Additive TI

monofunctional isocyanate

Description

Additive TI is a reactive monofunctional isocyanate of low viscosity which reacts with water generating an inert amide. **Additive TI** eliminates slight parts of humidity and prevents moisture related problems in the formulation of polyurethane coatings.

Characteristic data

Appearance:	colorless to yellow-brownish liquid	
p-Toluenesulfonyl Isocyanate:	> 98 %	OMG Borchers test-method 100-70
Tosyl Chlorides:	max. 1.1 %	GC
Color, APHA:	max. 50	DIN ISO 6271
Density (20 °C):	approx. 1.29 g/cm³	
Flash point:	> 145 °C	

Properties

Additive TI is used for dehydration of solvents, fillers, pigments and bituminous tars. It rapidly reacts with water and generates carbon dioxide and toluenesulfonamide which is generally inert towards further reaction with alkyl and aryl isocyanates, and is usually soluble in common coating solvents. **Additive TI** does not cause further film yellowing.

By application of **Additive TI** in a polyurethan coating formulation moisture-related problems such as gloss reduction, haze, yellowing and reaction foam will be prevented.

Additive TI can also react with other active hydrogen compounds, such as alcohols, phenols, amines, amides and so on.

Applications

Additive TI eliminates moisture introduced with solvents, pigments, and fillers in 1-component as well as in classical 2-component PU systems.

Furthermore **Additive TI** is recommended for the storage stabilization of purified diisocyanates against decomposition and discoloration.

Use and Dosage

As a packing stabilizer for moisture-curing 1-component PU systems **Additive TI** can be added into the finished coatings. When the deareation is finished the packing of these materials can take place.

In formulation of classical 2-component PU systems pigments and fillers are suspended first in the solvent and then treated with **Additive TI**.

Experience suggests the addition of **Additive TI** between 0.5 – 4.0 % of the total formulation weight sufficient for 0.05 – 0.30 % moisture. To ensure complete reaction it is recommended to add the polyol- and isocaynate-component after a processing period of 24 hours.

A surplus of **Additive TI** can react with polyols. Best results are obtained when the moisture content can be determined accurately so that the addition rate of **Additive TI** can be calculated.
12g of **Additive TI** is needed theoretically to eliminate 1g of water introduced by solvents. Experience has shown, however, that the reaction is more effective in the presence of a surplus of **Additive TI**, i.e. it is preferable to use 24g of **Additive TI** for reaction with 1g of water from solvents. After the addition of **Additive TI** these solvents are ready to use within several hours.

Storage

Protect from the effects of weathering and store at temperatures between 5 and 30 °C.
Once opened, containers should be resealed immediately after each removal of the product.

Safety

The product is a highly reactive compound and therefore needs to be handled with particular care. The safety data sheet should be heeded. This contains information on labelling, transport and storage as well as handling, product safety and ecological effects. Please refer also to information sheet M004 entitled "Reizende Stoffe, ätzende Stoffe" (Irritant substances, corrosive substances) issued by the German Berufsgenossenschaft Chemie. The product reacts spontaneously and very vigorously with water, alcohols, amines, acids and alkalis. Such substances must therefore not be poured into vessels already containing the product. The reaction with water yields carbon dioxide at quantities of 1.3 litres per gram of water. The sudden formation of large amounts of gas in a container into which water has penetrated may cause the container to explode, even if the seal has already been broken.
Care must therefore be taken during transport, storage and handling of **Additive TI** to prevent the penetration of moisture into the containers. Once added to the paint as a drying agent, existing guidelines on the application of paints containing solvents apply. Additional precautions are unnecessary provided that the addition rate is proportional to the water content and does not exceed about 5 % of the total formulation.

Additive TI is a very reactive compound. Although it is not very toxic, it causes severe irritation of skin and mucous membranes. It is therefore essential to prevent exposure of the skin, eyes and airways to undiluted **Additive TI** . Safety goggles and protective gloves must be worn and the inhalation of vapours and aerosols must be avoided when handling the product. To protect the skin, preventive application of an appropriate barrier preparation (e.g. Arretil L manufactured by Stockhausen) is recommended. Breathing apparatus is necessary in inadequately ventilated workplaces. Use of an air-fed hood or a face mask with an A2-P2 combination filter is advisable.

Contaminated areas of skin should be washed immediately with plenty of soap and water. Contaminated clothing should be removed immediately. In the event of contact with the product, the eyes should be rinsed carefully and thoroughly with water and medical advice should be sought. In the event of inhalation of quite large amounts of product vapours or dust, any resulting irritation of the airways should be treated symptomatically (in the same way as any symptoms of irritation caused by inhalation of irritant substances). Medical advice must always be sought. Product residues can be disposed of in accordance with the following guidelines:

Containers must be emptied completely. They must not be rinsed out with water. Pools of **Additive TI** on the floor or on a laboratory bench can be carefully removed with water or by covering them with the paste-like material described below. Empty containers should be cleaned using the solution described below or by being left to stand without lids in a safe place for several days. Since monofunctional isocyanate is highly reactive with water, it will gradually react with atmospheric moisture to form a solid white substance.

	solution [wt-%]	*material* [wt-%]
tertiary butyl alcohol	15	4
petroleum	65	10
butyl acetate	20	4
sand	–	42
diatomaceous earth, industrial grade	–	30
sawdust	–	10
total	100	100

100 g of the solution is sufficient to react with approx. 42 g of **Additive TI**

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