GIEBEL Adsorber®
...setting standards in aeration drying!

+49 (0) 7946 944401- 0
+49 (0) 7946 944401- 29
info@giebel-adsorber.de
www.giebel-adsorber.de

Bretzfeld, 16.07.2018

Amount of desiccant
What influence does the amount of desiccant have on the adsorber?

An attempt was made to answer what effect the amount of desiccant on the function of the adsorber in use. Two adsorbers were filled with 0.25kg, 0.5kg, 1kg and 2kg silica gel orange and tested. The mass flow of 46.6 g / h is calculated from a temperature of 20 ° C, a relative humidity of 90% and a volume flow of 50 l / min.

The load curves show a temporary variation, so that the increase of the load curves decreases. The adsorbent masses of 1kg and 2kg kilograms keep the initial moisture to a minimum at low loads. In this area, the moisture is adsorbed almost completely. The breakthrough curves of the masses of 0.25kg and 0.5kg are comparable. The breakthrough curves, the 1kg and 2kg trials, look at another breakthrough curve.

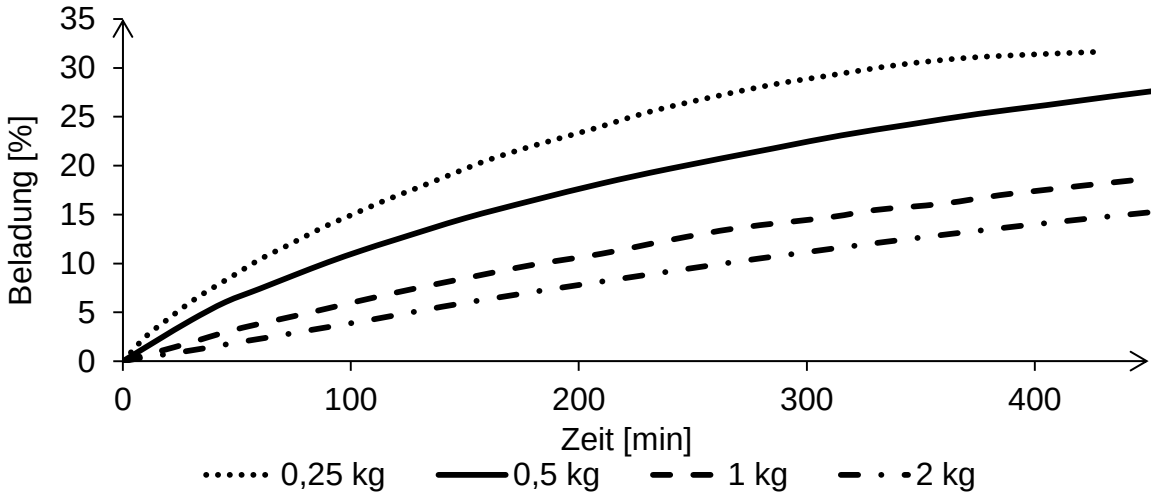

Figure: Dependence of load on time for different adsorbent masses.

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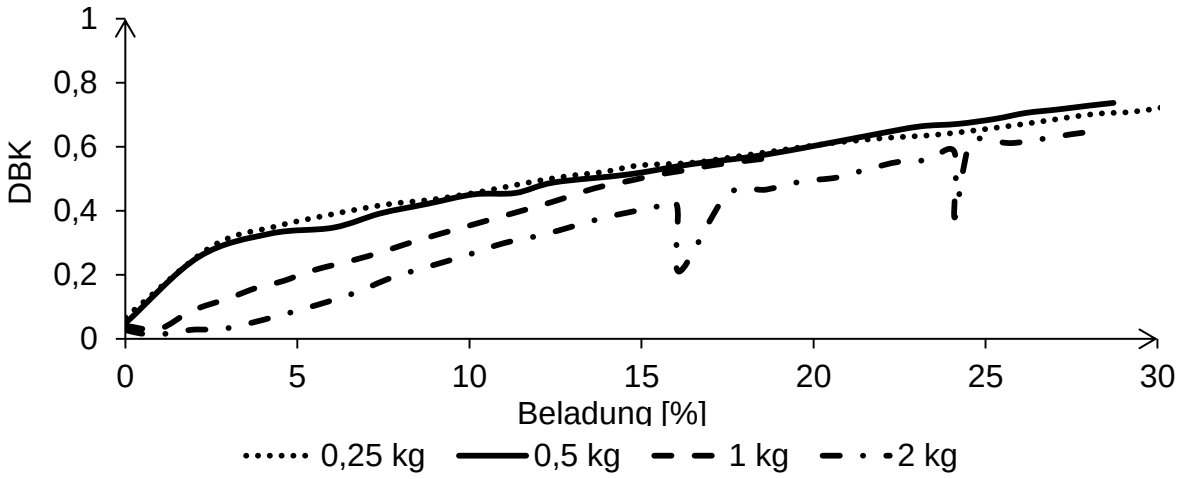

Figure: Dependence of the DBK on the load for different adsorbent masses.

The water uptake of the experiments with 1kg and 2kg kilograms assume a similar value at the first color change. Over the entire load, the water uptakes of these two attempts are analogous, see illustration. The higher breakthrough curve of the experiment with 1kg kilograms compensates, the time-related, higher water absorption of the experiment with 2kg kg. Up to a loading of 10% by weight, the water absorption of all adsorbent masses are comparable. Over a loading of 10% by weight, as the amount of adsorbent increases, water absorption increases.

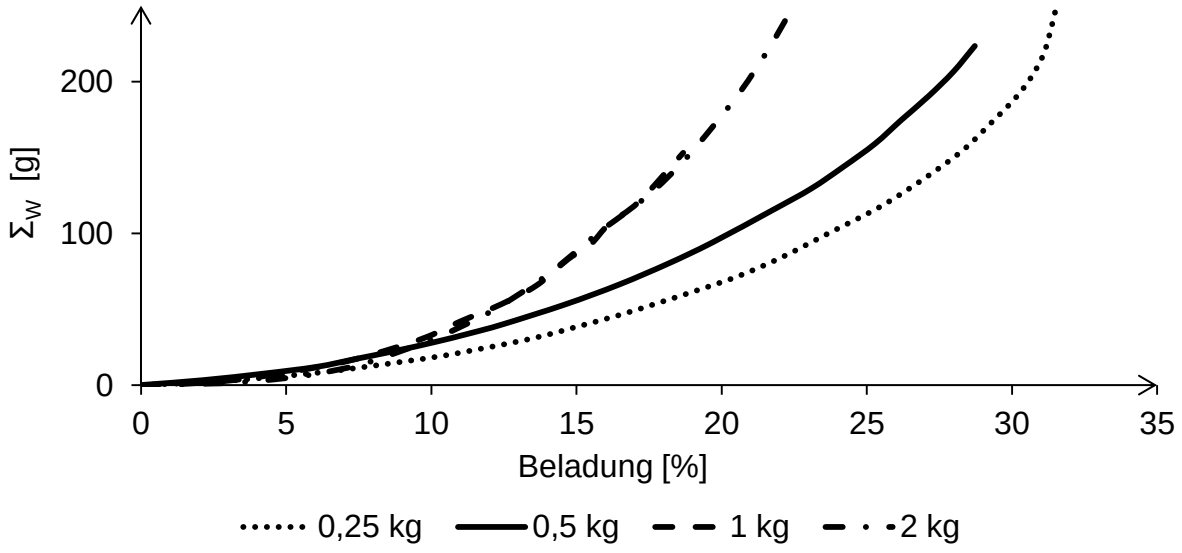

Figure: Dependence of the water sum on the load for different adsorbent masses.

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Figure: Tested amounts of silica gel (from left: 0.25kg, 0.5kg, 1kg, 2kg)

Result

With increasing desiccant mass extends the life of the adsorber. The larger capacity for absorbing humidity is responsible for this. Due to the longer service life larger desiccant masses lead to a larger amount of water. The amount must be adjusted to the adsorptive mass flow.