

## Applications Bulletin

**ZEOCHEM® Z10-03 molecular sieve adsorbent** is a 13X zeolite intended for purification of hydrocarbon streams. Specific applications include removal of water, sulfur components, and oxygenates from a wide variety of feedstocks for pipeline specifications or for catalyst protection. For example:

- Drying and sweetening of NGL products, e.g., ethane, propane, butane, and LPG
- Purification of butane for isomerizer feed
- Purification of C5/C6 for isomerizer feed
- Purification of olefin feed to polyolefin plants

**ZEOCHEM® Z10-03 molecular sieve** joins Z10-01 (general service) and Z10-02 (air purification) as 13X products tailored for industry-specific purifications. Z10-03 is available in 4x8 (2.5-4.5 mm), 8x12 (1.5-2.5 mm), and 9x16 (1-2 mm) mesh sizes in both drums and bulk bags. See Zeochem 13X Bulletin for typical properties.

Zeochem AG has tested Z10-03 against another widely used 13X grade for this application. The methodology employed used a n-pentane carrier doped with ppm levels of common sulfur and oxygenate compounds. The adsorptive uptake was measured at equilibrium at 25 degrees C.

### SULFUR:

The results show that **ZEOCHEM® Z10-03 molecular sieve** has a higher adsorptive capacity for every sulfur component tested, when compared side by side to the competitive grade.

### OXYGENATES:

Again, **ZEOCHEM® Z10-03 molecular sieve** has a higher adsorptive capacity for ethers and methanol, when compared side by side to the competitive grade.

And Zeochem's proprietary forming techniques result in physical properties 25-50% higher than other beads. Why not try Z10-03 for your next project ?

## Molecular Sieve Type 13X

## Product Information

### **Description**

ZEOCHEM<sup>®</sup> Molecular Sieve Type 13X is an alkali aluminosilicate; it is the sodium form of the Type X crystal structure. Type 13X has an effective pore opening of about 10 angstroms.

### **Chemical Formula:**

$5\text{Na}_2\text{O} \cdot 0.5\text{Al}_2\text{O}_3 \cdot 14\text{SiO}_2 \cdot \text{XH}_2\text{O}$

### **Applications**

ZEOCHEM<sup>®</sup> Molecular Sieve Type 13X is commonly used for the following applications:  
Concurrent removal of H<sub>2</sub>O

and CO<sub>2</sub> from gas and air streams; removal of H<sub>2</sub>S and mercaptans from liquid and hydrocarbon fractions;

sweeten natural gas streams containing H<sub>2</sub>S, mercaptans, and thiophenes; separation of heavy hydrocarbons from natural gas and air; static (non-regenerative) removal of water and solvent vapors from the interspace of insulated glass windows.

ZEOCHEM<sup>®</sup> Molecular Sieve Type 13X will adsorb molecules with a kinetic diameter of less than 10 angstroms and exclude those larger.

### **Regeneration**

ZEOCHEM Molecular Sieve Type 13X can be regenerated by evacuating or purging,

ally at elevated temperatures. The purge gas temperature must be sufficiently high to bring the molecular sieve to a level of 400 to 600 °F, but not exceeding in any case 1000 °F. The degree of regeneration depends on the temperature, pressure and humidity of the

purge gas and affects the exit stream purity. It is possible to dry fluids to less than 0.1 ppm H<sub>2</sub>O and purify to less than 1 ppm total sulfur and CO<sub>2</sub>.

### **Type**

Z10-01 Standard 13X Grade

Z10-02 Air Pre-purification Grade

Z10-03 Hydrocarbon Pre-purification Grade

Z10-04 PSA / Air Separation Grade

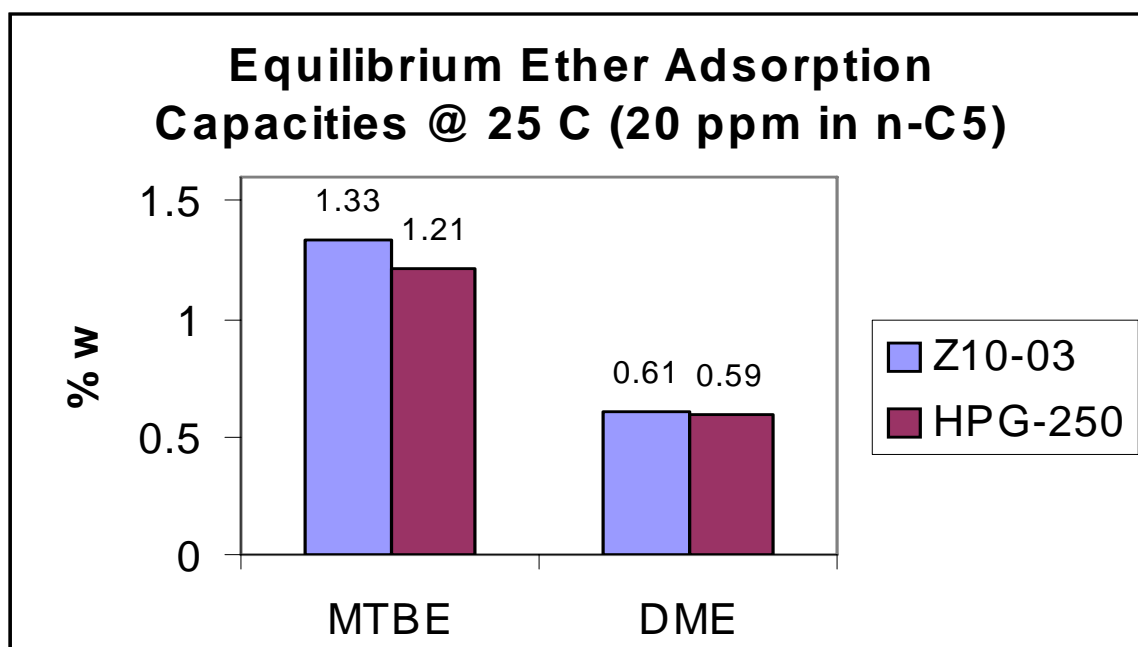
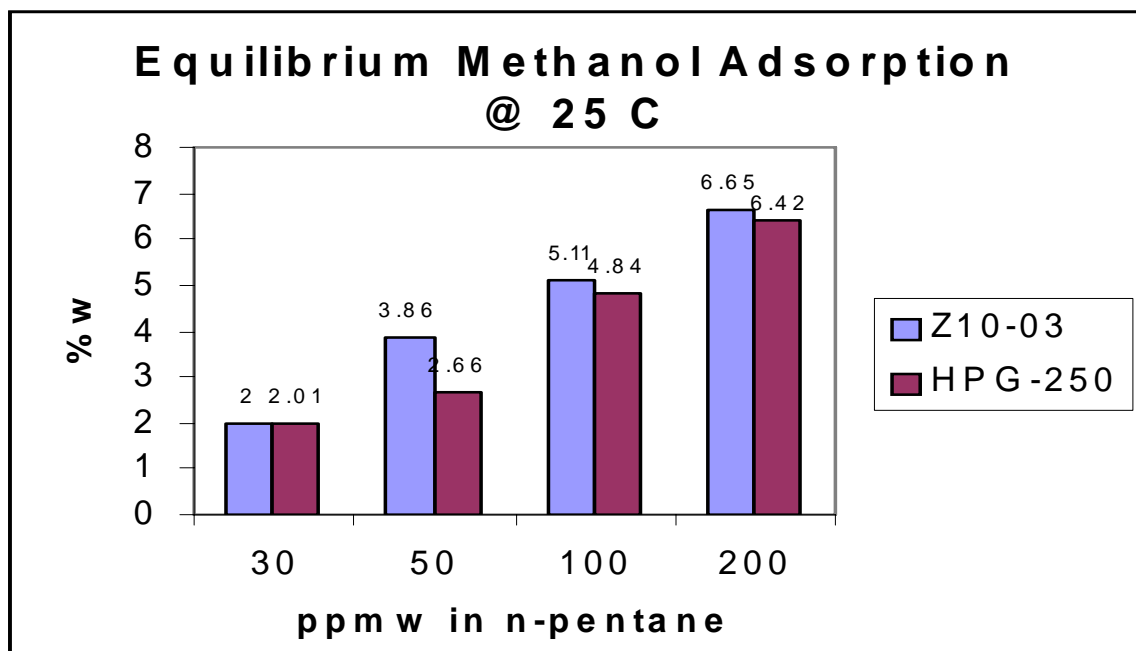
### **Typical Properties of Beads**

Nominal pore diameter	10 angstroms
Type of crystal structure	body centered cubic
Bulk density	42 lbs/cuft
Equilibrium water capacity (theoretical)	29% wt.
Water content (as shipped)	1.5% wt. (max.)
Heat of adsorption (max.)	1,800 BTU/lb H <sub>2</sub> O
Specific heat (approx.)	0.23 BTU/lb/ °F
Packing	Please refer to Data sheets for Units

### **Commercial bead sizes (nominal)**

Mesh	4 x 8	8 x 12	9 x 16
mm	2.5- 5	1.5-2.5	1-2
crush strength, lbs.	15-20	7-12	4-6

## Oxygenate Data



Sulfur Data

