

Safety Data Sheet

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

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

- **Product identifier**
- **Product name:** TYZOR® AA-105
- **Relevant identified uses of the substance or mixture and uses advised against**
Catalysts/Cross-linking agent. Not for consumer use.
- **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 vapor.
Skin Irrit. 2 H315 Causes skin irritation.
Eye Dam. 1 H318 Causes serious eye damage.
STOT SE 3 H335 May cause respiratory irritation.
- **OSHA/HCS status**
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

- **Label elements**
- **Hazard pictograms**



GHS02 GHS05 GHS07

- **Signal word** Danger
- **Hazard-determining components of labeling:**
Titanium, acetylacetone Et alc. iso-Pr alc. complexes
- **Hazard statements**
H226 Flammable liquid and vapor.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
- **Precautionary statements**
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.

(Contd. on page 2)

Safety Data Sheet

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 1)

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**

- **NFPA ratings (scale 0 - 4)**



Health = 2

Fire = 2

Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**



Health = 2

Fire = 2

Reactivity = 0

- **Other hazards** No information available.

- **% of unknown toxicity:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization:** Substance

- **Dangerous components:**

445398-76-5	Titanium, acetylacetone Et alc. iso-Pr alc. complexes	> 95%
	Eye Dam. 1, H318	
	Skin Irrit. 2, H315; STOT SE 3, H335	

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.

- **Skin Contact:**

Immediately rinse with water.

If skin irritation continues, consult a doctor.

Remove contaminated clothing and shoes.

Wash clothing before reuse.

(Contd. on page 3)

Safety Data Sheet

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 2)

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**

Pain, watering, redness. Causes serious eye damage.

May be irritating to respiratory system. Respiratory tract irritation, coughing.

Skin irritation. Pain or irritation, redness, blistering may occur.

May cause burns to mouth, throat and stomach. Stomach pains.

- **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

Use dry chemical, CO₂, water spray (fog) or foam.

- **For safety reasons unsuitable extinguishing agents:**

Water with full jet

Water spray

- **Special hazards arising from the substance or mixture**

Flammable liquid and vapour.

In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Runoff to sewer may create fire or explosion hazard.

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.

(Contd. on page 4)



Safety Data Sheet

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 3)

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**

Wear protective clothing.

Keep away from ignition sources

Ensure adequate ventilation

Use respiratory protective device against the effects of fumes/dust/aerosol.

Wear protective equipment. Keep unprotected persons away.

- **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).

Use spark-proof tools and explosion-proof equipment.

Dispose of via a licensed waste disposal contractor

7 Handling and storage

- **Handling:**

- **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:**

Protect against electrostatic charges.

Keep ignition sources away - Do not smoke.

Protect from heat.

To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

- **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.

Keep in the original container or an approved alternative made from a compatible material.

- **Information about storage in one common storage facility:**

Store in accordance with local regulations.

Store in a segregated and approved area.

Store away from oxidizing agents.

(Contd. on page 5)

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 4)

Further information about storage conditions:

All organometallic compounds exhibit discoloration when exposed to sunlight. We recommend that the product shipped in non-steel packaging be stored in enclosed buildings and out of direct sunlight or intense UV light.

Product freeze to form solid precipitate at temperature below 0 °C. Crystals formed by low temperatures go back into solution with light heating and agitation.

Moisture-sensitive material. Once opened, container should be kept under nitrogen blanketing to prevent decomposition.

Store in cool, dry conditions in well sealed receptacles.

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:**

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.

Do not breathe vapor or mist.

Breathing equipment:

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.

Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

(Contd. on page 6)

Safety Data Sheet

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 5)

- **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.



Tightly sealed goggles

- **Body protection:** Protective work clothing

- **Limitation and supervision of exposure into the environment**

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.

9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form: Liquid

Color: Red

- **Odor:** Alcohol-like

- **Odor threshold:** No data available.

- **pH-value:** No data available

- **Melting point/Freezing Point :** - 25 °C

- **Boiling point/Boiling range:** No data available

- **Flash point:** 50 °C (122 °F)

- **Flammability (solid, gaseous):** Not applicable.

- **Decomposition temperature:** No data available.

- **Explosion limits:**

Lower: No data available.

Upper: No data available

- **Oxidizing properties** No data available.

- **Vapor pressure:** No data available.

- **Relative density at 20 °C (68 °F)** 1.125 g/cm³ (9.388 lbs/gal)

- **Vapor density** No data available

- **Evaporation rate** No data available

- **Solubility(water):** No data available.

- **Partition coefficient (n-octanol/water):** No data available

(Contd. on page 7)

Safety Data Sheet

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 6)

- **Viscosity:**
- Dynamic:** 75 mPas
- Kinematic:** No data available.

10 Stability and reactivity

- **Reactivity** Under normal conditions of storage and use, hazardous reactions will not occur.
- **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:**
Reactive or incompatible with the following materials:
Oxidizing materials
Hydrolyzes in water to form 2-propanol and titanium dioxide.
- **Hazardous decomposition products:**
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 Toxicological information

- **Information on toxicological effects**
 - **Acute toxicity:**
 - **LD/LC50 values that are relevant for classification:**
Acute Toxicity Estimate (ATE) of product
- | | | |
|--------|------------|--------------------------|
| Oral | LD50 (ATE) | > 2000 mg/kg bw (Rat) |
| Dermal | LD50 (ATE) | > 2000 mg/kg bw (Rabbit) |
- **Primary irritant effect:**
 - **on the skin:** Irritant to skin and mucous membranes.
 - **on the eye:** Strong irritant with the danger of severe eye injury.
 - **Respiratory/ Skin sensitization:** No sensitizing effects known.
 - **Germ cell mutagenicity:** This product does not contain any substance classified for germ cell mutagenicity.
 - **Carcinogenicity:** This product does not contain any substance classified for carcinogenicity.
 - **Reproductive toxicity:** This product does not contain any substance classified for reproductive toxicity.

- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

Substance is not listed.

- **NTP (National Toxicology Program)**

Substance is not listed.

(Contd. on page 8)

Safety Data Sheet

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 7)

· OSHA-Ca (Occupational Safety & Health Administration)

Substance is not listed.

- **Single dose toxicity:** May cause respiratory irritation.
- **Repeated Dose toxicity** No known significant effects or critical hazards.
- **Aspiration hazard** Product is not classified for aspiration hazard.
- **Other relevant information:** No data available

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No known significant effects or critical hazards.
- **Persistence and degradability** No further relevant information available.
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Results of PBT and vPvB assessment** Not available
- **Other adverse effects** No further relevant information available.

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 off in a safe way. Dispose off 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.

· Recommendation:

Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 Transport information

- | | |
|---|---|
| <ul style="list-style-type: none"> · UN-Number · DOT, ADR, IMDG, IATA | UN1993 |
| <ul style="list-style-type: none"> · UN proper shipping name · DOT | Flammable liquids, n.o.s. (Titanium, acetylacetone Et alc. iso-Pr alc. complexes) |

(Contd. on page 9)

Safety Data Sheet

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



Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 8)

· ADR	1993 Flammable liquids, n.o.s. (Titanium, acetylacetone Et alc. iso-Pr alc. complexes)
· IMDG	FLAMMABLE LIQUID, N.O.S. (Titanium, acetylacetone Et alc. iso-Pr alc. complexes)
· IATA	Flammable liquid, n.o.s. (Titanium, acetylacetone Et alc. iso-Pr alc. complexes)
· Transport hazard class(es)	
· DOT	
	
· Class	3 Flammable liquids
· Label	3
· ADR, IMDG, IATA	
	
· Class	3 Flammable liquids
· Label	3
· Packing group	
· DOT, ADR, IMDG, IATA	III
· Environmental hazards:	Not applicable.
· 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.
· Transport/Additional information:	
· IMDG	
· Limited quantities (LQ)	5L

15 Regulatory information

· Section 355 (extremely hazardous substances):

Substance is not listed.

· Section 313 (Specific toxic chemical listings):

Substance is not listed.

(Contd. on page 10)

Safety Data Sheet

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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 9)

· **TSCA (Toxic Substances Control Act):** All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

Substance is not listed.

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

Substance is not listed.

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

Substance is not listed.

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

Substance is not listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

Substance is not listed.

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

Substance is not listed.

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

Substance is not listed.

· **Chemical safety assessment** Chemical safety assessment has not been carried out.

*

16 Other information

File name: TYZOR AA-105_SDS_US_en_MAY-24-2017

Superseded SDS date: JUL-28-2016

Change History: Composition updated

· **Note** Conforms to UNGHS Rev.3(2009)

· **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

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

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)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

APF = Assigned protection factor

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

IOELV: Indicative Occupational Exposure Limit Values

Flam. Liq. 3: Flammable liquids – Category 3

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

(Contd. on page 11)



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

Printing date 05/24/2017

Version number 3

Reviewed on 05/24/2017

Product name: TYZOR® AA-105

(Contd. of page 10)

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

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.