

CLAIMS:

1. A process for producing light olefins from an oxygenate-containing feedstock, said process comprising:

contacting the oxygenate-containing feedstock in an oxygenate conversion reactor (14, 214) with an oxygenate conversion catalyst and at reaction conditions effective to convert the oxygenate-containing feedstock to form an oxygenate conversion effluent stream comprising fuel gas hydrocarbons, light olefins, C₄₊ hydrocarbons and remaining oxygenate materials including a quantity of carbonyls;

absorbing at least a portion of the remaining oxygenate material from the effluent stream in a vapor-liquid absorber, including at least a portion of the quantity of carbonyls, in a quantity of water to form an oxygenate-rich water process stream, and a hydrocarbon product stream having less than 110 mol ppm of carbonyls and acetaldehyde; and

stripping oxygenate material from the oxygenate-rich water process stream to form a recycle water stream;

with at least a portion of the recycle water stream water forming said quantity of water used to absorb at least a portion of the remaining oxygenate material and said process additionally comprising said quantity of water having been treated to contain less than 150 mol ppm of carbonyls.

~~2. The process of claim 1 wherein said quantity of water has been treated to contain less than 80 mol ppm of carbonyls.~~

~~3. The process of claim 1 wherein said quantity of water having been treated to contain less than 150 mol ppm of carbonyls comprises said stripping of oxygenate material from the oxygenate-rich water process stream being performed at stripping conditions whereby the recycle water stream contains less than 150 mol ppm of carbonyls.~~

2. The process of claim 1 wherein said quantity of water has been treated to contain less than 80 mol ppm of carbonyls.

3. The process of claim 1 wherein said quantity of water has been treated to contain less than 30 mol ppm of carbonyls.

4. The process of claim 1 wherein said quantity of water having been treated to contain less than 150 mol ppm of carbonyls comprises treating the recycle water stream with a sulfite-containing material to form a treated recycle water stream containing no more than 150 mol ppm carbonyls.

5. The process of claim 4 wherein said treating of the recycle water stream with sulfite-containing material comprises treating the recycle water stream with a solution of a sulfite compound comprising an alkali metal or an alkaline earth metal cation.

6. The process of claim 5 wherein the sulfite compound comprises sodium cation.

7. The process of claim 5 wherein the sulfite compound comprises potassium cation.

8. The process of claim 1 wherein the oxygenate-containing feedstock comprises an oxygenate-containing feedstock material selected from the carbonyl acetaldehyde group consisting of methanol, dimethyl ether and combinations thereof.

9. ~~The process of claim 8 wherein the absorbing of at least a portion of the remaining oxygenate material additionally forms a stream of hydrocarbon product and said process additionally containing feedstock comprises said hydrocarbon product having been treated to contain less than 110 mol ppm of the carbonyl acetaldehyde.~~

10. ~~A system (210) process for converting oxygenates to producing light olefins, said system~~

from an oxygenate-containing feedstock, said process comprising:

~~a reactor (214) for contacting the oxygenate-containing feedstock in an oxygenate-containing feedstream~~ conversion reactor with an oxygenate conversion catalyst and converting at reaction conditions effective to convert the oxygenate-containing feedstream feedstock to form an oxygenate conversion effluent stream comprising fuel gas hydrocarbons, light olefins, C₄₊ hydrocarbons and remaining oxygenate materials including a quantity of acetaldehyde;

~~an absorber (226) for absorbing at least a portion of the remaining oxygenate material from the effluent stream in a vapor-liquid absorber, including at least a portion of the quantity of acetaldehyde, in a quantity of water to form an oxygenate-rich water process stream; and a stream of hydrocarbon product; and~~
~~a stripper (244) for stripping oxygenate material from the oxygenate-rich water process stream to form a recycle water stream; and~~
~~a treatment system (226) for with at least a portion of the recycle water stream water forming said quantity of water used to absorb at least a portion of the remaining oxygenate material and said process additionally comprising said hydrocarbon product having been treated to contain less than 110 mol ppm of acetaldehyde.~~

11. The process of claim 10 wherein said hydrocarbon product has been treated to contain less than 50 mol ppm of acetaldehyde.

12. The process of claim 10 wherein said hydrocarbon product has been treated to contain less than 20 mol ppm of acetaldehyde.

13. The process of claim 10 comprising said stripping of oxygenate material from the oxygenate-rich water process stream being performed at stripping conditions whereby the recycle water stream contains less than 150 mol ppm of acetaldehyde.

14. The process of claim 10 comprising treating the recycle water stream with a sulfite-containing material to form a treated recycle water stream containing no more than 150 mol ppm acetaldehyde;

~~wherein the treated water stream forms the quantity of water used in the absorber (226) to absorb at least a portion of the remaining oxygenate material.~~
15. The process of claim 14 wherein the sulfite compound is sodium bisulfite.