



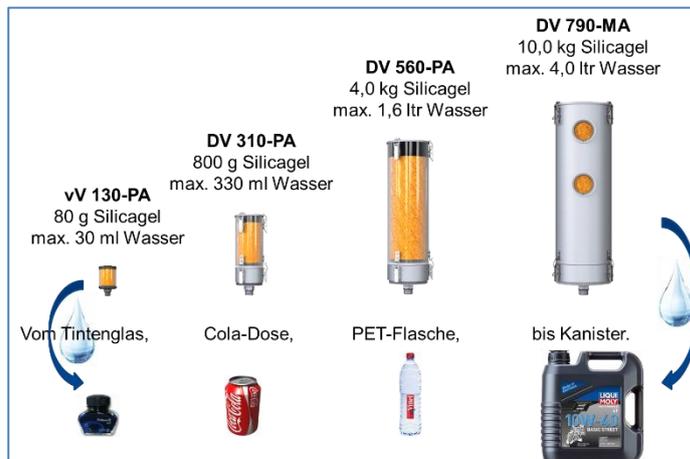
Question of the Month July 04/2019

How much water can an adsorber absorb?

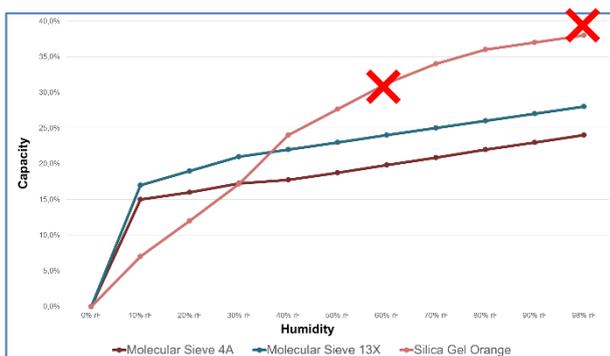
The water absorption capacity of an adsorber determines the maintenance interval and drying efficiency and is therefore an important specification of an aeration dryer.

Practical calculation

A practical calculation is as follows
Quantity Silicagel x max. absorption capacity = water absorption capacity. The maximum absorption capacity of silica gel is calculated at 40%. Thus an adsorber with 4.0 kg silica gel can absorb a maximum of 1.6 litres of water.



Detailed calculation



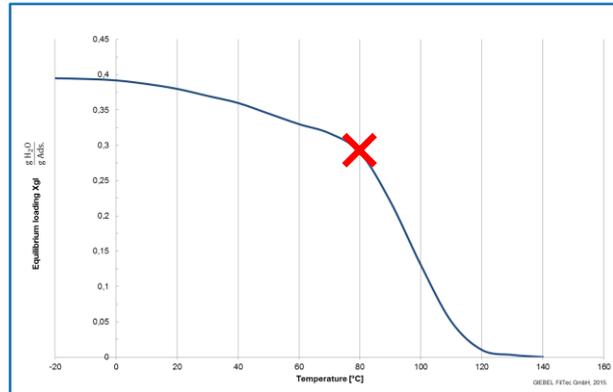
The relative humidity of the ambient air and the temperature are the most important influencing factors for a more accurate statement of the water absorption capacity.

The ability of silica gel to store water depends on the isotherm. This means that the absorption capacity is influenced by the relative humidity. For example, the silica gel can absorb up to 40% water if the ambient

air has a humidity of 100% RH. If this value decreases, the water absorption capacity also decreases. For example, at 60% RH this is only max. 30% of the dry weight, etc.



With regard to temperature, it should be noted that an increase in temperature reduces the water absorption capacity. As the temperature increases, the water molecules in the air begin to oscillate more strongly and are less readily adsorbed. At 80°C the molecular movement is so strong that the use of silica gel no longer makes sense.



Recommendations for use

To classify an adsorber, the calculation with the maximum absorption capacity of 40% is absolutely sufficient. Provided the temperature is below 60-70°C and the humidity above 60-70% RH. In case of deviating conditions, the use of a respiration dryer should be verified, as the adsorbed water may easily be dissolved again and may enter the system.