

# KONNATE TDI

## Toluene diisocyanate



### TECHNICAL DATA SHEET

#### DESCRIPTION

KONNATE T-80 contains the 2,4- and 2,6-isomer of toluene diisocyanate. This product is used in the preparation of polyurethane foams, prepolymers and elastomers.

#### KONNATE T-80

KONNATE T-80 is a mixture of 80% 2,4-toluene diisocyanate and 20% 2,6-toluene diisocyanate. It is mainly used in the preparation of flexible polyurethane foam and non-foam urethanes.

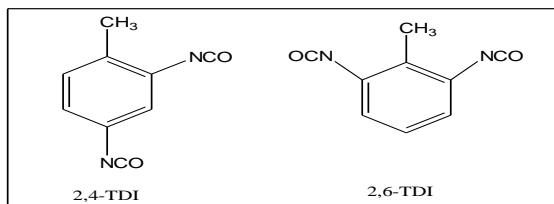
#### KONNATE T-100

KONNATE T-100 contains more than 98% of 2,4-toluene diisocyanate. It is mainly used in the cast elastomers and the paint/coatings industries.

#### KONNATE T-65

KONNATE T-65 is a mixture of 65% 2,4-toluene diisocyanate and 35% 2,6-toluene diisocyanate. It is mainly used in the preparation of high-resilience flexible foams.

#### MOLECULAR STRUCTURE



#### PRODUCT SPECIFICATION

Items	KONNATE T-80		KONNATE T-100	KONNATE T-65	KONNATE T-67
	Type I	Type II			
Purity (%)	Min. 99.7	Min. 99.5	Min. 99.7	Min. 99.7	Min. 99.7
Isomer Ratio					
2,4- toluene diisocyanate (%)	80±1	80±1	Min. 98	65±2	67.7±0.75
2,6- toluene diisocyanate (%)	20±1	20±1	Max. 2	35±2	32.3±0.75
Acidity (as HCl, ppm)	Max. 15	80±10	Max. 20	-	Max. 30
Hydrolyzable chloride (ppm)	Max. 40	100±20	Max. 50	Max. 100	Max. 100
Total chloride (ppm)	Max. 180	Max. 700	Max. 180	Max. 2000	-
Color (APHA)	Max. 15	Max. 15	Max. 20	Max. 20	Max. 20

#### PHYSICAL PROPERTIES

Molecular Weight	174.2	Flash Point (°C)	135
Viscosity		Melting Point (°C)	
at 25°C cps	3.10	KONNATE T-80	11.5 ~ 13.5
at 50°C cps	1.74	KONNATE T-100	21.5 ~ 23.5
at 100°C cps	0.70	KONNATE T-65	4.5 ~ 6.5
Specific Gravity at 25°C	1.22	Vapor Pressure (mmHg at 25°C)	0.03
Boiling Point (°C @ 760mmHg)	251	Vapor Density (air=1)	6.0

#### STORAGE AND HANDLING

The reaction of isocyanates with water leads to the formation of insoluble ureas and carbon dioxide gas, which can result in pressure buildup inside closed containers. Therefore, extreme care must be taken to assure containers used for KONNATE T-80 remain dry. Containers that have become contaminated with moisture should not be subsequently sealed; otherwise a hazardous increase in pressure may result.

Freshly manufactured KONNATE T-80 is a transparent colorless liquid. Sedimentation is usually due to contamination from atmospheric moisture or crystallization. Reaction from atmospheric moisture can be prevented by storing KONNATE T-80 in carefully sealed containers under a dry nitrogen or dry air atmosphere. During handling, KONNATE T-80 must also be protected from atmospheric moisture and water ingress, and containers must be carefully resealed after each sampling.

The most favorable storage temperature for KONNATE T-80 is between 20°C and 30°C. Storage above 30°C for extended periods may cause a change in product quality and color. Below 17°C KONNATE T-80 may begin to freeze. If freezing or partial freezing occurs slowly heat the product to 20 ~ 30°C to reliquify. The product must be thoroughly mixed before using to ensure uniform isomer distribution and reactivity.

#### SHIPPING INFORMATION

20,000- liter tank trucks and 250 kg non-returnable steel drums.

#### REACTION HAZARDS

TDI is a stable compound with a relatively high flash point. However, it will react with water, acids, bases and other organic and inorganic compounds. TDI is also affected by heat and, like any organic compound, will burn.

*Water* ; When TDI comes in contact with water, aromatic polyurea is formed; heat is generated; and carbon dioxide is evolved. Pressure build-up from the carbon dioxide will

occur. This pressure could rupture a storage vessel. To help prevent reaction with water, TDI should be kept under a nitrogen pad. Closed containers with un-reacted TDI and water should never be sealed.

*Chemical* ; Contact between TDI and acids should be avoided. Contact with bases, such as caustic soda and primary and secondary amines, might produce a violent reaction. The heat given off causes pressure build-up and there is a risk of rupture of the storage vessel. Contact with tertiary amines commonly used as urethane catalysis may cause uncontrollable polymerization, with a similar result. High temperatures may also cause dimerization. TDI should be kept away from certain rubber and plastics. These materials will rapidly become embrittled; cracks may develop and their strength may be weakened.

#### FIRE HAZARDS

TDI has a flash point of 135°C, and therefore, does not constitute a severe fire hazard as a combustible, non-flammable material. However, TDI is an organic material and will burn when exposed to fire. In a fire situation, TDI may decompose to release toxic gases.

#### HEALTH HAZARDS

KONNATE T-80 is a liquid at ambient temperature. At these temperatures, KONNATE T-80 has a relatively high vapor pressure and a vapor hazard exists. In the absence of adequate ventilation, it is likely to exceed recommended control limits. The current OSHA Permissible Exposure Limit (PEL) for toluene 2,4-diisocyanate (TDI) is 0.02 ppm as a ceiling value (not to be exceeded at any time). The ACGH Threshold Limit Value (TLV) for TDI is 0.005 ppm 8 hour TWA and 0.02 ppm Short Term Exposure Limit (STEL), NIOSH recommends a 0.005 ppm hour TWA and a 10 minute 0.02 ppm ceiling limit. Personnel who may be exposed to isocyanate vapors above the TLV must wear an air-fed hood or approved respirator to avoid overexposure. Repeated inhalation of the vapor at low levels above the TLV could cause serious respiratory problems. Air purifying respirators are not approved for protection against TDI vapors.

### TECHNICAL DATA SHEET

KONNATE T-80 is a reactive chemical and great care must be taken when handling it to prevent ingestion, or contact with skin and eyes. The use of goggles or face shield, nitrile, laminated PE/EVAL or butyl gloves and apron will reduce chances of injury from contact with the product.

If splashes accidentally reach the eyes, immediately flush the eyes with plenty of water for at least 15 minutes and call a physician. Wash any material from the skin with soap and plenty of water. Immediately remove any contaminated clothing or shoes. If redness, itching or a burning sensation develops after exposure, or following repeated or prolonged skin contact, seek medical attention. Wash clothing and decontaminates shoes

before reuse. If ingestion occurs, do not induce vomiting. Administer large amount of milk or water and contact a physician. If irritation or respiratory problems develop after inhalation of TDI, get to fresh air and seek medical attention. TDI may induce acute irritant reactions or hypersensitivity reactions such as asthma-like respiration reponses, in exposed persons. These reactions may be delayed for up to several hours after exposure. Persons previously sensitized to TDI should be removed from all exposure.

*Please refer to the Material safety Data Sheet (MSDS) for more specific information.*

#### ===== FOR MORE INFORMATION CONTACT =====

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