SAFETY DATA SHEET
TYZOR TPT

According to Appendix D, OSHA Hazard Communication Standard 29 CFR §1910.1200

1. Identification

Product identifier

Product name TYZOR TPT

Recommended use of the chemical and restrictions on use

Application Catalyst. / Cross-linking agent. / Adhesion promoters Surface Modifier. Intermediate Not For Consumer Use.

Uses advised against Industrial use as formulation of adhesive , sealants ; Coatings and paints, thinners, paint removers; Lubricants, greases, release products ; Intermediate ; Esterification and transesterification processes; Fuels; Polymer preparations and compounds.

Details of the supplier of the safety data sheet

Manufacturer

Dorf Ketal Chemicals Speciality Catalyst
11200 Westheimer Road
Suite 400
Houston, Texas 77042
Phone= +1 713 343 2377
Fax= +1 832 649 7615
Email: ehss@dorfketal.com

Emergency telephone number

Emergency telephone For Chemical Emergency ONLY (in the case of fire, leak, spill, exposure or accident) call CHEMTREC at +1(703) 527- 3887 or CHEMTREC India at 000-800-100-7141. For ALL other emergencies call DORF KETAL Emergency Control Room +91 022-27402879 & +91 022-33286102.

2. Hazard(s) identification

Classification of the substance or mixture

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

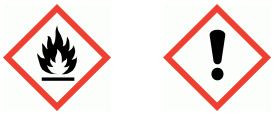
Physical hazards Flam. Liq. 3 - H226

Health hazards Eye Irrit. 2A - H319 STOT SE 3 - H336

Environmental hazards Not Classified

Label elements

Hazard symbols



Signal word Warning

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Hazard statements

H226 Flammable liquid and vapor.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.

Precautionary statements

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P240 Ground/ bond container and receiving equipment.
P241 Use explosion-proof electrical equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing vapor/ spray.
P264 Wash contaminated skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a poison center/ doctor if you feel unwell.
P337+P313 If eye irritation persists: Get medical advice/ attention.
P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents/ container in accordance with national regulations.

Contains titanium tetraisopropanolate

Other hazards

This product does not contain any substances classified as PBT or vPvB.

3. Composition/information on ingredients

Mixtures

titanium tetraisopropanolate **>98%**

CAS number: 546-68-9

Classification
Flam. Liq. 3 - H226
Eye Irrit. 2A - H319
STOT SE 3 - H336

The full text for all hazard statements is displayed in Section 16.

4. First-aid measures

Description of first aid measures

General information Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel.

Inhalation Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention. Place unconscious person on their side in the recovery position and ensure breathing can take place.

Ingestion	Rinse mouth thoroughly with water. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Never give anything by mouth to an unconscious person. Place unconscious person on their side in the recovery position and ensure breathing can take place. Keep affected person under observation. Get medical attention if symptoms are severe or persist.
Skin Contact	Rinse with water.
Eye contact	Rinse with water. Do not rub eye. Remove any contact lenses and open eyelids wide apart. Get medical attention if any discomfort continues.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.

Most important symptoms and effects, both acute and delayed

Inhalation	A single exposure may cause the following adverse effects: May cause drowsiness or dizziness.
Eye contact	Causes serious eye irritation.

Indication of immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	The product is flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire. Extinguish with dry sand.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire. Water spray.

Special hazards arising from the substance or mixture

Specific hazards	In case of fire, the following can be released: Carbon monoxide (CO). Carbon dioxide (CO_2). Metal oxides.

Advice for firefighters

Protective actions during firefighting	Avoid breathing fire gases or vapors. Evacuate area. Keep upwind to avoid inhalation of gases, vapors, fumes and smoke. Ventilate closed spaces before entering them. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapors and protect men stopping the leak. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.
Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Evacuate area. Provide adequate ventilation. No smoking, sparks, flames or other sources of ignition near spillage. Promptly remove any clothing that becomes contaminated. Avoid inhalation of vapors and spray/mists. Use suitable respiratory protection if ventilation is inadequate.

Environmental precautions

Environmental precautions Inform respective authorities in case of seepage into water course or sewage system.Do not allow to enter sewers/ surface or ground water. Do not allow to enter sewers/ surface or ground water.

Methods and material for containment and cleaning up

Methods for cleaning up Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Eliminate all ignition sources if safe to do so. No smoking, sparks, flames or other sources of ignition near spillage. Do not allow material to enter confined spaces, due to the risk of explosion. Absorb small quantities with paper towels and evaporate in a safe place. Once evaporation is complete, place paper in a suitable waste disposal container and seal securely. Large Spillages: If the product is soluble in water, dilute the spillage with water and mop it up. Alternatively, or if it is not water-soluble, absorb the spillage with an inert, dry material and place it in a suitable waste disposal container. The contaminated absorbent may pose the same hazard as the spilled material. Label the containers containing waste and contaminated materials and remove from the area as soon as possible. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. For waste disposal, see Section 13.

Reference to other sections For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

7. Handling and storage

Precautions for safe handling

Usage precautions Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimize spills. Keep container tightly sealed when not in use. Avoid the formation of mists. The product is flammable. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.

Advice on general occupational hygiene Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Storage precautions Store away from incompatible materials (see Section 10). Store locked up. Keep away from oxidizing materials, heat and flames. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage. Moisture-sensitive material. Once opened, container should be kept under nitrogen blanketing to prevent decomposition. Shelf life two years from the date of manufacturing.

Storage class Flammable liquid storage.

Specific end uses(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.

8. Exposure controls/Personal protection

Control parameters

Occupational exposure limits

Remarks titanium tetraisopropanolate: 546-68-9

Ingredient comments No exposure limits known for ingredient(s).

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Exposure controls

Protective equipment

Appropriate engineering controls	Provide adequate general and local exhaust ventilation. Ensure the ventilation system is regularly maintained and tested. Good general ventilation should be adequate to control worker exposure to airborne contaminants. Observe any occupational exposure limits for the product or ingredients.
Eye/face protection	Wear tight-fitting, chemical splash goggles or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
Hand protection	No specific hand protection recommended.
Other skin and body protection	Wear appropriate clothing to prevent repeated or prolonged skin contact.
Hygiene measures	Wash after use and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.
Respiratory protection	Ensure all respiratory protective equipment is suitable for its intended use and is NIOSH approved. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with OSHA 1910.134. Full face mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. Half mask and quarter mask respirators with replaceable filter cartridges should comply with OSHA 1910.134.
Environmental exposure controls	Keep container tightly sealed when not in use.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Liquid.
Color	Colourless to light yellow.
Odor	Alcoholic.
pH	6.0-8.0
Melting point	-4 to 12°C
Initial boiling point and range	Substance decomposes before boiling (OECD 103). 82.3 °C at 101.3 kPa (BP of main degradation product, isopropyl alcohol, used for CSA)
Flash point	(106 °F) 41°C (ASTM D 93)
Vapor pressure	Substance decomposes during vapour pressure testing (OECD 104). 60.2 hPa at 25 °C (read across data of hydrolysing product isopropyl alcohol)
Relative density	at 25 °C 0.96g/cm3 (ASTM D 891)
Solubility(ies)	Hydrolytically unstable.1000000 mg/L at 25°C (water solubility of degradation product isopropyl alcohol)
Partition coefficient	n-octanol/water:Hydrolytically unstable,Log Kow (Pow): 0.05 at 25°C for hydrolyzing product isopropyl alcohol released from the substance.
Auto-ignition temperature	>400°C
Viscosity	Dynamic at 25°C: 3 mPas (DKTM112.1)

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Explosive properties Not considered to be explosive.

Other information No data available.

10. Stability and reactivity

Reactivity Under normal conditions of storage and use, hazardous reactions will not occur. Water reactive, complete hydrolysis will take place with no significant reaction products other than isopropyl alcohol and hydrated titanium dioxide when comes in contact with water or moisture.

Stability Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.

Possibility of hazardous reactions The following materials may react strongly with the product: Oxidizing agents.

Conditions to avoid Avoid heat, flames and other sources of ignition. Containers can burst violently or explode when heated, due to excessive pressure build-up. Do not pressurize, cut, weld, drill, grind or otherwise expose containers to heat or sources of ignition.

Materials to avoid Oxidizing materials. Acids - oxidizing. Hydrolyzes in water to form isopropyl alcohol and titanium dioxide.

Hazardous decomposition products Thermal decomposition or combustion products may include the following substances: Carbon dioxide (CO2). Carbon monoxide (CO). Hydrolyzes in water to form isopropyl alcohol.

11. Toxicological information

Information on toxicological effects

Acute toxicity - oral

Summary titanium tetraisopropanolate: 546-68-9

Notes (oral LD_{50}) 7500 mg/kg, Oral, Rat

Acute toxicity - dermal

Summary titanium tetraisopropanolate: 546-68-9

Notes (dermal LD_{50}) 12870 mg/kg, Dermal, Rat

Acute toxicity - inhalation

Summary titanium tetraisopropanolate: 546-68-9

Notes (inhalation LC_{50}) 7780 mg/m³, Inhalation, Rat

Skin corrosion/irritation

Skin corrosion/irritation Not irritating.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye irritation.

Respiratory sensitization

Respiratory sensitization Not sensitizing.

Skin sensitization

Skin sensitization Not sensitizing.

Germ cell mutagenicity

Genotoxicity - in vitro Negative.

Carcinogenicity

Carcinogenicity No adverse effects known.

Reproductive toxicity

Reproductive toxicity - fertility Negative.

Specific target organ toxicity - single exposure

STOT - single exposure A single exposure may cause the following adverse effects: May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No specific health hazards known.

Aspiration hazard

Aspiration hazard No specific health hazards known.

12. Ecological information

Toxicity Substance is not classified as dangerous to aquatic organisms. Because this substance hydrolysis rapidly the intrinsic ecotoxicological properties are related to the most critical decomposition product isopropyl alcohol. Based on the lowest toxicity value; this substance is not considered as toxic.

Acute aquatic toxicity

Summary titanium tetraisopropanolate: 546-68-9

Acute toxicity - fish LC_{50}, 96 hour: 10000 mg/l, Fish

Acute toxicity - aquatic invertebrates EC_{50}, 24 hour: >770 mg/l, Daphnia magna

Acute toxicity - aquatic plants EC_{50}, 72 hour: >820 mg/l, Algae

Persistence and degradability

Persistence and degradability The product is readily biodegradable. Main organic decomposition product (isopropyl alcohol) is readily biodegradable; . No persistence potential.(OECD Guideline 111)

Bioaccumulative potential

Bio-Accumulative Potential No potential for bioaccumulation. The main degradation product (IPA) is readily biodegradable having a low log Kow of 0.05 (< 4.5)(OECD Guideline111).

Partition coefficient n-octanol/water:Hydrolytically unstable,Log Kow (Pow): 0.05 at 25°C for hydrolyzing product isopropyl alcohol released from the substance.

Mobility in soil

Mobility High mobility in soil based on high water solubility and estimated Koc 1.5 L/kg of degradation product isopropyl alcohol.

Other adverse effects

Other adverse effects None known.

13. Disposal considerations

Waste treatment methods

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General information	The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.
Disposal methods	Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labeled with their contents. Incineration or landfill should only be considered when recycling is not feasible.

14. Transport information

UN Number

UN No. (TDG)	1993
UN No. (IMDG)	1993
UN No. (IATA)	1993

UN proper shipping name

Proper shipping name (TDG)	FLAMMABLE LIQUID, N.O.S.(titanium tetraisopropanolate)
Proper shipping name (IMDG)	FLAMMABLE LIQUID, N.O.S.(titanium tetraisopropanolate)
Proper shipping name (IATA)	FLAMMABLE LIQUID, N.O.S.(titanium tetraisopropanolate)

Transport hazard class(es)

TDG class	3
TDG label(s)	3
IMDG Class	3

Transport labels

IATA class/division	3

Packing group

TDG Packing Group	III
IMDG packing group	III
IATA packing group	III

Environmental hazards

Environmentally Hazardous Substance
No.

Special precautions for user

EmS	F-E, S-E

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Chemical safety assessment Chemical safety assessment has been carried out.

US Federal Regulations

SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities
None of the ingredients are listed or exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)
None of the ingredients are listed or exempt.

SARA Extremely Hazardous Substances EPCRA Reportable Quantities
None of the ingredients are listed or exempt.

SARA 313 Emission Reporting
None of the ingredients are listed or exempt.

CAA Accidental Release Prevention
None of the ingredients are listed or exempt.

FDA - Essential Chemical
None of the ingredients are listed or exempt.

FDA - Precursor Chemical
None of the ingredients are listed or exempt.

SARA (311/312) Hazard Categories
Flammable (gases, aerosols, liquids or solids)
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

OSHA Highly Hazardous Chemicals
None of the ingredients are listed or exempt.

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins
None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-I)
None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-II)
None of the ingredients are listed or exempt.

California Directors List of Hazardous Substances
None of the ingredients are listed or exempt.

Massachusetts "Right To Know" List
None of the ingredients are listed or exempt.

Rhode Island "Right To Know" List
None of the ingredients are listed or exempt.

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Minnesota "Right To Know" List
None of the ingredients are listed or exempt.

New Jersey "Right To Know" List
None of the ingredients are listed or exempt.

Pennsylvania "Right To Know" List
None of the ingredients are listed or exempt.

Inventories

US - TSCA
All ingredients are Listed.

16. Other information

Abbreviations and acronyms used in the safety data sheet	TDG: The transport of dangerous goods act IATA: International air transport association. ICAO: Technical instructions for the safe transport of dangerous goods by air. IMDG: International maritime dangerous goods. CAS: Chemical abstracts service. ATE: Acute toxicity estimate. LC_{50}: Lethal concentration to 50 % of a test population. LD_{50}: Lethal dose to 50% of a test population (median lethal dose). EC_{50}: 50% of maximal effective concentration. PBT: Persistent, bioaccumulative and toxic substance. vPvB: Very persistent and very bioaccumulative.
Classification abbreviations and acronyms	Flam. Liq. = Flammable liquid Eye Irrit. = Eye irritation STOT SE = Specific target organ toxicity-single exposure
Training advice	Only trained personnel should use this material.
Revision comments	Version updated
Revision date	7/15/2019
Revision	2
SDS No.	4857
Hazard statements in full	H226 Flammable liquid and vapor. H319 Causes serious eye irritation. H336 May cause drowsiness or dizziness.
NFPA - health hazard	Temporary incapacitation, injury. (2)
NFPA - flammability hazard	Burns only if heated moderately. (2)
NFPA - instability hazard	Unstable if heated. (1)
ACA HMIS Health rating.	Moderate hazard. (2)
ACA HMIS Flammability rating.	Burns only if heated moderately. (2)

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ACA HMIS Physical hazard rating.	Unstable if heated. (1)