

Safety Data Sheet

Conforms to OSHA Hazard Communication Standard (HCS) 29CFR 1910.1200

Printing date 01/06/2014

Reviewed on 01/06/2014

1 Identification of the Substances/Preparation and of the Company/Undertaking

- **Product identifier**

- **Product name:** TYZOR® TPT

- **Relevant identified uses of the substance or mixture and 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.

- **Application of the substance / the preparation**

Catalyst; Cross-linking agent; Adhesion promoter; Surface modifier; Intermediate.

- **Details of the supplier of the safety data sheet**

- **Manufacturer/Supplier:**

Dorf Ketal Specialty Catalysts LLC
11200 Westheimer Road
Suite 400
Houston, Texas 77042
Phone= +1 713 343 2377
Fax= +1 832 649 7615
Email: ehss@dorketal.com

- **Emergency telephone number:**

For Chemical Emergency ONLY (spill, leak, fire, exposure or accident) call Chemtrec at +1 (703) 527 3887 or Chemtrec India at 000-800-100-7141. DORF KETAL Emergency Control Room +91 22-65271001.

2 Hazard(s) identification

- **Classification of the substance or mixture**

Flam. Liq. 3 H226 Flammable liquid and vapour.
Eye Irrit. 2A H319 Causes serious eye irritation.
STOT SE 3 H336 May cause drowsiness or dizziness.

- **OSHA/HCS status**

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

- **Label elements**

- **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS02 GHS07

- **Signal word** Warning

- **Hazard-determining components of labeling:**

titanium tetraisopropanolate

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· Hazard statements

Flammable liquid and vapour.
 Causes serious eye irritation.
 May cause drowsiness or dizziness.

· Precautionary statements

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 Wear protective gloves/protective clothing/eye protection/face protection.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
 Continue rinsing.
 If eye irritation persists: Get medical advice/attention.

· Classification system:**· NFPA ratings (scale 0 - 4)**

Health = 2

Fire = 2

Reactivity = 1

· HMIS-ratings (scale 0 - 4)

HEALTH 2 Health = 2

FIRE 2 Fire = 2

REACTIVITY 1 Reactivity = 1

3 Composition/information on ingredients**· Chemical characterization: Substances****· Dangerous components:**

546-68-9	titanium tetraisopropanolate	Flam. Liq. 3, H226 Eye Irrit. 2A, H319; STOT SE 3, H336	> 98%
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4 First-aid measures**· Description of first aid measures****· General information:**

Take affected persons out into the fresh air.
 Do not leave affected persons unattended.

· Inhalation:

Move exposed person to fresh air.
 If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
 Loosen tight clothing such as a collar, tie, belt or waistband.
 Get medical attention immediately.

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· Skin Contact:

- Immediately rinse with water.
- If skin irritation continues, consult a doctor.
- Remove contaminated clothing and shoes.
- Wash clothing before reuse.
- Clean shoes thoroughly before reuse.

· Eye Contact:

- Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids.
- Check for and remove any contact lenses.
- Rinse opened eye for several minutes under running water. Then consult a doctor.

· Ingestion:

- Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel.
- Never give anything by mouth to an unconscious person. Get medical attention immediately.

· Most important symptoms and effects, both acute and delayed

- Causes serious eye irritation
- Headache
- Dizziness

· Indication of any immediate medical attention and special treatment needed

- Show this safety data sheet to the doctor in attendance. Treat symptomatically.

5 Fire-fighting measures

- Extinguishing media** In case of fire use the following suitable extinguishing agent.

· Suitable extinguishing agents:

- Foam
- Fire-extinguishing powder
- Alcohol resistant foam
- Carbon dioxide
- Sand

· For safety reasons unsuitable extinguishing agents:

- Water with full jet
- Water spray

· Special hazards arising from the substance or mixture

- In case of fire, the following can be released:
- Carbon monoxide (CO)
- Carbon dioxide
- Metal oxides

· Advice for firefighters

- 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.

· Protective equipment:

- Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

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6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures

- Wear protective clothing.
- Keep away from ignition sources
- Ensure adequate ventilation
- Wear protective equipment. Keep unprotected persons away.
- Use respiratory protective device against the effects of fumes/dust/aerosol.

· Environmental precautions:

- Do not allow product to reach sewage system or any water course.
- Inform respective authorities in case of seepage into water course or sewage system.

· Methods and material for containment and cleaning up:

- Stop leak if without risk.
- Move containers from spill area.
- Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- Ensure adequate ventilation.
- Do not flush with water or aqueous cleansing agents

7 Handling and storage

· Precautions for safe handling

- Put on appropriate personal protective equipment .
- Do not ingest.
- Avoid contact with eyes, skin and clothing.
- Avoid breathing vapour or mist.
- Ensure good ventilation/exhaustion at the workplace.
- Prevent formation of aerosols.

· Information about protection against explosions and fires:

- Keep ignition sources away - Do not smoke.
- Protect against electrostatic charges.

· Conditions for safe storage, including any incompatibilities

· Requirements to be met by storerooms and receptacles:

- Avoid storage near extreme heat, ignition sources or open flame.

· Information about storage in one common storage facility: Store away from oxidizing agents.

· Further information about storage conditions:

- Moisture-sensitive material. Once opened, container should be kept under nitrogen blanketing to prevent decomposition.
- Keep receptacle tightly sealed.
- Protect from heat and direct sunlight.

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- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
No exposure limit value known.
- **Exposure controls**
- **Appropriate engineering controls:**
Use local exhaust ventilation or other engineering control to maintain airborne levels below exposure limit requirement or guidelines.
If there are no applicable exposure limit requirement or guidelines, general ventilation should be sufficient for most operations.
Local exhaust ventilation may be necessary for some operations.
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
Regarding use of the substance in most of the use applications, respiratory protection is not required to keep the exposure via inhalation at acceptable level. During industrial application of coating by spraying and in formulation of lubricant additives at elevated temperature, operational conditions or risk management measures to reduce exposure via inhalation are required. This may include use of respiratory protection (Respirator with APF of 10)
- **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
Glove materials, which give excellent resistance: Neoprene, butyl rubber and Viton. Glove materials which give good resistance: Nitrile rubber.
- **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:**
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.(see exposure scenarios in Annexes)

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Tightly sealed goggles

· **Body protection:** Protective work clothing

9 Physical and chemical properties

· Information on basic physical and chemical properties

Appearance: Colourless to light yellow liquid**Odor:** Alcohol-like**Odour threshold:** No data available.· **pH-value:** 6 to 8· **Melting point/Freezing Point :** -4 to 12 °C (25 to 54 °F) (OECD 102)· **Boiling point/Boiling 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:** 41 °C (106 °F) (ASTM-D 93)· **Flammability (solid, gaseous):** Not applicable.· **Decomposition temperature:** No data available.· **Auto ignition temperature** No data available· **Explosion limits:****Lower:** not applicable (Substance non-explosive)**Upper:** not applicable (Substance non-explosive)· **Oxidizing properties** No· **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 (77 °F)** 0.96 g/cm³ (8.011 lbs/gal) (ASTM D 891)· **Vapour density** No data available· **Evaporation rate** No data available· **Solubility:** 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 for hydrolysing product isopropyl alcohol released from the substance.· **Viscosity:****Dynamic at 25 °C (77 °F):** 3 mPas (DKTM112.1)

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Kinematic: 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 n-butanol and hydrated titanium dioxide when comes in contact with water or moisture

· **Chemical stability** The product is stable under storage at normal ambient temperature.

· Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions are not known.

· Conditions to avoid

Avoid all possible sources of ignition (spark or flame).

Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

· Incompatible materials:

Hydrolyzes in water to form isopropyl alcohol and titanium dioxide.

Acids

Oxidizing material

· Hazardous decomposition products:

Hydrolyzes in water to form isopropyl alcohol

Incomplete combustion and thermolysis may produce gases such as:

Carbon monoxide and carbon dioxide

11 Toxicological information

· Information on toxicological effects

· Acute toxicity:

· LD/LC50 values that are relevant for classification:

546-68-9 titanium tetraisopropanolate

Oral	LD50	7500 mg/kg bw (rat)
Dermal	LD50	12870 mg/kg bw (rabbit)
Inhalative	LC50	7780 mg/m ³ (rat)

· Primary irritant effect:

· **on the skin:** No irritant effect.

· **on the eye:** Irritating effect.

· **Respiratory/ Skin sensitization:** No sensitizing effects known.

· **Germ cell mutagenicity:** No adverse effect observed. Negative

· **Carcinogenicity:** Substance has not been classified for carcinogenicity

· **Reproductive toxicity:** Substance is not classified for reproductive toxicity.

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- **Single dose toxicity:** May cause drowsiness or dizziness.
- **Repeated Dose toxicity** No data available
- **Aspiration hazard** Substance is not classified for aspiration hazard.
- **Other relevant information:** No data available

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.

· Aquatic toxicity:

546-68-9 titanium tetraisopropanolate

EC10	201 mg/L (Algae)
EC50 (16h)	1050 mg/L (Micro-organisms)
EC50 (48h)	590 mg/L (daphnia)
EC50(72h)	820 mg/L (Algae)

· Persistence and degradability

Readily degradable. Main organic decomposition product (isopropyl alcohol) is readily biodegradable; . No persistence potential.(OECD Guideline 111)

· Bioaccumulative potential

No potential for bioaccumulation.The main degradation product (IPA) is readily biodegradable having a low log Kow of 0.05 (< 4.5)(OECD Guideline 111)

· Mobility in soil

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

· Results of PBT and vPvB assessment

· **PBT:** Not a PBT

vPvB: Not a vPvB

Other adverse effects

No reason for any hazard classification under CLP or DSD for atmospheric environment (the ozone layer).

13 Disposal Information

· Waste treatment methods

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and

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contact with soil, waterways, drains and sewers.

14 Transport information

· UN-Number · DOT, ADR, IMDG, IATA	UN1993
· UN proper shipping name · DOT · ADR	Flammable liquids, n.o.s. (titanium tetraisopropanolate) 1993 Flammable liquids, n.o.s. (titaniumtetraisopropanolate),
· IMDG, IATA	FLAMMABLE LIQUID, N.O.S. (titanium tetraisopropanolate)
· Transport hazard class(es) · DOT	
	
· Class · Label	3 Flammable liquids 3
· ADR	
	
· Class · Label	3 (F1) Flammable liquids 3
· IMDG, IATA	
	
· Class · Label	3 Flammable liquids 3
· Packing group · DOT, ADR, IMDG, IATA	III
· Environmental hazards: · Marine pollutant:	No

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· Special precautions for user	Warning: Flammable liquids
· Danger code (Kemler):	30
· EMS Number:	F-E, <u>S-E</u>
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· UN "Model Regulation":	UN1993, Flammable liquids, n.o.s., (titanium tetraisopropanolate), 3, III

15 Regulatory information

· **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients are listed.

· **IARC (International Agency for Research on Cancer)** None of the ingredients are listed.

· **NTP (National Toxicology Program)** Not listed

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients are listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

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· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

· **Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

16 Other information

File Name: Tyzor TPT SDS US en JAN-06-2014

Version: 2.0

Superseded SDS date: 4 April 2013

Change History: The whole SDS updated as per CSA of the product.

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

IOELV: Indicative Occupational Exposure Limit Values

· **Disclaimer:**

The data and recommendations presented in this data sheet concerning the use of our product and the materials contain there in are believed to be accurate and are based on information which is considered reliable as of the date hereof. However, the customer should determine the suitability of much material for his purpose before adopting them on a commercial scale. Since the use our product by others is beyond our control, no guarantee, express or implied, is made and no responsibility assumed for the use of this material or the results to be obtained there from. Information on this document is furnished for the purpose of compliance with Government Health and Safety Regulations and shall not be used for any other purposes. Moreover, the recommendations contained in this Safety Data Sheet are not to be constructed as a license to operate under, or a recommendation to infringe, any existing patents, nor should they be confused with state, municipal or insurance requirements, or with national safety codes.