WHAT IS CLAIMED IS:

1. A hydroisomerization process, useful to make dewaxed products including base oils, the process comprising

contacting a hydrocarbon feed with a first hydroisomerization catalyst under first hydroisomerization conditions to produce a first product;

wherein, the first hydroisomerization catalyst comprises an SSZ-91 molecular sieve comprising at least one modifying metal selected from Groups 7 to 10 and 14 of the Periodic Table,

wherein the SSZ-91 molecular sieve comprises ZSM-48 type zeolite material, the molecular sieve having:

at least 70% polytype 6 of the total ZSM-48-type material;

an EUO-type phase in an amount of between 0 and 3.5 percent by weight; and

polycrystalline aggregate morphology comprising crystallites having an average aspect ratio of between 1 and 8; and

contacting the first product with a second hydroisomerization catalyst under second hydroisomerization conditions to produce a second product;

wherein, the second hydroisomerization catalyst comprises an SSZ-32x molecular sieve comprising at least one modifying metal selected from Groups 7 to 10 and 14 of the Periodic Table.

2. The process of claim 1, wherein the first catalyst comprises a first Group 10 metal and, optionally, a second metal selected from Groups 7 to 10 and Group 14 metals of the Periodic Table.

3. The process of claim 2, wherein the first Group 10 metal of the first catalyst comprises Pt.

4. The process of any one of claims 2-3, wherein the Groups 7 to 10 and Group 14 metal is selected from Pt, Pd, Ni, Re, Ru, Ir, Sn, or a combination thereof.

5. The process of any one of claims 2-4, wherein the second Groups 7 to 10 and Group 14 metal is selected from Pd, Ni, Re, Ru, Ir, Sn, or a combination thereof.

6. The process of claim 1, wherein the SSZ-91 molecular sieve comprises:

at least 80%, or 90%, polytype 6 of the total ZSM-48-type material;

between 0.1 and 2 wt.% EU-1;

crystallites having an average aspect ratio of between 1 and 5, or between 1 and 3;

or a combination thereof.

7. The process of any one of claims 1-6, wherein the modifying metals content for the first and/or second catalyst is 0.01-5.0 wt.% or 0.01-2.0 wt.%, or 0.1-2.0 wt.% based on the total catalyst weight basis.

8. The process of any one of claims 1-7, wherein the first and/or second catalyst comprises 0.01-1.0 wt.% Pt as one of the modifying metals and 0.01-1.5 wt.% of a second metal selected from Groups 7 to 10 and Group 14, or 0.3-1.0 wt.% Pt and 0.03-1.0 wt.% second metal, or 0.3-1.0 wt.% Pt and 0.03-0.8 wt.% second metal.

9. The process of any one of claims 2-5, wherein the ratio of the first Group 10 metal to the optional second metal selected from Groups 7 to 10 and Group 14 is in the range of 10:1 to 1:5, or 3:1 to 1:3, or 1:1 to 1:2.

10. The process of any one of claims 1-9, wherein the first catalyst comprises Pt as a Group 10 metal in an amount of 0.01-1.0 wt.% or 0.3-1.0 wt.% and a second metal selected from Pd, Ni, Re, Ru, Ir, Sn, or a combination thereof as a Groups 7 to 10 and Group 14 metal in an amount of 0.01-1.5 wt.%, or 0.03-0.8 wt.%.

11. The process of any one of claims 1-10, wherein the silicon oxide to aluminum oxide mole ratio of the SSZ-91 molecular sieve is in the range of 40 to 220 or 50 to 220 or 40 to 200.

12. The process of any one of claims 1-11, wherein the first catalyst further comprises a matrix material selected from alumina, silica, titania or a combination thereof.

13. The process of claim 12, wherein the first catalyst comprises 0.01 to 5.0 wt.% of the modifying metal, 1 to 80 wt.% of the matrix material, and 0.1 to 99 wt.% of the SSZ-91 molecular sieve.

14. The process of any one of claims 1-13, wherein the weight ratio of the first isomerization catalyst to the second isomerization catalyst is 10:1 to 1:10 or 4:1 to 1:4 or 1:1.

15. The process of any one of claims 1-14, wherein the hydrocarbon feed comprises 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 a combination thereof, and/or wherein the hydrocarbon feed comprises a feed hydrocarbon cut in the distillation range from 400-1300°F, or 500-1100°F, or 600-1050°F, and/or wherein the hydrocarbon feed has a KV100 range from 3 to 30 cSt or 3.5 to 15 cSt, and/or wherein.

16. The process of any one of claims claim 1-15, further comprising contacting the feedstock under hydrotreating conditions with a hydrotreating catalyst prior to contacting the hydrocarbon feed with the

first hydroisomerization catalyst, optionally, wherein the hydrotreating catalyst comprises a guard layer catalyst comprising a refractory inorganic oxide material containing 0.1 to 1 wt. % Pt and 0.2 to 1.5 wt.% Pd.

17. A hydroisomerization catalyst system comprising a first and a second catalyst, for use in the process of any one of claims 1-216, wherein

the first catalyst comprises an SSZ-91 molecular sieve comprising at least one modifying metal selected from Groups 7 to 10 and 14 of the Periodic Table, and wherein the SSZ-91 molecular sieve comprises ZSM-48 type zeolite material, the molecular sieve having:

at least 70% polytype 6 of the total ZSM-48-type material;

an EUO-type phase in an amount of between 0 and 3.5 percent by weight; and

polycrystalline aggregate morphology comprising crystallites having an average aspect ratio of between 1 and 8'

the second catalyst comprises an SSZ-32x molecular sieve comprising at least one modifying metal seleted from Groups 7 to 10 and 14 of the Periodic table; and

wherein the first catalyst comprises 0.01 to 5.0 wt.% of the modifying metal, 1 to 99 wt.% of a matrix material, and 0.1 to 99 wt.% of the SSZ-91 molecular sieve, or 0.01 to 5.0 wt.% of the modifying metal, 1 to 80 wt.% of a matrix material, and 5.0 to 85 wt.%, or 15 to 75 wt.% of the SSZ-91 molecular sieve.