



Adsorber in PUR foam production

Breathing dryer on IBC containers with isocyanate and other chemicals

GIEBEL Adsorber® increases the quality of PUR foam products and reduces production waste. The effective drying of the air protects isocyanates, polyols and other chemicals from contamination by water during storage and processing.

Isocyanates and foam production

If polyols are mixed with isocyanates and blowing agents, **the polyol reacts with the isocyanate to form PUR (polyurethane foam)**. Additives as well as the blowing agent are added to the polyol, so that usually two components are used. The properties can be adjusted according to the selection of starting materials. Thus, the use of long-chain polyols results in soft to elastic foams, or short-chain polyols result in strongly cross-linked hard foams. (Source: www.wikipedia.de, from 17.08.2019)



Figure 1: Production line for the manufacture of foam blocks
(Source: www.veendendaal.gmbh, from 17.08.2019)

Necessity Breathing Dryer



figure 2: Adsorber on IBC, filled with Isocyanate.

At a leading international manufacturer of quality products made of flexible polyurethane foam, the storage of ...

- Isocyanate
- Polyol
- Amines
- PU-metal catalysts Cosmos 29
- Flame retardant Celltech 60
- Diethanolamine
- Silicone 8266 from Evonik



Figure 3: Trapped CO2 in PUR end product.

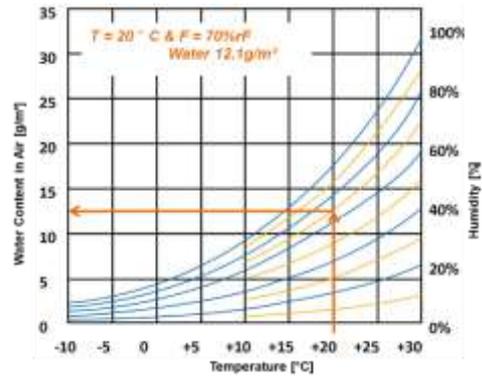
...shows, that the **contact of water from the air leads to undesirable side reactions**. CO2 is formed in the molding compound and remains trapped in the hardened molding material. This property requires consistent adherence to the processing conditions if reproducible properties are to be guaranteed in the product. **This includes in particular the control of**

the air humidity.



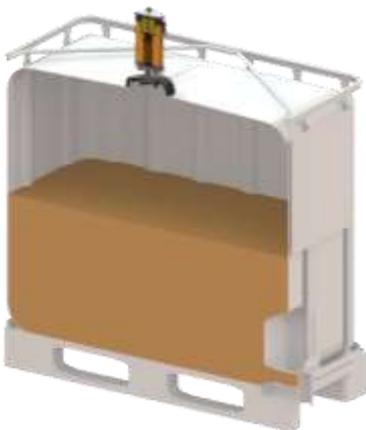
Figure 4: Storage of IBC containers for foam production.

During the storage and processing of isocyanates and polyols in an industrial building, average ambient conditions of 20°C and 70%rh prevail. **Thus the water portion amounts to approx. 12g/m³ air**. When a complete IBC is emptied, 12 ml of water is sucked out of the air and contaminates the substance.



Function Breathing dryer on IBC

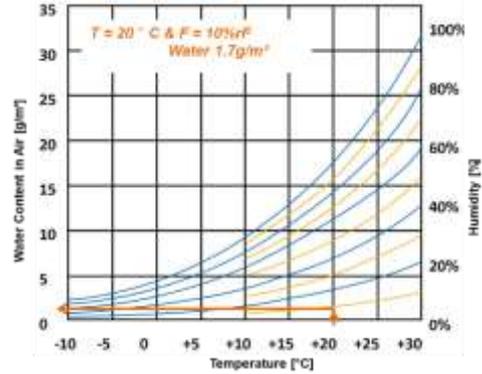
Breathing dryers are used to protect the IBC contents from moisture and are screwed directly onto the lid. **All the air sucked in is completely dried.**





During the removal of the isocyanate, polyol, silicone, PU metal catalyst or other substances, the sucked in air is dehumidified to initially 2%rh (on average 10%rh).

Thus the air sucked into the IBC contains only 1.7 g of water per m³ of air (1x IBC unit). **This almost completely eliminates the influence of humidity on the isocyanate.**



Added value for Vita Cellular Foams - High quality for flexible foams



By using GIEBEL adsorbers, a **company in the Vita Cellular Foams group was able to ensure the production of high-quality PUR soft foam.** Production waste was reduced and end product quality increased.

This simple and effective measure to protect the isocyanate could be easily integrated into the existing production without any conversion measures. **The result was visible from the very first day and increased customer satisfaction.**

