

GIEBEL Wiki – Questions & Answers

What is the difference between KC Sorbead Chamelion and silica gel?

Desiccants are very often referred to in the market with different terms. Drying beads, adsorbent, silica gel, desiccant and drying agent are the most common names for the same substance. But are there differences? And are they relevant for the use in aeration dryers or adsorbers?

Desiccant and silica gel

The generic term **adsorbent** (or adsorbents) stands for a solid that has the ability to bind (adsorb) another substance (gaseous or liquid) on its surface. This includes:

- activated carbon
- Alumina
- Silica gels (narrow and wide pored)
- Molecular sieves (0.3 to 1nm)
- Carbon molecular sieves

As silica gels and molecular sieves (formerly also aluminium oxide) are mainly used for drying air and gases, they are generally known as **desiccants** and are part of the adsorbents.

KC dry pearls and silica gel orange



Chemically, silica gel is 99% silicon dioxide (SiO₂). The silica gel used for drying is amorphous, has a large inner surface with many pores and is strongly hygroscopic. Pure silica gel is colourless and the condition is not visible. To get an indication of the loading condition, a colour indicator is added to the silica gel.

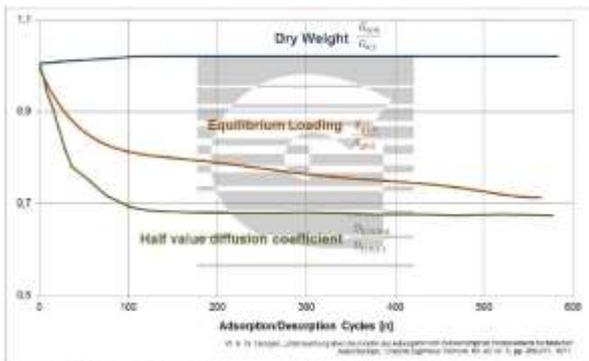
The colour change of silica gel orange-green takes place at approx. 15 wt.%. With silica gel Orange-Colourless even after 20 wt.%. These desiccants therefore have a very long maintenance interval.



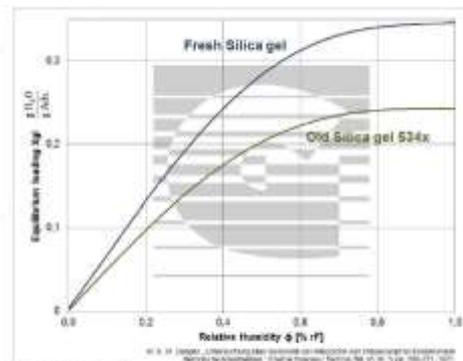


KC Dry Beads (or Sorbead®) is a BASF product. In addition to 97% silicon dioxide SiO₂, this desiccant also contains 3% aluminium oxide AlO₃. The color indicator is iron salt, which changes color from orange to colorless at 6 weight percent.

An essential advantage of KC dry pearls is the number of possible regeneration cycles. KC dry beads have a higher half-value diffusion coefficient, so that after several regeneration cycles a higher capacity is available than with standard silica gel orange. The application is mainly in adsorption plants, which adsorb and regenerate cyclically.



Veränd. Gleichgewichtsbeladung und Halbwertdiffusionskoeffizienten



Vergleich der Wasserdampf-Adsorptionsisotherme

Use in aeration dryers

Since ventilation dryers do not have a high air flow rate compared to compressors or gas dryers, the product life cycle to a single full load is often 12 months or more. Regeneration of the desiccant is therefore not required. It is changed after complete loading. Therefore, the control **regeneration capability is not relevant for use in aeration dryers**

On the other hand, the colour indicator and timing play an important role. Since KC dry beads change color at about 6% loading and thus indicate the end of the product life cycle, the **use of standard silica gels is more advantageous**. The product life cycle ends at 15% or over 20% and can therefore remain in use for much longer.

The following figure shows dehumidifiers with 0.5 kg silica gel and KC drying beads at 10%, 20% and 30% total load.



GIEBEL Adsorber®

...setting standards in aeration drying!



Silicagel Orange-Grün



Silicagel Orange-Farblos



Silicagel Blau-Rosa



KC-Trockenperlen OC

Figure 1: Total load of the adsorber, at 10%, 20% and 30% of the dry mass
Clearly visible: advantage of the longer maintenance interval of Silica gel orange

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