CLAIMS

1. A method of drying, the method comprising:

providing a first stream comprising propylene oxide and a first amount of water, wherein the first amount of water constitutes ~~about~~ 1 % to ~~about~~ 12 %, by weight, of the first stream; and

contacting the first stream with a plurality of molecular sieves to form a second stream comprising propylene oxide and a second amount of water;

wherein the second amount of water constitutes ~~about~~ 10 ppm to ~~about~~ 500 ppm of the second stream.

2. The method of claim 1, wherein the plurality of molecular sieves are in a reservoir having an inlet and an outlet, and the contacting of the first stream with the plurality of molecular sieves comprises feeding the first stream in the inlet of the reservoir.

3. The method of claim 2, wherein a rate at which the first stream is fed in the inlet is effective to achieve a space velocity of ~~about~~ 0.01 hr^{-1} to ~~about~~ 1.0 hr^{-1}.

4. The method of claim 2, wherein a rate at which the first stream is fed in the inlet is effective to achieve a space velocity of ~~about~~ 0.5 hr^{-1} to ~~about~~ 1.0 hr^{-1}.

5. The method of claim 2, wherein the reservoir is at ambient temperature and ambient pressure.

6. The method of claim 1, wherein, in the first stream, the weight ratio of propylene oxide to the first amount of water is ~~about~~ 88:12 to ~~about~~ 99:1.

7. The method of claim 1, wherein, in the first stream, the weight ratio of propylene oxide to the first amount of water is ~~about~~ 97:3 to ~~about~~ 99:1.

8. The method of claim 1, wherein the first amount of water constitutes ~~about~~ 1 % to ~~about~~ 10 %, by weight, of the first stream.

9. The method of claim 1, wherein the first stream further comprises an organic compound, wherein the organic compound is present in the first stream at an amount of ~~about~~ 0.001 % to ~~about~~ 10 %, by weight, of the first stream.

10. The method of claim 9, wherein the organic compound comprises a hydrocarbon.

11. The method of claim 10, wherein the hydrocarbon comprises 2-methyl-pentane.

12. The method of claim 1, wherein the second amount of water constitutes ~~about~~ 50 ppm to ~~about~~ 300 ppm of the second stream.

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13. The method of claim 1, wherein the second amount of water constitutes ~~about~~ 100 ppm to ~~about~~ 200 ppm of the second stream.

14. The method of claim 1, wherein the plurality of molecule sieves have an average pore diameter of ~~about~~ 3 Å.

15. The method of claim 1, further comprising regenerating the plurality of molecular sieves.

16. The method of claim 15, wherein the regenerating of the plurality of molecular sieves comprises (i) heating the plurality of molecular sieves at a temperature for a time effective to regenerate the plurality of molecular sieves, (ii) heating the plurality of molecular sieves under vacuum at the temperature for the time effective to regenerate the plurality of molecular sieves, (iii) heating the plurality of molecular sieves at the temperature for the time effective to regenerate the plurality of molecular sieves and contacting the plurality of molecular sieves with a carrier gas, or (iv) a combination thereof.

17. A method of drying, the method comprising:

providing a first stream comprising propylene oxide and a first amount of water, wherein the first amount of water constitutes ~~about~~ 1 % to ~~about~~ 12 %, by weight, of the first stream;

providing a molecular sieves drying unit comprising (i) a reservoir having an inlet and an outlet, and (ii) a plurality of molecular sieves in the reservoir, wherein the plurality of molecular sieves have an average pore diameter of ~~about~~ 3 Å;

feeding the first stream in the inlet of the reservoir at a rate effective to achieve a space velocity of ~~about~~ 0.01 hr^{-1} to ~~about~~ 1.0 hr^{-1}; and

collecting a second stream at the outlet of the reservoir;

wherein the second stream comprises propylene oxide and a second amount of water, wherein the second amount of water constitutes ~~about~~ 50 ppm to ~~about~~ 300 ppm of the second stream.

18. The method of claim 17, further comprising regenerating the plurality of molecular sieves.

19. The method of claim 17, wherein the first stream further comprises an organic compound, wherein the organic compound is present in the first stream at an amount of ~~about~~ 0.001 % to ~~about~~ 10 %, by weight, of the first stream.

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20. The method of claim 19, wherein the organic compound comprises 2-methyl-pentane, acetone, or a combination thereof.

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