DONAU CARBON

Activated Carbon for Odour Control

DESOREX®

Odour Control

For the removal of odorous components from gas activated carbon is a suitable solution. Beside of volatile organic compounds hydrogen sulphide (H_2S), mercaptanes and ammonia are present in these gases.

Due to the high moisture content of these gases it is difficult to select a suitable activated carbon for the removal of the odorous components. For volatile organic compounds a non impregnated activated carbon is the most economical solution. If H2S, mercaptanes and ammonia are to be removed too, a special type has to be chosen.

For most of these gas treatments ***Desorex® PI 50 K*** is a good solution. ***Desorex® PI 50 K*** is a special treated activated carbon type which is able to oxidize hydrogen sulphide to sulphuric acid which easily can be stored in the pores of the activated carbon.

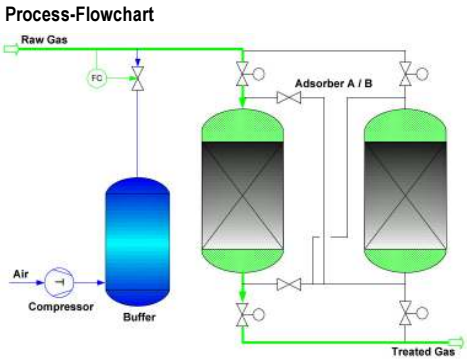
For the selection of the most suitable activated carbon type our technicians will help you.

Catalytical activated carbon

The use of catalytic activated carbon (***Desorex® PI 50 K***) requires oxygen in the gas. The humidity of the gas may be higher (max. 90%rh) and the H_2S content is limited to max. 50ppm to run the filter bed without damaging the activated carbon.
At higher H_2S content the activated carbon also shows a good performance but the oxidation of the H_2S

$$H_2S + 2\ O_2 \longrightarrow H_2SO_4$$

may be incomplete. In these cases the formation of elementary sulphur may occur which can not be removed from the carbon by washing with water.
Within the mentioned limits, a high temperature and high moisture content lead to a better performance of the process.
After washing the carbon can be reused for another adsorption cycle. The capacity of the activated carbon is decreased by an increasing number of loading cycles.
As the carbon forms sulphuric acid at the carbon surface, ammonia also can be removed by this activated carbon type. These properties and the high relative humidity of the gas at which the carbon can be used recommend the use of ***Desorex® PI 50 K*** in odour control plants, where ammonia always occurs.



Data Sheet Desorex® *PI 50 K* **Cylindrically shaped activated carbon, bituminous coal**	
Typical characteristics:	
Bulk density (kg/m³)	500 ± 30
Moisture content (wt.%) (as packed)	< 5
Iodine adsorption (mg/g)	1000 ± 50
CTC-adsorption (wt.%)	approx. 60
Diameter of particles (mm)	approx. 4
Hardness (wt.%)	> 97
H_2S breakthrough capacity (g H_2S/cm³ activated carbon)	> 0.12

Instruction for Activated Carbon Washing to Recover the Adsorption Capacity of Activated Carbon used for H_2S removal

Step 1: Determination of the Conductivity of the Fresh Water (Base Conductivity C_B)
Before starting the activated carbon washing, determine the conductivity of the fresh water. It represents the base conductivity C_B.

Step 2: Beginning of Carbon Washing and Determination of the Initial Conductivity C_I
Washing begins by opening the valve and spraying the water over the activated carbon. As soon as the first gush of water appears at the outlet at the bottom of the adsorber: Immediately measure its conductivity. Repeat twice and calculate the mean value. The mean value represents the initial conductivity C_I of the washing water.

Step 3: Determination of the Criteria for Termination of the Washing (C_T)
Washing shall be ended once the conductivity of the washing water has reached approximately 10% of the initial conductivity. While the water is applied to the carbon, determine this value. To begin with, the base conductivity (C_B) has to be subtracted from the initial conductivity (C_I) as it is enclosed therein.

$$C_I - C_B = C_D$$

Afterwards, determine the terminal conductivity C_T (once this value has been reached in the water, the washing is determined).

$$C_T = (C_D \times 0{,}1) + C_B$$

C_I = initial conductivity, [mS/cm]
C_B = base conductivity of the fresh water, [mS/cm]
C_D = difference betweenC_I and C_B, [mS/cm]
C_T = termination point, [mS/cm]

Step 4: Washing
During the ongoing washing, regularly measure the current conductivity of the washing water and compare to the terminal conductivity as calculated in step 3.

Step 5: Termination of the Washing and Re-Start of Adsorption
As soon as the conductivity of the effluent water reaches the value of C_T (step 3):
- Disconnect the water feed and let drain until no more water drips from the carbon.
- Close the water outlet pipe at the bottom of the adsorber and re- start the gas feed.

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