be done according to official regulations.
Additional information : Do not re-use empty containers.

SECTION 14 Transport information

In accordance with DOT / TDG / IMDG / IATA

14.1. UN number

UN-No. (DOT) : Not applicable
UN-No. (TDG) : Not applicable
UN-No. (IMDG) : Not applicable
UN-No. (IATA) : Not applicable

14.2. UN Proper Shipping Name

Proper Shipping Name (DOT) : Not applicable
Proper Shipping Name (TDG) : Not applicable
Proper Shipping Name (IMDG) : Not applicable
Proper Shipping Name (IATA) : Not applicable

14.3. Transport hazard class(es)

DOT
Transport hazard class(es) (DOT) : Not applicable

TDG
Transport hazard class(es) (TDG) : Not applicable

IMDG
Transport hazard class(es) (IMDG) : Not applicable

IATA
Transport hazard class(es) (IATA) : Not applicable

14.4. Packing group

Packing group (DOT) : Not applicable
Packing group (TDG) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT
Not applicable

TDG
Not applicable

IMDG
Not applicable

IATA
Not applicable

SECTION 15 Regulatory information

15.1. Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Bismuth vanadium oxide (BiVO4)	CAS-No. 14059-33-7	-%
trizinc bis(orthophosphate)	CAS-No. 7779-90-0	<10%

15.2. International regulations

CANADA

DCL Hybrid 3RLM

Listed on the Canadian DSL (Domestic Substances List)

Bismuth vanadium oxide (BiVO4) (14059-33-7)

Listed on the Canadian DSL (Domestic Substances List)

trizinc bis(orthophosphate) (7779-90-0)

Listed on the Canadian DSL (Domestic Substances List)

Sulfuric acid, barium salt (1:1) (7727-43-7)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

DCL Hybrid 3RLM

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Bismuth vanadium oxide (BiVO4) (14059-33-7)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

trizinc bis(orthophosphate) (7779-90-0)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Sulfuric acid, barium salt (1:1) (7727-43-7)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

DCL Hybrid 3RLM

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)

Bismuth vanadium oxide (BiVO4) (14059-33-7)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)

trizinc bis(orthophosphate) (7779-90-0)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)

Sulfuric acid, barium salt (1:1) (7727-43-7)

Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
Sulfuric acid, barium salt (1:1)(7727-43-7)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16 Other information

according to 29 CFR § 1910.1200, Hazard Communication Standard (HCS 2024)

Revision date : 5/28/2026

Issue date : 2/26/2013

Full text of hazard classes and H-statements	
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

Indication of changes:

Section	Changed item	Comments
1	Name	**Modified**
1	Other means of identification	**Removed**
1	Trade name	**Modified**

Safety Data Sheet (SDS), USA

The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.

DCL pigment, pigment preparations and special dyes are technical grade products. Unless otherwise stated or agreed DCL products are recommended only for industrial use in applications involving coloration of inks, plastics and coatings. Other intended uses including their use in consumer products governed by specific legislation or standards should be referred to the manufacturer. The use of this product is not authorized for the direct coloration of food, the coloration of articles that come into contact with internal organs or body fluids, tattoo inks, nor for cosmetic use. The customer must perform its own tests to determine the suitability of the supplied product for the intended purpose. It is also the customer's responsibility to ensure that its intended uses shall be fully in compliance with all applicable laws and regulations in each relevant country or region. The data contained in the SDS apply only to DCL products sold under the stated trade names.