WHAT IS CLAIMED IS:

1. A hydroisomerization catalyst comprising: a molecular sieve belonging to the ZSM-48 family of zeolites; an inorganic oxide support; one or more first modifiers selected from Groups 8 to 10; and one or more second modifiers selected from the group consisting of calcium (Ca), chromium (Cr), magnesium (Mg), lanthanum (La), barium (Ba), praseodymium (Pr), strontium (Sr), potassium (K) and neodymium (Nd); wherein the molecular sieve comprises: a silicon oxide to aluminum oxide mole ratio of 40 to 220; at least 70% polytype 6 of the total ZSM-48-type material present in the molecular sieve ; and an additional EUO-type molecular sieve phase in an amount of between 0 and 7.0 percent by weight of the total molecular sieve; and wherein the molecular sieve has a morphology characterized as polycrystalline aggregates comprising crystallites collectively having an average aspect ratio of between 1 and 8.

2. The hydroisomerization catalyst according to claim 1, wherein the molecular sieve has: in its as-synthesized form, an X-ray diffraction pattern substantially as shown in the following Table:

2-Theta[(a)]	d-spacing (nm)	Relative Intensity[(b)]
7.55	1.170	W
8.71	1.015	W
12.49	0.708	W
15.12	0.586	W
21.18	0.419	VS
22.82	0.390	VS
24.62	0.361	W
26.39	0.337	W
29.03	0.307	W
31.33	0.285	W

[(a)] ± 0.20

[(b)] The powder XRD patterns provided are based on a relative intensity scale in which the strongest line in the X-ray pattern is assigned a value of 100: W = weak (> 0 to ≤ 20); M = medium (> 20 to ≤ 40); S = strong (> 40 to ≤ 60); VS = very strong (> 60 to ≤ 100); and/or

in its calcined form, an X-ray diffraction pattern substantially as shown in the following Table:

2-Theta[(a)]	d-spacing (nm)	Relative Intensity[(b)]
7.67	1.152	M
8.81	1.003	W
12.61	0.701	W
15.30	0.579	W

21.25	0.418	VS
23.02	0.386	VS
24.91	0.357	W
26.63	0.334	W
29.20	0.306	W
31.51	0.284	W

[(a)] ± 0.20

[(b)] The powder XRD patterns provided are based on a relative intensity scale in which the strongest line in the X-ray pattern is assigned a value of 100: W = weak (> 0 to ≤ 20); M = medium (> 20 to ≤ 40); S = strong (> 40 to ≤ 60); VS = very strong (> 60 to ≤ 100).

3. The hydroisomerization catalyst according to claim 1 or claim 2, wherein: the molecular sieve has a silicon oxide to aluminium oxide mole ratio of 70 to 160, for example 80 to 140; the molecular sieve comprises at least 80%, for example at least 90%, polytype 6 of the total ZSM-48 type material present in the molecular sieve; the molecular sieve comprises between 0.1 and 2 wt.% EU-1; and/or the crystallites collectively have an average aspect ratio of between 1 and 5, for example between 1 and 3.

4. The hydroisomerization catalyst according to any preceding claim, wherein the hydroisomerization catalyst comprises from 5 wt. % to 80 wt. %, for example from 20 wt. % to 70 wt. %, of the molecular sieve based on the bulk dry weight of the hydroisomerization catalyst.

5. The hydroisomerization catalyst according to any preceding claim, wherein the hydroisomerization catalyst comprises no more than 10 wt. %, for example from 0.1 wt. % to 10 wt. %, or from 0.1 wt. % to 2 wt. %, of the one or more second modifiers in total based on the bulk dry weight of the hydroisomerization catalyst.

6. The hydroisomerization catalyst according to any preceding claim, wherein the hydroisomerization catalyst comprises no more than 10 wt. %, for example from 0.1 wt. % to 10 wt. %, or from 0.1 wt. % to 2 wt. %, of the one or more first modifiers in total based on the bulk dry weight of the hydroisomerization catalyst.

7. The hydroisomerization catalyst according to any preceding claim, wherein the hydroisomerization catalyst comprises from 0.1 wt. % to 1.5 wt. % Mg.

8. The hydroisomerization catalyst according to any preceding claim, wherein the hydroisomerization catalyst is provided in the form of a calcined extrudate or formed particle.

9. A method of making a hydroisomerization catalyst, the method comprising: forming a mixture comprising a molecular sieve belonging to the ZSM-48 family of zeolites and an inorganic oxide, wherein the molecular sieve: comprises: a silicon oxide to aluminum oxide mole ratio of 40 to 220; at least 70% polytype 6 of the total ZSM-48-type material present in the molecular sieve; and an additional EUO-type molecular sieve phase in an amount of between 0 and 7.0 percent by weight of the total molecular sieve; and has a morphology characterized as polycrystalline aggregates comprising crystallites collectively having an average aspect ratio of between 1 and 8; extruding the mixture to form an extrudate or formed particle; drying the extrudate or formed particle; and calcining the dried extrudate or formed particle; wherein the method further comprises incorporating into the hydroisomerization catalyst one or more first modifiers selected from Groups 8 to 10 and one or more second modifiers selected from the group consisting of calcium (Ca), chromium (Cr), magnesium (Mg), lanthanum (La), barium (Ba), praseodymium (Pr), strontium (Sr), potassium (K) and neodymium (Nd).

10. The method according to claim 9, wherein incorporating into the hydroisomerization catalyst the one or more first modifiers and the one or more second modifiers comprises loading the calcined extrudate or formed particle with the one or more first modifiers and/or the one or more second modifiers to form a modified calcined extrudate or formed particle by: contacting the calcined extrudate or formed particle with a first impregnation solution comprising either the one or more first modifiers or the one or more second modifiers, optionally under sufficient impregnation conditions to impregnate the calcined extrudate or formed particle with at least 0.1 wt.% of the respective one or more first modifiers or one or more second modifiers; and contacting the calcined extrudate or formed particle with a second impregnation solution comprising the corresponding other of the one or more second modifiers or the one or more first modifiers, optionally under sufficient impregnation conditions to impregnate the calcined extrudate or formed particle with at least 0.1 wt.% of the respective one or more second modifiers or one or more first modifiers; or contacting the calcined extrudate or formed particle with a third impregnation solution comprising both the one or more first modifiers and the one or more second modifiers, optionally under sufficient impregnation conditions to impregnate the calcined extrudate or formed particle with at least 0.1 wt.% of the one or more first modifiers and at least 0.1 wt. % the one or more second modifiers; and drying the modified calcined extrudate or formed particle.

11. The method according to claim 9, wherein incorporating into the hydroisomerization catalyst the one or more first modifiers and the one or more second modifiers comprises loading the molecular sieve with the one or more first modifiers and the one or more second modifiers prior to forming the mixture, optionally under sufficient conditions to load the molecule sieve with at least 0.1 wt.% of the one or more first modifiers and at least 0.1 wt. % the one or more second modifiers.

12. The method according to any of claims 9 to 11, wherein incorporating into the hydroisomerization catalyst the one or more first modifiers and the one or more second modifiers comprises loading the hydroisomerization catalyst with 0.1 wt. % to 1.5 wt. % Mg.

13. The method according to any of claims 9 to 11, wherein: the molecular sieve has a silicon oxide to aluminium oxide mole ratio of 70 to 160, for example 80 to 140; the molecular sieve comprises at least 80%, for example at least 90%, polytype 6 of the total ZSM-48 type material present in the molecular sieve; the molecular sieve comprises between 0.1 and 2 wt.% EU-1; and/or the crystallites collectively have an average aspect ratio of between 1 and 5, for example between 1 and 3.

14. The method according to any of claims 9 to 13, wherein the mixture comprises from 5 wt. % to 80 wt. % of the molecular sieve.

15. A method of hydroisomerizing a hydrocarbonaceous feedstock, the method comprising contacting the hydrocarbonaceous feedstock with a hydroisomerization catalyst according to any of claims 1 to 8 under hydroisomerization conditions to produce a hydroisomerized effluent.

16. The method according to claim 15, wherein the hydrocarbonaceous feedstock comprises one or more of: gas oil; vacuum gas oil; long residue; vacuum residue; atmospheric distillate; heavy fuel; oil; wax and paraffin; used oil; deasphalted residue or crude; charges resulting from thermal or catalytic conversion processes; shale oil; cycle oil; animal and vegetable derived fats, oils and waxes; petroleum and slack wax; or any combination thereof.

17. The method according to claim 15, wherein the method is a method of dewaxing the hydrocarbonaceous feedstock by hydroisomerization.

18. The method according to claim 17, wherein the hydrocarbonaceous feedstock is an unconverted oil or a base oil product.

19. The method according to any of claims 15 to 17, wherein the hydroisomerization conditions comprise: a reaction temperature from 400°F to 950°F (from 204°C to 510°C), for example, from 650°F to 850°F (from 343°C to 454°C); a reaction gauge pressure from 500 psi to 5000 psi (from 3447 kPa to 34474 kPa), for example, from 1500 psi to 2500 psi (from 10342 kPa to 17237 kPa), or from 1200 psi to 2500 psi from 8274 kPa to 17237 kPa); an LHSV from 0.1 hr^{-1} to 15 hr^{-1}, for example from 0.2 hr^{-1} to 10 hr^{-1}, or from 0.2 hr^{-1} to 2.5 hr^{-1}, or from 0.1 hr^{-1} to 10 hr^{-1}; and/or a hydrogen consumption from 100 scf to 2500 scf per barrel of liquid hydrocarbon feed (from 17.8 to 445 m^3 H_2/m^3 feed), for example from 200 scf to 2500 scf per barrel (from 35.6 to 445 m^3 H_2/m^3 feed), or from 100 scf to 1500 scf per barrel (from 17.8 to 267 m^3 H_2/m^3 feed).

20. Use of a molecular sieve in a hydroisomerization catalyst to: increase the yield of a hydroisomerized effluent; increase the viscosity index of the hydroisomerized effluent; increase the

selectivity of the hydroisomerization catalyst for hydroisomerization; and/or reduce the yield of short-chain hydrocarbons, when the hydroisomerization catalyst is used in the hydroisomerization of a hydrocarbonaceous feedstock, wherein the molecular sieve: belongs to the ZSM-48 family of zeolites; comprises: a silicon oxide to aluminum oxide mole ratio of 40 to 220; at least 70% polytype 6 of the total ZSM-48-type material present in the molecular sieve; and an additional EUO-type molecular sieve phase in an amount of between 0 and 7.0 percent by weight of the total molecular sieve; and has a morphology characterized as polycrystalline aggregates comprising crystallites collectively having an average aspect ratio of between 1 and 8; and wherein the hydroisomerization catalyst further comprises: an inorganic oxide support; one or more first modifiers selected from Groups 8 to 10; and one or more second modifiers selected from the group consisting of calcium (Ca), chromium (Cr), magnesium (Mg), lanthanum (La), barium (Ba), praseodymium (Pr), strontium (Sr), potassium (K) and neodymium (Nd).

21. The use according to claim 20, wherein: the molecular sieve has a silicon oxide to aluminium oxide mole ratio of 70 to 160, for example, 80 to 140; the molecular sieve comprises at least 80%, for example, at least 90%, polytype 6 of the total ZSM-48 type material present in the molecular sieve; the molecular sieve comprises between 0.1 and 2 wt.% EU-1; and/or the crystallites collectively have an average aspect ratio of between 1 and 5, for example between 1 and 3.

22. The use according to claim 20 or claim 21, wherein the hydroisomerization catalyst comprises: from 5 wt. % to 80 wt. %, for example, from 20 wt. % to 70 wt. %, of the molecular sieve based on the bulk dry weight of the hydroisomerization catalyst; no more than 10 wt. %, for example, from 0.1 wt. % to 10 wt. %, or from 0.1 wt. % to 2 wt. %, of the one or more first modifiers in total based on the bulk dry weight of the hydroisomerization catalyst; and/or no more than 10 wt. %, for example, from 0.1 wt. % to 10 wt. %, or from 0.1 wt. % to 2 wt. %, of the one or more second modifiers in total based on the bulk dry weight of the hydroisomerization catalyst, for example, wherein the hydroisomerization catalyst comprises from 0.1 wt. % to 1.5 wt. % Mg in total based on the bulk dry weight of the hydroisomerization catalyst.

23. Use of one or more modifiers, selected from the group consisting of calcium (Ca), chromium (Cr), magnesium (Mg), lanthanum (La), barium (Ba), praseodymium (Pr), strontium (Sr), potassium (K) and neodymium (Nd), in a hydroisomerization catalyst to: increase the yield of a hydroisomerized effluent; increase the viscosity index of the hydroisomerized effluent; increase the selectivity of the hydroisomerization catalyst for hydroisomerization; and/or reduce the yield of short-chain hydrocarbons, when the hydroisomerization catalyst is used in the hydroisomerization of a hydrocarbonaceous feedstock, wherein the hydroisomerization catalyst further comprises: a molecular sieve belonging to the ZSM-48 family of zeolites, the molecular sieve: comprising: a silicon oxide to

aluminum oxide mole ratio of 40 to 220; at least 70% polytype 6 of the total ZSM-48-type material present in the molecular sieve; and an additional EUO-type molecular sieve phase in an amount of between 0 and 7.0 percent by weight of the total molecular sieve; and having a morphology characterized as polycrystalline aggregates comprising crystallites collectively having an average aspect ratio of between 1 and 8; an inorganic oxide support; and one or more metals selected from Groups 8 to 10.

24. The use according to claim 23, wherein: the molecular sieve has a silicon oxide to aluminium oxide mole ratio of 70 to 160, for example 80 to 140; the molecular sieve comprises at least 80%, for example at least 90%, polytype 6 of the total ZSM-48 type material present in the molecular sieve; the molecular sieve comprises between 0.1 and 2 wt.% EU-1; and/or the crystallites collectively have an average aspect ratio of between 1 and 5, for example between 1 and 3.

25. The use according to claim 23 or claim 24, wherein the hydroisomerization catalyst comprises: from 5 wt. % to 80 wt. %, for example from 20 wt. % to 70 wt. %, of the molecular sieve based on the bulk dry weight of the hydroisomerization catalyst; no more than 10 wt. %, for example from 0.1 wt. % to 10 wt. %, or from 0.1 wt. % to 2 wt. %, of the one or more first modifiers in total based on the bulk dry weight of the hydroisomerization catalyst; and/or no more than 10 wt. %, for example from 0.1 wt. % to 10 wt. %, or from 0.1 wt. % to 2 wt. %, of the one or more second modifiers in total based on the bulk dry weight of the hydroisomerization catalyst, for example, wherein the hydroisomerization catalyst comprises from 0.1 wt. % to 1.5 wt. % Mg in total based on the bulk dry weight of the hydroisomerization catalyst.