Claims

1. A process for preparing a molecular sieve, which process comprises:
a molecular sieve is introduced into a gas-phase ultra-stabilization reactor,
the molecular sieve is moved without the conveying of carrier gas from a molecular sieve inlet of the gas-phase ultra-stabilization reactor to a molecular sieve outlet of the gas-phase ultra-stabilization reactor, and
the molecular sieve is contacted and reacted with a gaseous $SiCl_4$ in the gas-phase ultra-stabilization reactor;
the molecular sieve gas-phase ultra-stabilization reactor comprises a tube body, a molecular sieve inlet, a molecular sieve outlet and an optional tetrachlorosilane inlet, the molecular sieve inlet is provided at one end of the tube body, the molecular sieve outlet is provided at the opposite end of the tube body, wherein the end provided with the molecular sieve inlet is not below the opposite end provided with the molecular sieve outlet in the elevation direction.

2. The process according to claim 1, wherein the weight ratio of $SiCl_4$ to the molecular sieve is 0.01-1, or 0.05-0.60, or 0.05-0.30.

3. The process according to claim 1, wherein the molecular sieve and the gaseous $SiCl_4$ are contacted and reacted in the gas-phase ultra-stabilization reactor to produce an ultra-stabilized molecular sieve, and the ultra-stabilized molecular sieve has a relative crystallinity of greater than 50%.

4. The process according to claim 1, wherein the contact temperature of the molecular sieve and the gaseous $SiCl_4$ in the reactor is 250-700°C, and the reaction time of the molecular sieve in the gas-phase ultra-stabilization reactor is 10 seconds to 100 minutes.

5. The process according to claim 1, wherein the gas-phase ultra-stabilization reactor is a tube reactor or a belt transport reactor.

6. The process according to claim 1, wherein the gas-phase ultra-stabilization

reactor comprises a gravity conveying device and/or a mechanical conveying device, e.g. a reciprocating piston conveyor, a tube chain conveyor, a screw conveyor, a tube belt conveyor, a tube gravity conveyor, a belt conveyor or a combination thereof.

7. The process according to claim 1, wherein the gas-phase ultra-stabilization reactor comprises a gravity conveying device, and at least a part of or all of the tube body is configured as being rotatable around the axis of the tube body.

8. The process according to claim 1, wherein in the gas-phase ultra-stabilization reactor, the angle between the axis of the tube body and the horizontal plane can be 0-90°, for example, 10°, 20°, 30°, 40°, 50°, 60°, 70°, 80° and a range between any two of the above point values.

9. The process according to claim 1, wherein the gas-phase ultra-stabilization reactor comprises a tetrachlorosilane inlet, which is provided at the end of the tube body provided with the molecular sieve inlet and is close to the molecular sieve inlet.

10. The process according to claim 1, wherein the gas-phase ultra-stabilization reactor comprises at least one seizing plate and/or at least one dam plate, and the seizing plate and the dam plate are installed onto the inner wall of the tube body.

11. The process according to claim 1, wherein the tube body of the gas-phase ultra-stabilization reactor has a length of 5-200 meters, 7-150 meters, 15-130 meters, or 20-80 meters; the tube body of the reactor has an inner diameter of 0.01-6 meters, 0.02-3 meters, 0.1-2 meters, or 0.2-1.5 meters; the ratio of the length of the tube body to the inner diameter of the tube body of the reactor is not less than 1, 3-100:1, or 10-100:1.

12. The process according to claim 1, wherein the tube body of the gas-phase ultra-stabilization reactor is configured as being rotatable around the axis of the

tube body comprises 20% or more, 20%-100%, or 20-90% of the length of the tube body of the reactor.

13. The process according to claim 1, wherein an inner tube is provided in the tube body of the gas-phase ultra-stabilization reactor, and the annular space between the inner tube and the tube body form a reaction zone.

14. The process according to claim 1, wherein the axis of the tube body of the gas-phase ultra-stabilization reactor, in the direction from the molecular sieve inlet to the molecular sieve outlet, drops monotonously in the elevation direction or lacks any rising portion in the elevation direction.

15. The process according to claim 1, wherein in the gas-phase ultra-stabilization reactor, the tangent line at any point on the axis of the tube body of the reactor, taking the direction from the molecular sieve inlet to the molecular sieve outlet as the positive direction of the tangent line of the axis, has a vector of zero in the elevation direction; or has a positive vector in the vertical downward direction.

16. The process according to claim 1, wherein the gas-phase ultra-stabilization reactor comprises a gravity conveying device, wherein the tube body of the reactor is a straight tube, at least a part of the tube body is configured as being rotatable around the axis of the tube body at a rotation speed of 0.05-40rpm, preferably 0.1-15rpm.