

VORANATE T-80

Isocyanate

Description

VORANATE* T-80 isocyanate is composed of a mixture of the 2,4 and 2,6 isomers of toluene diisocyanate in a ratio of 80% to 20%. Toluene diisocyanate is commonly called TDI.

Applications

The largest industrial use for TDI is in manufacture of flexible urethane foam for furniture, bedding and automotive applications.

Typical properties	Units	Limits
Physical form		colourless to pale, yellow liquid
Acidity, max.	wt % HCl	0.004
Colour, max.	APHA	25
Assay, min.	wt % TDI	99.5
Hydrolysable chloride, max.	wt %	0.0070
Total chloride, max.	wt %	0.06
Isomer content, 2,4 isomer	%	79-81
Isomer content, 2,6 isomer	%	19-21
Molecular weight	g/mole	174.2
Specific gravity	25 °C / 25 °C	1.22
Freezing point	°C	14
Vapour pressure at 25 °C	mmHg	0.01
Vapour density	air=1	6.0
Viscosity at 25 °C	mPa.s	5

Handling and Storage

Store in a dry place at 18 to 40 °C

Keep container closed as moisture contamination will induce an exothermic reaction with evolution of CO₂ which may cause dangerous pressure generation.

Caution

Polyurethanes or polyisocyanurates produced from this product may present a fire risk in certain applications if exposed to fire and/or excessive heat, e.g. welding and cutting torches, in the presence of oxygen or air.

Drum Storage

VORANATE T-80 will react when exposed to atmospheric moisture. Where drums are to be partially emptied, it is recommended that a calcium chloride-filled dryer tube be used in the air bleed opening. Should VORANATE T-80 be exposed to moisture, a skin will develop on its surface similar to that found on paint. Normally, however, the remaining liquid VORANATE T-80 under the skin may be used without formulation changes. Due to an exponential change in viscosity at low temperatures, VORANATE T-80 should be stored at temperatures above 18 °C to facilitate pouring. At temperatures below 15 °C, a partial crystallisation of VORANATE T-80 may occur. The crystallised material can be remelted at 35 °C. For detailed procedures consult your nearest Dow sales office.

Bulk Storage

Construction material for tanks, lines, pumps, etc. can be mild steel for storage at temperatures up to 35 °C. Series 300 stainless steel or stainless cladding is recommended for storage at temperatures above 35 °C. Transfer pumps should contain a stainless steel shaft with mechanical seals. Packed glands can leak sufficiently to cause reaction with moisture and subsequent scoring of the pump shaft by the formed ureas. Only low temperature heating media should be used in tank jackets or coils unless adequate circulation or agitation of VORANATE T-80 is maintained. A slight positive pressure using dry inert gas (-40 °C dew point) must be maintained over stored VORANATE T-80 to prevent solids formation that can occur in the presence of atmospheric moisture.

Safety Considerations

Safety Data Sheet [SDS] for VORANATE T-80 isocyanate is available from The Dow Chemical Company. SDS is provided to help customers satisfy their own handling, safety and disposal needs, and those that may be required by locally applicable health and safety regulations. SDS sheets are updated regularly. Therefore, please request and review the most current SDS before handling or using any product. Copies of the SDS are available on request through your nearest Dow Sales office.

Toxicity

Very toxic by inhalation. Irritating to eyes, respiratory system and skin. May cause sensitisation by inhalation and skin contact. Avoid breathing vapour or mist. Use with adequate ventilation. Avoid contact with eyes, skin, or clothing. Always wear chemical goggles. Wear a mask or respirator of a type approved by local government and public bodies. If handled indoors, provide mechanical exhaust ventilation. During spray operations, airline masks or positive pressure hose masks should be worn because of the high concentration of isocyanate mist in the atmosphere. OELs (Occupational Exposure Limits) have been set for TDI in most countries. The atmospheric levels should be maintained below the exposure guidelines. Wear protective clothing, goggles, overalls, boots, apron and gloves.



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Fire

Isocyanate will burn but do not ignite easily. In the event of a fire, toxic vapours and decomposed material are likely to be present. Suitable fire extinguishing agents include water fog, carbon dioxide, or dry chemical powder. All fire fighters should be equipped with protective clothing and a positive pressure, self-contained breathing apparatus.

Drums of isocyanate involved in a fire should be sprayed with water to minimise the risk of rupture. However, water contamination in a closed container or a confined area is to be avoided due to exothermic CO₂ evolution upon water contamination.

Spills

In case of spills, evacuate and ventilate the spill area. Only properly trained and protected personnel should be involved in the spill clean-up and waste disposal operations. Spills can be covered with a commercial absorbent or sand, shoveled into open, properly labeled containers and removed from the work area for decontamination. A suitable decontaminant solution is described in the SDS, section 6. Waste disposal of isocyanates should always be in accordance with national and local regulations.

First Aid Procedure

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Obtain medical attention immediately. Effects may be delayed.

Skin contact: Remove material from skin immediately by washing with soap and plenty of water (warm water is preferable if readily available).

Remove contaminated clothing and shoes while washing. Seek prompt medical attention if irritation persists.

Eye contact: Flush eyes with water for at least 15 minutes. Get prompt medical attention.

Ingestion: Do not induce vomiting if swallowed, immediately call a physician who will decide on need and method for emptying the stomach.

Customer Notice

Dow encourages its customers to review their applications of Dow products from the standpoint of human health and environmental quality. To help ensure that Dow products are not used in ways for which they were not intended or tested, Dow personnel are willing to assist in dealing with ecological and product safety considerations. Your Dow representative can arrange the proper contacts.

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