What is claimed is:

1. A lubricating oil composition comprising:

a. an oil of lubricating viscosity, and

b. from 0.1 to 20 wt. % of a polymeric surfactant compound comprising an acylated polymer wherein the polymer comprises a branched olefin containing 8 to 30 carbon atoms, and combinations thereof, and the polymer has a number average molecular weight (Mn) of 500 to 50,000 Da.

2. The lubricating composition of claim 1, wherein the acylated polymer is further reacted with an amine or alcohol to form an imide, amide, ester and combinations thereof.

3. The lubricating composition of claim 1, wherein the polymer is represented by formula:

$$-[T]_n-[Z]_m-$$

wherein,

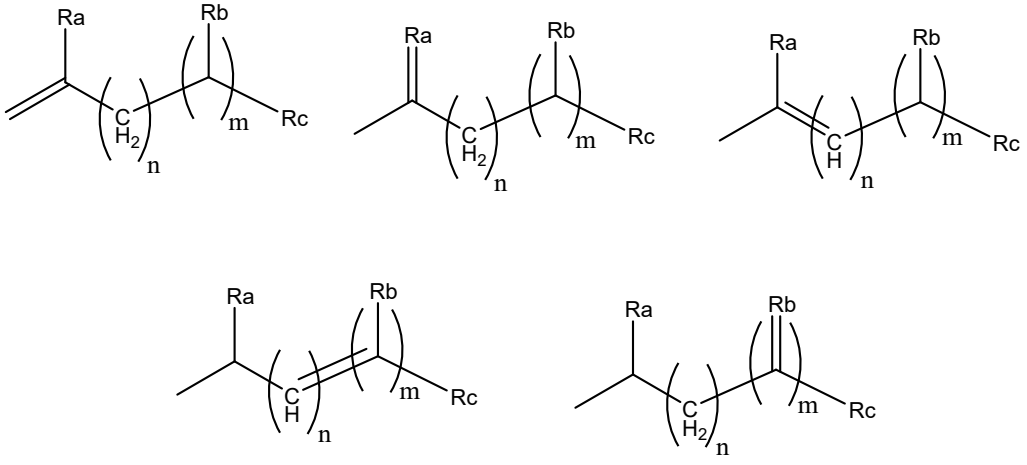
[T] is a branched olefin having 8 to 30 carbon atoms;

[Z] is a vinyl monomer capable of polymerizing with the branched olefin; and

m is 0 to 100 and n is at least 1 or is at least 2 when m = 0.

4. The lubricating composition of any one of the preceding claims, wherein the branched olefin comprises an oligomer or polymer of at least one lower olefin monomer unit containing 5 to 10 carbon atoms.

5. The lubricating composition of any one of the preceding claims, wherein the lower olefin monomer is represented by one of the following formulas:



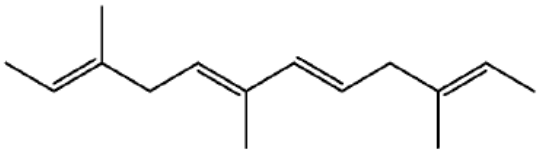
where,

Ra, Rb, and Rc can be H or a C_1 to C_5 alkyl;

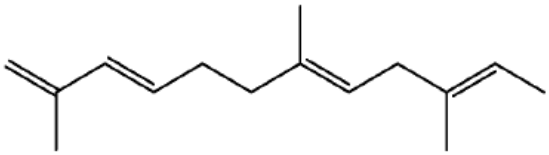
n and m can be, independently, integers of 0 to 6, with the proviso that n+m is from 1 to 6.

6. The lubricating composition of any one of the preceding claims, wherein the lower olefin monomer is isoprene.

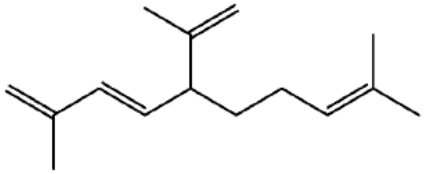
7. The lubricating composition of any one of the preceding claims, wherein the branched olefin is a trimer of isoprene represented by the following formula:



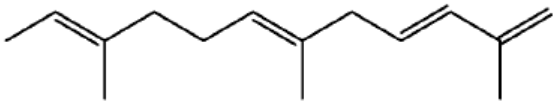
(2E,5E,7E,10E)-3,6,10-trimethyldodeca-2,5,7,10-tetraene



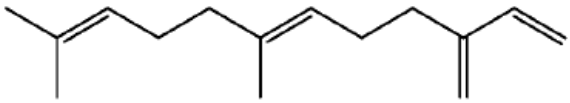
(3E,7E,10E)-2,7,10-trimethyldodeca-1,3,7,10-tetraene



(E)-2,9-dimethyl-5-(prop-1-en-2-yl)deca-1,3,8-triene

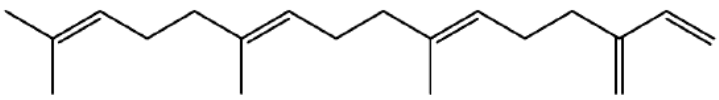


(3E,6E,10E)-2,6,10-trimethyldodeca-1,3,6,10-tretraene

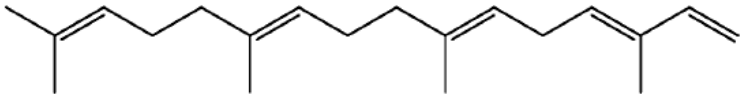


(E)-7,11-dimethyl-3-methylenedodeca-1,6,10-triene.

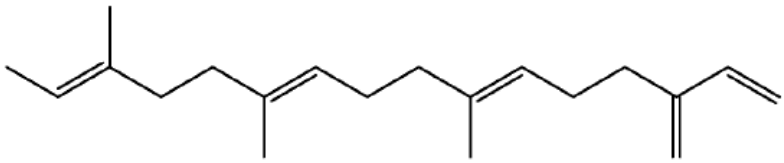
8. The lubricating composition of any of claims 1 to 6, wherein the branched olefin can be tetramers of the following formula:



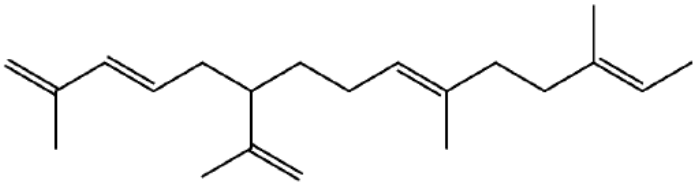
(6E,10E)-7,11,15-trimethyl-3-methylenehexadeca-1,6,10,14-tetraene



(3E,10E,14E)-3,7,11,15-tetramethylhexadeca-1,3,6,10,14-pentaene

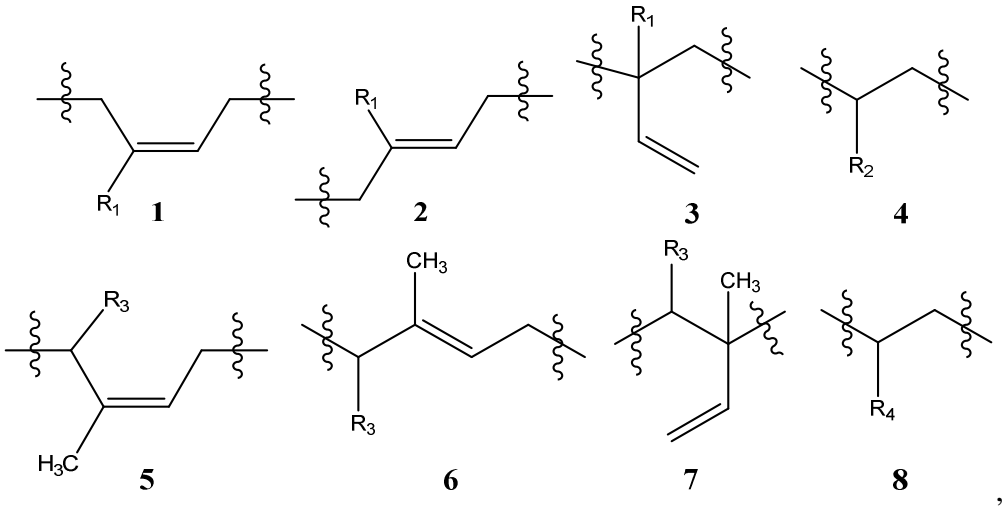


(6E,10E,14E)-7,11,14-trimethyl-3-methylenehexadeca-1,6,10,14-tetraene



(6E,9E,13E)-2,10,13-trimethyl-6-(prop-1-en-2-yl)pentadeca-1,3,9,13-tetraene

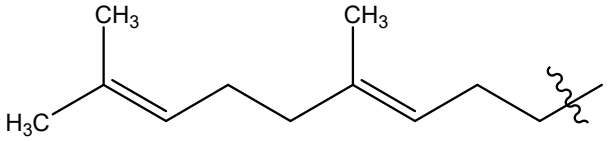
9. The lubricating composition of any one of the preceding claims, wherein the branched olefin is represented by one or more of formula (1) to (8):



,

wherein

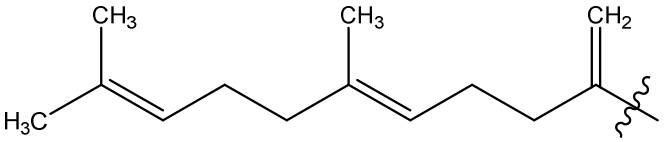
R_1 is represented by formula (9):



9

;

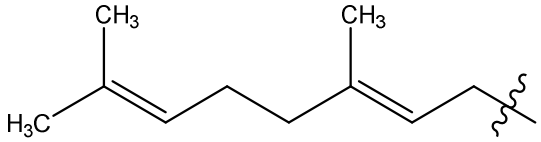
R_2 is represented by formula (10):



10

;

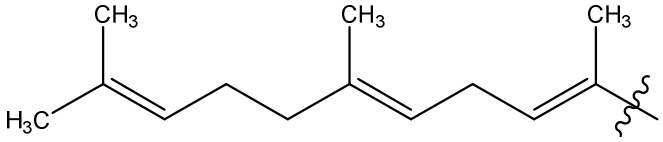
R_3 is represented by formula (11):



11

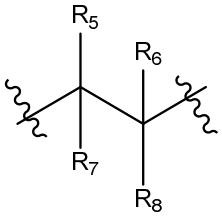
; and

R_4 is represented by formula (12):



12

10. The lubricating composition of any one of claims 3 to 9, wherein the vinyl monomer is represented by formula (13):



13

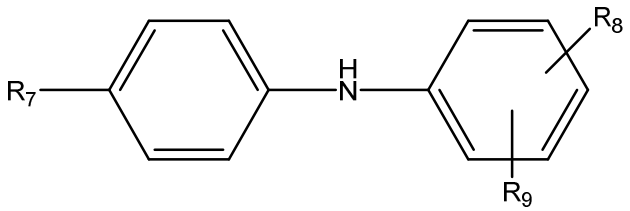
,

wherein,

R_5, R_6, R_7 and R_8 are each independently H, alkyl, cycloalkyl, aryl, cycloalkenyl, and alkynyl.

11. The lubricating composition of any one of claims 3 to 10, wherein the vinyl monomer is one or more of ethylene, an α-olefin, and styrene.

12. The lubricating composition of any one of claims 2 to 11, wherein the amine is an N-arylphenylenediamine represented by the formula:



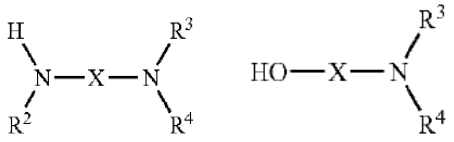
wherein,

R_7 is H, —NHaryl, —NHalkaryl, or a branched or straight chain hydrocarbyl radical having from 4 to 24 carbon atoms being selected from an alkyl, an alkenyl, an alkoxyl, an aralkyl, or analkaryl;

R_9 is —NH_2. —$(NH(CH_2)_n)_m$ NH_2, —NHalkyl, —NHaralkyl, —CH2-aryl-NH2, in which n and m each have a value from 1 to 10; and

R_8 is H, alkyl, alkenyl, alkoxyl, aralkyl, or alkaryl, having from 4 to 24 carbon atoms.

13. The lubricating composition of any one of claims 2 to 11 wherein the amine or alcohol is represented by the following formula:



wherein,

X is an alkylene group containing about 1 to about 4 carbon atoms;

R2, R3 and R4 are each independently hydrocarbyl groups.

14. The lubricating composition of any one of the preceding claims, wherein the composition further comprises one or more additives selected from the group consisting of anti-foaming agents, anti-wear agents, anti-oxidants, demulsifiers, detergents, dispersants, extreme pressure agents, friction modifiers, metal deactivators, pour point depressants, rust and corrosion inhibitors, viscosity modifiers, and combinations thereof.

15. The lubricating composition of any one of the preceding claims, wherein the composition contains no more than 2 wt%, or 1.5 wt% or 1.0 wt% of a polyisobutylene based dispersant.

16. The lubricating composition of any one of the preceding claims, wherein the phosphorus content of the lubricating composition is 0.2 wt% or less, or 0.12 wt % or less, or 0.1 wt% or less,

or 0.085 wt% or less, or 0.08 wt % or less, or even 0.06 wt% or less, 0.055 wt% or less, or 0.05 wt% or less.

17. The lubricating composition of any one of the preceding claims, wherein the lubricating composition is an engine oil having at least one of (i) a sulfur content of 0.5 wt% or less, (ii) a phosphorus content of 0.1 wt % or less, (iii) a sulfated ash content of 1.5 wt% or less, or combinations thereof.

18. The lubricating composition of any one of the preceding claims, wherein the lubricating composition is an engine oil is prepared by combining an oil of lubricating viscosity with an additive mixture, wherein the additive mixture includes:

a. a polymeric surfactant compound that is an acylated polymer comprising a polymer having a number average molecular weight of about 300Da to about 50,000Da, or about 2000Da to about 50,000Da, or preferred about 2000Da to about 25,000Da and includes a branched olefin having from 8 to 30 carbon atoms and

b. one or more additives selected from the group consisting of anti-foaming agents, anti-wear agents, anti-oxidants, demulsifiers, detergents, dispersants, extreme pressure agents, friction modifiers, metal deactivators, pour point depressants, rust and corrosion inhibitors, viscosity modifiers, and combinations thereof, and the additive mixture without variation of the combination of additives or the relative proportions thereof within the additive mixture that meets or exceeds the performance requirements of one or more of the following engine oil certification programs: ILSAC GF-5, ILSAC GF-6, API SN, dexos, CJ-4, ACEA-A1 , ACEA-A2, ACE A- A3, ACEA-B1 , ACEA-B2, ACEA-B3, ACEA-B4, ACEA-E1 , ACEA-E2, ACEA-E3, ACEA-E4, and PC-11.

19. The lubricating composition of any one of claims 1 to 17, wherein the lubricating composition is a gear oil prepared by combining an oil of lubricating viscosity with an additive mixture, wherein the additive mixture includes:

a. a polymeric surfactant compound that is an acylated polymer comprising a polymer having a number average molecular weight of about 300Da to about 50,000Da, or about 2000Da to about 50,000Da, or preferred about 2000Da to about 25,000Da and comprises a branched olefin having from 8 to 30 carbon atoms; and

b. one or more additives selected from the group consisting of anti-foaming agents, anti-wear agents, anti-oxidants, demulsifiers, detergents, dispersants, extreme pressure agents,

friction modifiers, metal deactivators, pour point depressants, rust and corrosion inhibitors, viscosity modifiers, and combinations thereof, and the additive mixture without variation of the combination of additives or the relative proportions thereof within the additive mixture that meets or exceeds the performance requirements of one or more of the following API Gear oil categories: API GL-4, GL-5, MIL-L-2105D, MIL-PRF-2105E, MT-1, and SAE Standard J2360.

20. The lubricating composition of any one of claims 1 to 17, wherein the lubricating composition is an automatic transmission fluid prepared by combining an oil of lubricating viscosity with an additive mixture, wherein the automatic transmission fluid includes:

a. a polymeric surfactant compound that is an acylated polymer comprising a polymer having a number average molecular weight of about 300Da to about 50,000Da, or about 2000Da to about 50,000Da, or preferred about 2000Da to about 25,000Da and comprises a branched olefin having from 8 to 30 carbon atoms; and

b. one or more additives selected from the group consisting of anti-foaming agents, anti-wear agents, anti-oxidants, demulsifiers, detergents, dispersants, extreme pressure agents, friction modifiers, metal deactivators, pour point depressants, rust and corrosion inhibitors, viscosity modifiers, and combinations thereof, and the additive mixture without variation of the combination of additives or the relative proportions thereof within the additive mixture that meets or exceeds the performance requirements of one or more of the following performance categories: DEXRON ULV, MERCON ULV, Mopar ATF+4, DEXRON III/MERCON, DEXRON VI/MERCON V, MERCON V - Most Ford, Mercury, Lincoln, Mazda B-Series, 2001-08 Mazda Tribute, MERCON LV, MERCON SP, Toyota ATF Type T-IV (T4), and Toyota ATF WS.