

**SAFETY DATA SHEET**

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Date issued: April the 21st, 2008

Product name: : **Titanyl sulfate - solution**

Date revised: October the 18th, 2011

Revised version No.: 3

1. Chemical product and supplier identification:

1.1.	Product identification:	Titanyl sulfate - solution	Identification No.: P933315
1.2.	Product use:	Synthesis of pigment TiO ₂	
1.3.	Supplier identification (manufacturer, importer, distributor):		
1.3.1.	Supplier name:	CINKARNA CELJE, Inc.	
1.3.2.	Supplier address:	Kidričeva 26, 3001 CELJE – SLOVENIJA, +386 3 427 60 00	
1.3.3.	Contact person:	Tatjana.Rozman@cinkarna.si	
1.3.4.	Emergency number:	+386 3 427 61 12	

2. Hazard identification:

2.1.	Hazards:	Corrosive.
2.2.	Specific hazards:	Non-volatile liquid, slightly brownish-yellow, odourless, strongly corrosive, may cause corrosive wounds, exothermal reaction in contact with water, in contact with oxidant agents may cause ignition or explosion.
2.3.	Symptoms after exposure: - Inhalation: - Skin contact: - Contact with eyes: - Ingestion:	Injuries of mouth cavity and respiratory organs. Corrosive wounds, which heal badly and are likely to ulcerate. Severe irritation and burns. Visual impairment or possible loss of sight is likely to result. Injuries of tongue, gullet, and stomach. May be fatal
2.4.	Danger to environment:	Threat to environment, no specific data available.

3. Composition with information on hazardous ingredients:

3.1.	Common name:	Titanyl sulfate - solution					
3.2.	Hazardous ingredients:						
Chemical name	Registration number	Index No.	CAS No.	EC No.	wt./vol%/max concentration	Hazard symbol	Risk Phrases

Product name:

Sulfuric acid, H ₂ SO ₄		016-020-00-8	7664-93-9	231-639-5	32 %H ₂ SO ₄ – 38 %H ₂ SO ₄	C	35
Titanium oxisulfate, TiOSO ₄			13825-74-6	237-523-0	10 %TiO ₂ – 12%TiO ₂		

4. First aid measures:

4.1.	General instructions:	Remove contaminated clothing and footwear.
4.2.	Inhalation:	Carry the injured outdoors, breathe plenty of fresh air, put in comfortable position and seek medical assistance.
4.3.	Contact with skin:	Wash the affected area with plenty of water and seek medical assistance.
4.4.	Contact with eyes:	Rinse with cold water for at least 10 to 15 minutes) with opened eyelids and moving the eyeballs in all directions, seek medical assistance.
4.5.	Ingestion:	Rinse mouth with water and drink lots of water, do not incite vomiting, seek medical assistance.
4.6.	First aid at work:	In case of ingestion do not neutralize with NaHCO ₃ or CaCO ₃ , since the created CO ₂ may perforate stomach wall. Injured person should slowly drink milk or MgO, suspended in water. Other specific anti-agents are not known. Treat symptomatically. Fumes may injure windpipe. To prevent cough use Kodein. In case of irritated respiratory organs use 5 inhalations from aerosol with Dexamethason (Tuxilolon, Thomac) every 15 minutes. In case of injured respiratory organs introduce antibiotic protection.

5. Fire-fighting measures:

5.1.	Suitable extinguishing medium:	Titanyl sulfate solution does not burn and does not support fire. If the product is involved in fire, use foam, carbon dioxide or powder.
5.1.1.	Extinguishing media which shall not be used for safety reasons:	Contact with metals may release hydrogen which may create explosive mixtures in contact with air. In case of fire containers with titanyl sulfate solution may be cooled with water spray but only if closed. Prevent water to penetrate into the solution.
5.2.	Special exposure hazards:	Protective gloves, protective clothes or apron, watertight shoes or boots, all from acid-proof materials. Protective goggles or face shield.
5.3.	Special protective fire fighting equipment, indicated by standard if any:	Titanyl sulfate solution does not burn and does not support fire. If the product is involved in fire, use foam, carbon dioxide or powder.

6. Accidental release measures:

6.1.	Personal safety measures:	Evacuate area. Wear acid-proof clothing, footwear and face shield or goggles within the hazardous area. Call fire brigade. Prevent contact of titanyl sulfate with metals.
6.2.	Environment protection:	Prevent drainage into water beds and sewer ducts.
6.3.	Cleaning after accidental discharge:	Neutralise titanyl sulfate with limestone or lime. Remove created gypsum

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and dispose it properly.

7. Handling and storage:

7.1.	Handling:	No specific requirements. Use personal protective equipment.
7.1.1.	Safety measures:	Familiarize operators handling the titanyl sulfate solution with hazards, appropriate handling, personal protective equipment, and first aid measures in case of accidents, assistance and environment protection. Shower must be available in the vicinity of storage area.
7.1.2.	Technical measures:	Avoid contact with water. No other specific measures are required.
7.1.3.	Recommended and forbidden measures:	Dilute by pouring the titanyl sulfate solution into water, and not vice versa.
7.2.	Storage:	Storage floor must be made of acid resistant material.
7.2.1.	Conditions for safe storage:	No smoking inside storage area. Containers with titanyl sulfate solution must be clearly labelled and closed. During warm season containers must be periodically vented.
7.2.2.	Separating incompatible products:	Do not store the following substances in the same storage space: chlorates, chromates, nitrates, and the like, flammable substances, HCl, HNO ₃ , leaches, and metallic dust.
7.2.3.	Special packaging:	ADR classification Class 8: Corrosive substance UN No.: 1760 CORROSIVE LIQUID N.O.S. packaging group II
7.2.4.	Protection against static electricity:	Not required.
7.3.	Specific use:	Each customer differently.

8. Exposure control/personal protection:

8.1.	Exposure limit values:	Sulfuric acid aerosol – air concentration MV at work place: 0.1 mg/m ³
8.2.	Exposure control:	
8.2.1.	Health and safety measures at the workplace:	See sections 3, 5, 6, 7 and 10.
	Personal protection:	Do not use damaged personal protective equipment.
	Respiratory system protection:	Not required for handling. In case of fire see section 5.3.
	Skin and body protection:	Acid resistant protective clothing, hat and boots.
	Hand protection:	Acid resistant gloves.
	Eye protection:	Protective goggles, face shield.
	General work hygiene:	Titanyl sulfate solution must not be stored adjacent to food and/or beverages.

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8.2.2.	Environment exposure control:	See sections 5, 6, 7, 10, 11,12 and 13. All must be permanently followed and controlled.
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9. Physical and chemical properties:

9.1.	General information: - appearance - odour	Clear to pale brown-yellow in colour, muddy liquid. Odourless.
9.2.	Important health, safety and ecological information: - pH: - Boiling point: - Melting point: - Flash point: - Ignition point (for solids and gases): -Explosive properties (upper/lower border): - Oxidation properties: - Vapour pressure: - Relative density: - Solubility (in water and fats): - Partition coefficient: n-octanol/water - Other data:	Under 1 760 mm Hg 120 - 122°C Under -20°C Not flammable Not flammable. Not flammable / 12 mbar (26°C) 1,419 g/cm ³ (20°C) Unlimited in water, no data in fats. / /
	- Note:	Concentration of present sulfuric acid: 32 % - 39 % by weight

10. Stability and reactivity:

10.1.	Stability and reactivity:	Stable and non-reactive under normal conditions of use and transport.
10.1.1.	Conditions to avoid:	Hazardous reaction in case of wrongful mixing with water, alkaline substances, and other acids. In contact with metals hydrogen may be released, see section 7.1.2.
10.1.2.	Incompatibility with other substances:	Oxidizing agents, alkaline substances, organic compounds – see section. 7.2.2.
10.2.	Hazardous products of decomposition:	SO ₃ , SO ₂ and H ₂ O (as water vapour aerosol).
10.3.	Other data:	Corrosive.

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11. Toxicological information:

11.1.	Acute effects (acute toxicity, irritation and corrosivity):	Originating from its corrosiveness.
11.2.	Chronic toxicity or repeated dose toxicity:	In case of ingestion may cause injuries of tongue, gullet, and stomach. Causes skin injuries which heal badly. In case of vapour inhalation causes injuries of mouth cavity and respiratory organs. LC ₅₀ (rat)/ 510 ppm / 2h Damages mucous membranes – corrosive wounds.
11.3.	Oversensibility:	/
11.4.	Specific effects(CMR effects-carcinogenity,mutagenicity and toxicity for reproduction:	Statement of IARC – vapour of strong inorganic acid, also sulfuric acid, may cause cancer on respiratory tract.

12. Ecological information:

12.1.	Ecotoxicity:	Toxicity for fish according to the literature: LC ₅₀ (96h) : 134 mg/l. Toxicity for daphnia according to the literature: EC ₅₀ (24h) : 29 mg/l.
12.2.	Mobility:	Liquid, limitless mixing with water.
12.3.	Persistence and degradability:	Titanyl sulfate solution may be extracted from water only by neutralization, not by biological cleaning.
12.4.	Bioaccumulative potential:	/
12.5.	Results of PBT assessment:	/
12.6.	Other adverse effects:	/

13. Disposal considerations:

13.1.	Product:	Titanyl sulfate solution may not be disposed at any waste disposal site. In case of small quantities acid should be neutralized until pH = 6.2 – 9.1, and in case of large quantities acid should be neutralized with lime, and the created gypsum removed to disposal site in accordance with local state and federal waste disposal regulations.
13.2.	Contaminated packaging:	Reusable after cleaning. Neutralize empty containers with lime milk and flush with clean water. Follow local regulations for waste packaging disposal.

14. Transport information:

14.1.	ADR, RID:	ADR
14.2.	UN number:	1760

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14.3.	Name:	CORROSIVE LIQUID N.O.S. (technical titanil sulfate - solution)
14.4.	Class:	8
14.5.	Classification code:	C9
14.6.	Packaging group:	II
14.7.	Hazard label:	8
14.8.	Tunnel restriction code (TRC):	E

15. Regulatory information:

15.1.	EC classification, letter, hazard labels, S and R (with the text), special regulations:	
15.1.1.	Classification:	231 – 639 – 5
15.1.2.	Labelling:	C – corrosive
15.1.3.	Risk Phrases:	R35 – Causes severe burns
15.1.4.	Safety Phrases:	S1/2 – Keep locked up and out f reach of children S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice S30 – Do not pour water S45 – In case of accident or if you well unwell, seek medical advice immediately, show the label where possible
15.1.5.	Special provisions:	/
15.2.	Regulations /Standards:	Rules and regulations regarding classification, labelling, and packaging of hazardous substances and compounds Regulations regarding chemicals.

16. Other information:

16.1.	Write out the full text of any R phrases referred to under heading 2 and 3 of the SDS:	R35 – Causes severe burns
16.2.	Staff training:	Safety at Work Certificate. Handling of Hazardous Substances Certificate.
16.3.	Recommended or restricted use of product:	No limitations.
16.4.	Instructions:	Safety Data Sheet is to be used only in combination with the product Technical Sheet. Safety Data Sheet cannot be a substitute for Technical Sheet. All information in the above paragraphs of the present Safety Data Sheet are obtained from our current expertise and experience with the substance, including the instructions for safe application, transport, storage, accident measures, first aid, and personal protective equipment. Customer is responsible for strict following of these instructions and adherence to

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		the rules laid out, and must also learn and adhere to any other local (national) legislation and/or regulations. Furthermore, the information in this Safety Data Sheet does not relieve the user of any obligation to comply with legislation relevant for the field of the user's activity.
16.5.	Sources:	<p>Rules (Official Gazette of Republic of Slovenia Nos.: 110/2003, 16/2008, 104/2003, 67/2005, 84/2006, 106/2006, 34/2008, 137/2006, 53/2007,9/2005, 9/2007, 9/2003 , 54/2007, 88/2008, 23/2008, 110/2007</p> <p>Regulations on Classification, Packaging and Labeling of Hazardous substances (Official Gazette of Republic of Slovenia Nos.: 35/2005 and 54/2007)</p> <p>Regulation (EC) No 1907/2006</p> <p>Directive 67/548/EEC</p> <p>Directive 2006/8/EC, 2008/58/EC</p>
16.6.	Revised issue:	October the 18 th , 2011