**WHAT IS CLAIMED IS:**

1. A multi-stage continuous process for the production of an ethoxylate comprising:

preparing a mixture of a $C_1 - C_{26}$ non-phenolic alcohol and a double metal cyanide ("DMC") catalyst;

establishing ethoxylation conditions in a first continuous stirred tank reactor ("CSTR");

continuously feeding ethylene oxide and the mixture of $C_1 - C_{26}$ non-phenolic alcohol and DMC catalyst to the first CSTR reactor under conditions suitable to produce an ethoxylate;

continuously feeding the reaction mixture from the first CSTR reactor and further ethylene oxide to a second CSTR reactor or to a tubular reactor under conditions suitable to produce an ethoxylate product; and

continuously withdrawing the ethoxylate product from the second CSTR reactor or tubular reactor to a collection vessel,

wherein the ethoxylate product has a molecular weight distribution that is essentially equivalent to that of the same ethoxylate product produced by basic catalysis.

2. The multi-stage continuous process according to Claim 1, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a primary alcohol.

3. The multi-stage continuous process according to Claim 1, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a secondary or tertiary alcohol.

4. The multi-stage continuous process according to Claim 1, wherein the $C_1 - C_{26}$ non-phenolic alcohol contains from 9 to 13 carbon atoms.

5. The multi-stage continuous process according to Claim 1, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a monofunctional primary alcohol comprising a mixture of $C_{12} - C_{15}$ monofunctional primary alcohols.

6. The multi-stage continuous process according to Claim 1, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is selected from the group consisting of alcohols derived from coconut oil, palm oil, soybean oil, castor oil, hydroxylated vegetable oils, hydroxymethyl stearate, hydroxyalkyl acrylate and methyl ricinoleate.

7. The multi-stage continuous process according to Claim 1, wherein the ethoxylate product has a molecular weight distribution that is narrower than that of the same ethoxylate product produced by basic catalysis.

8. The multi-stage continuous process according to Claim 1, wherein the tubular reactor is a pipe reactor or a plug flow reactor.

9. The multi-stage continuous process according to Claim 1 further including a step of continuously feeding the product from the second CSTR reactor or tubular reactor to a third reactor under conditions suitable to produce an ethoxylate product.

10. The multi-stage continuous process according to Claim 9, wherein the third reactor is a CSTR reactor or a tubular reactor.

11. The multi-stage continuous process according to Claim 1, wherein the ethoxylate product has a number average molecular weight of from about 200 Da to about 20,000 Da.

12. The multi-stage continuous process according to Claim 1, wherein the ethoxylate product has a number average molecular weight of from about 250 Da to about 12,000 Da.

13. The multi-stage continuous process according to Claim 1, wherein the ethoxylate product has a number average molecular weight of from about 350 Da to about 650 Da.

14. A multi-stage continuous process for the production of an ethoxylate comprising:

preparing a mixture of a $C_1 - C_{26}$ non-phenolic alcohol and a double metal cyanide ("DMC") catalyst;

establishing ethoxylation conditions in a first portion of a partitioned continuous stirred tank reactor ("CSTR");

continuously feeding ethylene oxide and the mixture of $C_1 - C_{26}$ non-phenolic alcohol and DMC catalyst to the first portion of the CSTR reactor under conditions suitable to produce an ethoxylate;

continuously forcing the reaction mixture from the first portion of the CSTR reactor into a second portion of the CSTR reactor and adding further ethylene oxide under conditions suitable to produce an ethoxylate product; and

continuously withdrawing the ethoxylate product from the second portion of the CSTR reactor to a collection vessel,

wherein the ethoxylate product has a molecular weight distribution that is essentially equivalent to that of the same ethoxylate product produced by basic catalysis.

15. The multi-stage continuous process according to Claim 14, wherein the continuous stirred tank reactor ("CSTR") is partitioned with one or more perforated plates and/or rotation disks.

16. The multi-stage continuous process according to Claim 14, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a primary alcohol.

17. The multi-stage continuous process according to Claim 14, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a secondary or tertiary alcohol.

18. The multi-stage continuous process according to Claim 14, wherein the $C_1 - C_{26}$ non-phenolic alcohol contains from 9 to 13 carbon atoms.

19. The multi-stage continuous process according to Claim 14, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a monofunctional primary alcohol comprising a mixture of $C_{12} - C_{15}$ monofunctional primary alcohols

20. The multi-stage continuous process according to Claim 14, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is selected from the group consisting of alcohols derived from coconut oil, palm oil, soybean oil, castor oil, hydroxylated vegetable oils, hydroxymethyl stearate, hydroxyalkyl acrylate and methyl ricinoleate.

21. The multi-stage continuous process according to Claim 14, wherein the ethoxylate product has a molecular weight distribution that is narrower than that of the same ethoxylate product produced by basic catalysis.

22. The multi-stage continuous process according to Claim 14, wherein the ethoxylate product has a number average molecular weigh of from about 200 Da to about 20,000 Da.

23. The multi-stage continuous process according to Claim 14, wherein the ethoxylate product has a number average molecular weigh of from about 250 Da to about 12,000 Da.

24. The multi-stage continuous process according to Claim 14, wherein the ethoxylate product has a number average molecular weigh of from about 350 Da to about 650 Da.

25. A single stage continuous process for the production of an ethoxylate comprising:

preparing a mixture of a $C_1$ – $C_{26}$ non-phenolic alcohol and a double metal cyanide ("DMC") catalyst;

establishing ethoxylation conditions in a reactor;

continuously feeding ethylene oxide and the mixture of $C_1$ – $C_{26}$ non-phenolic alcohol and DMC catalyst to the reactor under conditions suitable to produce an ethoxylate;

continuously feeding further ethylene oxide to the reactor under conditions suitable to produce an ethoxylate product; and

continuously withdrawing the ethoxylate product from the reactor to a collection vessel.

wherein the ethoxylate product has a molecular weight distribution that is substantially similar to that of the same ethoxylate product produced by basic catalysis.

26. The single-stage continuous process according to Claim 25, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is a primary alcohol.

27. The single-stage continuous process according to Claim 25, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is a secondary or tertiary alcohol.

28. The single-stage continuous process according to Claim 25, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol contains from 9 to 13 carbon atoms.

29. The single-stage continuous process according to Claim 25, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is a monofunctional primary alcohol comprising a mixture of $C_{12}$ – $C_{15}$ monofunctional primary alcohols.

30. The single-stage continuous process according to Claim 25, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is selected from the group consisting of alcohols derived from coconut oil, palm oil, soybean oil, castor oil, hydroxylated vegetable oils, hydroxymethyl stearate, hydroxyalkyl acrylate and methyl ricinoleate.

31. The single-stage continuous process according to Claim 25, wherein the ethoxylate product has a number average molecular weight of from about 200 Da to about 20,000 Da.

32. The single-stage continuous process according to Claim 25, wherein the ethoxylate product has a number average molecular weight of from about 250 Da to about 12,000 Da.

33. The single-stage continuous process according to Claim 25, wherein the ethoxylate product has a number average molecular weight of from about 350 Da to about 650 Da.

34. The single-stage continuous process according to Claim 25, wherein the reactor is a pipe reactor or a plug flow reactor.

35. In a process for the production of a surfactant, the improvement comprising including the ethoxylate product produced by the multi-stage continuous process according to Claim 1.

36. In a process for the production of a surfactant, the improvement comprising including the ethoxylate product produced by the multi-stage continuous process according to Claim 14.

37. In a process for the production of a surfactant, the improvement comprising including the ethoxylate product produced by the single-stage process continuous process according to Claim 25.

CLAIMS:

1. A continuous process for the production of an ethoxylate comprising:

preparing a mixture of a $C_1 - C_{26}$ non-phenolic alcohol and a double metal cyanide ("DMC") catalyst;

establishing ethoxylation conditions in a reaction zone of a reactor system comprising one or more reactors and at least one reaction zone;

continuously feeding ethylene oxide and the mixture of $C_1 - C_{26}$ non-phenolic alcohol and DMC catalyst to said reaction zone of the reactor system comprising one or more reactors under conditions suitable to produce an ethoxylate in a reaction mixture;

continuously feeding additional ethylene oxide to the reaction mixture in the reactor system comprising one or more reactors under conditions suitable to produce an ethoxylate product; and

continuously withdrawing the ethoxylate product from the reactor system comprising one or more reactors to a collection vessel,

wherein the ethoxylate product has a molecular weight distribution that is essentially equivalent to that of the same ethoxylate product produced via a semi-batch process by basic catalysis.

2. The process of Claim 1, wherein the continuous process is a multi-stage continuous process, and the reactor system comprises a first continuous stirred tank reactor and either a second continuous stirred tank reactor ("CSTR") or a tubular reactor, and each of said reactors has a said reaction zone.

3. The multi-stage continuous process of Claim 2, wherein:

ethoxylation conditions are established in the reaction zone of said first continuous stirred tank reactor;

ethylene oxide and the mixture of $C_1$-$C_{26}$ non-phenolic alcohol and DMC catalyst are continuously fed to the reaction zone of said first continuous stirred tank reactor;

the reaction mixture from the reaction zone of said first continuous stirred tank reactor is continuously fed to the reaction zone of said second continuous stirred tank reactor or to the reaction zone of the tubular reactor; and

the ethoxylate product is continuously withdrawn from the reaction zone of said second continuous stirred tank reactor or said tubular reactor to a collection vessel.

4. The multi-stage continuous process of any one of Claims 2 to 3, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a primary alcohol.

5. The multi-stage continuous process of any one of Claims 2 to 4, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a secondary or tertiary alcohol.

6. The multi-stage continuous process of any one of Claim 2 to 5, wherein the $C_1 - C_{26}$ non-phenolic alcohol contains from 9 to 13 carbon atoms.

7. The multi-stage continuous process of any one of Claims 2 to 6, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a monofunctional primary alcohol comprising a mixture of $C_{12} - C_{15}$ monofunctional primary alcohols.

8. The multi-stage continuous process of any one of Claim 2 to 7, wherein the $C_1 - C_{26}$ non-phenolic alcohol is selected from the group consisting of alcohols derived from coconut oil, palm oil, soybean oil, castor oil, hydroxylated vegetable oils, hydroxymethyl stearate, hydroxyalkyl acrylate and methyl ricinoleate.

9. The multi-stage continuous process of any one of Claims 2 to 8, wherein the tubular reactor is a pipe reactor or a plug flow reactor.

10. The multi-stage continuous process of any one of Claims 2 to 9, further including a step of continuously feeding the product from the second CSTR reactor or tubular reactor to a third reactor under conditions suitable to produce an ethoxylate product.

11. The multi-stage continuous process of Claim 10, wherein the third reactor is a CSTR reactor or a tubular reactor.

12. The multi-stage continuous process of any one of Claims 2 to 11, wherein the ethoxylate product has a number average molecular weight of from about 200 Da to about 20,000 Da.

13. The multi-stage continuous process of any one of Claims 2 to 11, wherein the ethoxylate product has a number average molecular weight of from about 250 Da to about 12,000 Da.

14. The multi-stage continuous process of any one of Claim 2 to 11, wherein the ethoxylate product has a number average molecular weight of from about 350 Da to about 650 Da.

15. The process of Claim 1, wherein the continuous process is a multi-stage continuous process, and the reactor system comprises a partitioned continuous stirred tank reactor ("CSTR"), and said partitioned continuous stirred tank reactor comprises at least a first reaction zone and a second reaction zone.

16. The process of Claim 15, wherein:

ethoxylation conditions are established in the first reaction zone of said partitioned continuous stirred tank reactor ("CSTR");

ethylene oxide and the mixture of $C_1$-$C_{26}$ non-phenolic alcohol and DMC catalyst are continuously fed to the first reaction zone of said partitioned continuous stirred tank reactor ("CSTR");

the reaction mixture from the first reaction zone of said partitioned continuous stirred tank reactor ("CSTR") is continuously forced into the second reaction zone of said partitioned continuous stirred tank reactor ("CSTR");

the ethoxylate product is continuously withdrawn from the second reaction zone of said partitioned continuous stirred tank reactor ("CSTR") to a collection vessel.

17. The multi-stage continuous process of any one of Claims 15 to 16, wherein the continuous stirred tank reactor ("CSTR") is partitioned with one or more perforated plates and/or rotation disks.

18. The multi-stage continuous process of any one of Claims 16 to 17, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a primary alcohol.

19. The multi-stage continuous process of any one of Claims 16 to 18, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a secondary or tertiary alcohol.

20. The multi-stage continuous process of any one of Claims 16 to19, wherein the $C_1 - C_{26}$ non-phenolic alcohol contains from 9 to 13 carbon atoms.

21. The multi-stage continuous process of any one of Claims 16 to 20, wherein the $C_1 - C_{26}$ non-phenolic alcohol is a monofunctional primary alcohol comprising a mixture of $C_{12} - C_{15}$ monofunctional primary alcohols.

22. The multi-stage continuous process of any one of Claims 16 to 21, wherein the $C_1 - C_{26}$ non-phenolic alcohol is selected from the group consisting of alcohols derived from coconut oil, palm oil, soybean oil, castor oil, hydroxylated vegetable oils, hydroxymethyl stearate, hydroxyalkyl acrylate and methyl ricinoleate.

23. The multi-stage continuous process of any one of Claims 16 to 22, wherein the ethoxylate product has a number average molecular weight of from about 200 Da to about 20,000 Da.

24. The multi-stage continuous process of any one of Claims 16 to 22, wherein the ethoxylate product has a number average molecular weight of from about 250 Da to about 12,000 Da.

25. The multi-stage continuous process of any one of Claims 16 to 22, wherein the ethoxylate product has a number average molecular weight of from about 350 Da to about 650 Da.

26. The process of Claim 1, wherein said continuous process is a single stage continuous process and the reactor system comprises one reactor.

27. The single-stage continuous process according to Claim 26, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is a primary alcohol.

28. The single-stage continuous process of any one of Claims 26 to 27, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is a secondary or tertiary alcohol.

29. The single-stage continuous process of any one of Claims 26 to 28, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol contains from 9 to 13 carbon atoms.

30. The single-stage continuous process of any one of Claims 26 to 29, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is a monofunctional primary alcohol comprising a mixture of $C_{12}$ – $C_{15}$ monofunctional primary alcohols.

31. The single-stage continuous process of any one of Claims 26 to 30, wherein the $C_1$ – $C_{26}$ non-phenolic alcohol is selected from the group consisting of alcohols derived from coconut oil, palm oil, soybean oil, castor oil, hydroxylated vegetable oils, hydroxymethyl stearate, hydroxyalkyl acrylate and methyl ricinoleate.

32. The single-stage continuous process of any one of Claims 26 to 31, wherein the ethoxylate product has a number average molecular weight of from about 200 Da to about 20,000 Da.

33. The single-stage continuous process of any one of Claims 26 to 31, wherein the ethoxylate product has a number average molecular weight of from about 250 Da to about 12,000 Da.

34. The single-stage continuous process of any one of Claims 26 to 31, wherein the ethoxylate product has a number average molecular weight of from about 350 Da to about 650 Da.

35. The single-stage continuous process of any one of Claims 26 to 31, wherein the reactor is a pipe reactor or a plug flow reactor.

36. In a process for the production of a surfactant, the improvement comprising including the ethoxylate product produced by the multi-stage continuous process according to Claim 2.

37. In a process for the production of a surfactant, the improvement comprising including the ethoxylate product produced by the multi-stage continuous process according to Claim 15.

38. In a process for the production of a surfactant, the improvement comprising including the ethoxylate product produced by the single-stage process continuous process according to Claim 26.