

Molecular Sieve

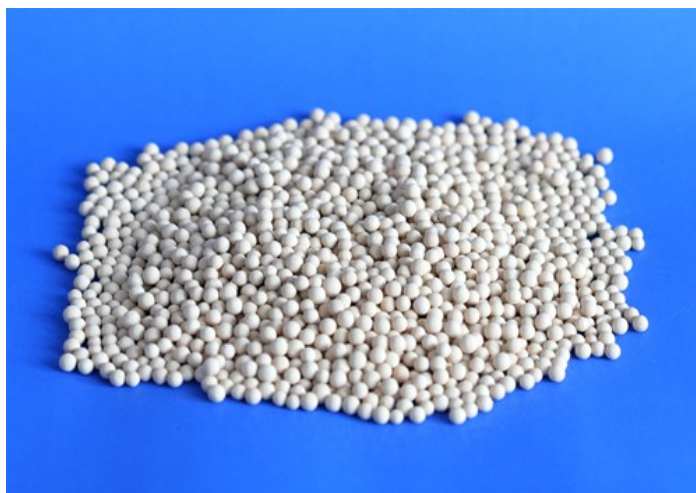


Illustration 1: Molecular Sieve

A molecular sieve is a material containing tiny pores of a precise and uniform size that is used as an adsorbent for gases and liquids.

Molecules small enough to pass through the pores are adsorbed while larger molecules are not. It is different from a common filter in that it operates on a molecular level. For instance, a water molecule may be small enough to pass through while larger molecules are not. Because of this, they often function as a desiccant. A molecular sieve can adsorb water up to 22% of its own weight.

Often they consist of aluminosilicate minerals, clays, porous glasses, microporous charcoals, zeolites, active carbons, or synthetic compounds that have open structures through which small molecules, such as nitrogen and water can diffuse.

CHEMPACK supply five types of molecular sieves: 3A, 5A, 6A, 13X(10A), Cu-13X.

Main items/types:

- a. 3A molecular sieve(KPK-MS3A)
- b. 4A molecular sieve(KPK-MS4A)
- c. 5A molecular sieve(KPK-MS5A)
- d. 10A molecular sieve(KPK-MS13X)
- e. Cu-13X molecular sieve(KPK-CU13X)

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Application:

Molecular sieves are often utilized in the petroleum industry, especially for the purification of gas streams and in the chemistry laboratory for separating compounds and drying reaction starting materials. The mercury content of natural gas is extremely harmful to the aluminum piping and other parts of the liquefaction apparatus - silica gel is used in this case.

CHEMPACK molecular sieves can adsorb water molecules and other contaminants from liquids and gases down to very low levels - often just 1 part per million.

Regeneration:

Methods for regeneration of molecular sieves include by pressure change as in oxygen concentrators or by heating and purging with a carrier gas as when used in ethanol dehydration. The regeneration gases which are in common use are nitrogen, air, hydrogen and alkane. The regeneration gases quantity is 0.2-1.2m³/h.kg or so, then heated to 200°C--350°C, the outlet temperature is 150°C or so, continuously heated for 3--4 hours, then put into the regeneration dry cool gases to cool to room temperature.

Other pictures:

Illustration 2: Molecular Sieve bead



Illustration 3: Molecular Sieve pellet