



# Rongjian Chemical Product Brochure



## Molecular Sieve

Pingxiang Rongjian Environmental Protection Chemical Packing Co., Ltd

# 3A Molecular Sieve

Molecular Sieve type 3A is an alkali metal aluminosilicate; it is the potassium form of the type A crystal structure. Type 3A has an effective pore opening of about 3 angstroms (0.3nm). This is large enough to allow in moisture, but excludes molecules such as unsaturated hydrocarbons which can potentially form polymers; and this maximises lifetime when dehydrating such molecules.

Technical Specification of 3A Molecular Sieve

Model	3A			
Color	Light gray			
Nominal pore diameter	3 angstroms			
Shape	Sphere		Pellet	
Diameter (mm)	1.7-2.5	3.0-5.0	1.6	3.2
Size ratio up to grade (%)	≥98	≥98	≥96	≥96
Bulk density (g/ml)	≥0.72	≥0.70	≥0.66	≥0.66
Wear ratio (%)	≤0.20	≤0.20	≤0.2	≤0.2
Crushing strength (N)	≥55/piece	≥85/piece	≥30/piece	≥40/piece
Static H <sub>2</sub> O adsorption (%)	≥21	≥21	≥21	≥21
Ethylene adsorption (‰)	≤3.0	≤3.0	≤3.0	≤3.0
Water content (%)	≤1.5	≤1.5	≤1.5	≤1.5
Typical chemical formula	0.4K <sub>2</sub> O · 0.6Na <sub>2</sub> O · Al <sub>2</sub> O <sub>3</sub> · 2SiO <sub>2</sub> · 4.5 H <sub>2</sub> O SiO <sub>2</sub> : Al <sub>2</sub> O <sub>3</sub> ≈2			
Typical application	a) Drying of unsaturated hydrocarbons (e.g. ethylene, propylene, butadien) b) Cracked Gas Drying c) Drying of natural gas, if COS minimization is essential, or a minimum co-adsorption of hydrocarbons is required. d) Drying of highly polar compounds, such as methanol and ethanol e) Drying of liquid alcohol f) Static, (non-regenerative) dehydration of insulating glass units, whether air filled or gas-filled. g) Drying of CNG.			



# 4A Molecular Sieve

Molecular Sieve type 4A is an alkali aluminosilicate; it is the sodium form of the Type A crystal structure. 4A molecular sieve has an effective pore opening of about 4 angstroms (0.4nm). Type 4A molecular sieve will adsorb most molecules with a kinetic diameter of less than 4 angstroms and exclude those larger. Such adsorbable molecules include simple gas molecules such as oxygen, nitrogen, carbon dioxide and straight chain hydrocarbons. Branched chain hydrocarbons and aromatics are excluded.

Technical Specification of 4A Molecular Sieve

Model	4A			
Color	Light gray			
Nominal pore diameter	4 angstroms			
Shape	Sphere		Pellet	
Diameter (mm)	1.7-2.5	3.0-5.0	1.6	3.2
Size ratio up to grade (%)	≥98	≥98	≥96	≥96
Bulk density (g/ml)	≥0.72	≥0.70	≥0.66	≥0.66
Wear ratio (%)	≤0.20	≤0.20	≤0.20	≤0.20
Crushing strength (N)	≥35/piece	≥85/piece	≥35/piece	≥70/piece
Static H <sub>2</sub> O adsorption (%)	≥22	≥22	≥22	≥22
Static methanol adsorption(%)	≥15	≥15	≥15	≥15
Water content (%)	≤1.0	≤1.0	≤1.0	≤1.0
Typical chemical formula	Na <sub>2</sub> O · Al <sub>2</sub> O <sub>3</sub> · 2SiO <sub>2</sub> · 4.5 H <sub>2</sub> O SiO <sub>2</sub> : Al <sub>2</sub> O <sub>3</sub> ≈2			
Typical application	a) Drying and removing of CO <sub>2</sub> from natural gas, LPG, air, inert and atmospheric gases, etc. b) Removal of hydrocarbons, ammonia and methanol from gas streams (ammonia syn gas treating) c) Special types are used in the air break units of buses, trucks and locomotives. d) Packed in small bags, it may be used simply as a packaging desiccant.			



# 5A Molecular Sieve

5A molecular sieve pore size for 5A, can adsorption is less than the diameter of any molecule, is mainly used in heterogeneous hydrocarbon separation, pressure swing adsorption, adsorption separation and water and carbon dioxide, based on the industrial application characteristics of 5A molecular sieve, we in the production of 5A molecular sieve choose high adsorption, adsorption speed, especially suitable for the pressure swing adsorption, can adapt to all kinds of size of oxygen, hydrogen, carbon dioxide and other gases pressure swing adsorption device, is the high-quality goods in the industry pressure swing adsorption (PSA).

Technical Specification of 5A Molecular Sieve

Model	5A			
Color	Light gray			
Nominal pore diameter	5 angstroms			
Shape	Sphere		Pellet	
Diameter (mm)	1.7-2.5	3.0-5.0	1.6	3.2
Size ratio up to grade (%)	≥98	≥98	≥96	≥96
Bulk density (g/ml)	≥0.72	≥0.70	≥0.66	≥0.66
Wear ratio (%)	≤0.20	≤0.20	≤0.20	≤0.20
Crushing strength (N)	≥45/piece	≥100/piece	≥40/piece	≥75/piece
Static H <sub>2</sub> O adsorption (%)	≥22	≥22	≥22	≥22
Water content (%)	≤1.0	≤1.0	≤1.0	≤1.0
Typical chemical formula	0.7CaO . 0.3Na <sub>2</sub> O . Al <sub>2</sub> O <sub>3</sub> . 2SiO <sub>2</sub> . 4.5H <sub>2</sub> O SiO <sub>2</sub> : Al <sub>2</sub> O <sub>3</sub> ≈2			
Typical application	a) The strong ionic forces of the divalent calcium ion makes it an excellent adsorbent to remove water, CO <sub>2</sub> , H <sub>2</sub> S from sour natural gas streams, while mini missing COS formation. Light mercaptans are also adsorbed. b) Separation of normal- and iso paraffin' s. c) Production of high purity N <sub>2</sub> , O <sub>2</sub> , H <sub>2</sub> and inert gases from mixed gasstreams d) Static, (non-regenerative) dehydration of insulating glass units, whether air filled or gas-filled.			



# 13X Molecular Sieve

Molecular Sieve 13X is the sodium form of the type X crystal and has a much larger pore opening than the type A crystals. It will adsorb molecules with a kinetic diameter of less than 9 Angstrom (0.9 nm) and exclude those larger. It also has the highest theoretical capacity of the common adsorbents and very good mass transfer rates. It can remove impurities too large to fit into a type A crystal and is commonly used to separate nitrogen from oxygen.

Technical Specification of 13X Type Molecular Sieve

Model	13X			
Color	Light gray			
Nominal pore diameter	10 angstroms			
Shape	Sphere		Pellet	
Diameter (mm)	1.7-2.5	3.0-5.0	1.6	3.2
Size ratio up to grade (%)	≥98	≥98	≥96	≥96
Bulk density (g/ml)	≥0.7	≥0.68	≥0.65	≥0.65
Wear ratio (%)	≤0.20	≤0.20	≤0.20	≤0.20
Crushing strength (N)	≥35/piece	≥85/piece	≥30/piece	≥45/piece
Static H <sub>2</sub> O adsorption (%)	≥25	≥25	≥25	≥25
Static CO <sub>2</sub> adsorption (%)	≥17	≥17	≥17	≥17
Water content (%)	≤1.0	≤1.0	≤1.0	≤1.0
Typical chemical formula	Na <sub>2</sub> O. Al <sub>2</sub> O <sub>3</sub> . (2.8 ± 0.2) SiO <sub>2</sub> . (6~7)H <sub>2</sub> O SiO <sub>2</sub> : Al <sub>2</sub> O <sub>3</sub> ≈2.6-3.0			
Typical application	a) Removal of CO <sub>2</sub> and moisture from air (air pre-purification) and other gases. b) Separation of enriched oxygen from air. c) Removal of n-chained compositions from aromatics. d) Removal of R-SH and H <sub>2</sub> S from hydrocarbon liquid streams (LPG, butane etc.) e) Catalyst protection, removal of oxygenates from hydrocarbons (olefin streams). f) Production of bulk oxygen in PSA units.			

