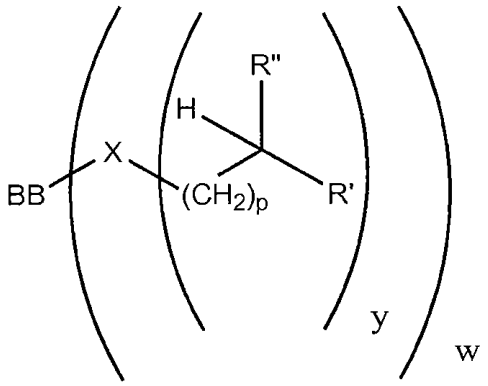
CLAIMS:

1. Use of a viscosity modifier comprising a copolymer having units derived from monomers of (i) an α-olefin and (ii) an ethylenically unsaturated carboxylic acid or derivatives thereof esterified with an alcohol for improving at least one of wear control as determined by ASTM D4172, load carrying capacity as determined by ASTM D2783 and traction reduction as determined by Mini-Traction Machine (MTM, Ball-on-Disc apparatus) in a driveline device lubricated with a lubricating composition as compared to at least one of wear control, load carrying capacity and traction reduction achieved with a lubricating composition containing a viscosity modifier other than said viscosity modifier copolymer, at an equal or lower kinematic viscosity (Kv@100°C), said lubricating composition comprising:

a first base stock component comprising one or more metallocene catalyzed polyalphaolefins (mPAOs), each mPAO having a kinematic viscosity (Kv_{100}) from 40 cSt to 155 cSt and a viscosity index (VI) from 150 to 207; and

a second base stock comprising one or more polyalphaolefins (PAOs), each PAO having a kinematic viscosity (Kv_{100}) less than 10 cSt and a VI from 130 to 145.

2. The use of claim 1, wherein the viscosity modifier is represented by the formula:



Formula (I)

wherein

Formula (I) comprises a copolymer backbone (BB), and one or more pendant groups, wherein BB is derived from a copolymer of (i) an α-olefin and (ii) an ethylenically unsaturated carboxylic acid or derivatives thereof;

X is a functional group which either (i) contains a carbon and at least one oxygen or nitrogen atom, or (ii) is an alkylene group with 1 to 5 carbon atoms, connecting the copolymer backbone and a branched hydrocarbyl group contained within $(\ )_y$;

w is the number of pendant groups attached to the copolymer backbone, which is in the range of 2 to 2000;

y is 0, 1, 2 or 3, provided that in at least 1 mol % of the pendant groups, y is not zero; and with the proviso that when y is 0, X is bonded to a terminal group in a manner sufficient to satisfy the valence of X, wherein the terminal group is selected from hydrogen, alkyl, aryl, a metal or ammonium cation, and mixtures thereof;

p is an integer in the range of 1 to 15; and

R´ and R´´ are independently linear or branched hydrocarbyl groups, and the combined total number of carbon atoms present in R´ and R´´ is at least 12.

3. The use of claim 1 or 2, wherein the α-olefin is selected from the group consisting of 1-decene, 1-undecene, 1-dodecene, 1-tridecene, 1-tetradecene, 1-pentadecene, 1-hexadecene, 1-hepta-decene, 1-octadecene, and mixtures thereof; the ethylenically unsaturated carboxylic acid or derivative thereof is selected from the group consisting of acrylic acid, methyl acrylate, methacrylic acid, maleic acid or anhydride, fumaric acid, itaconic acid or anhydride or mixtures thereof, and substituted equivalents thereof; and the alcohol is selected from the group consisting of 2-ethylhexanol, 2-butyloctanol, 2-hexyldecanol, 2-octyldodecanol, 2-decyltetradecanol, butanol, pentanol, hexanol, heptanol, octanol, nonanol, decanol, undecanol, dodecanol, tridecanol, tetradecanol, pentadecanol, hexadecanol, heptadecanol, octadecanol, eicosanol, and mixtures thereof.

4. The use of claims 1-3, wherein the viscosity modifier is a copolymer derived from monomers of (i) an α-olefin and (ii) an ethylenically unsaturated carboxylic acid or derivatives thereof,

wherein 0.1 to 99.89 percent of the carboxylic acid units are esterified with a primary alcohol branched at the β- or higher position,

wherein 0.1 to 99.89 percent of the carboxylic acid units are esterified with a linear alcohol or an alpha-branched alcohol, and

wherein 0.01 to 10 percent of the carboxylic acid units has at least one of an amino-, amido- and/or imido- group.

5. The use of claims 1-3, wherein the viscosity modifier copolymer has a weight average molecular weight of 45,000 or less.

6. The use of claims 1-4, wherein the lubricating oil base stock is present in an amount from 60 weight percent to 98 weight percent, and the viscosity modifier is present in an amount from 2 weight percent to 40 weight percent, based on the total weight of the lubricating composition; preferably wherein the lubricating composition further comprises one or more of an antioxidant, detergent, dispersant, pour point depressant, corrosion inhibitor, metal deactivator, seal compatibility additive, anti-foam agent, inhibitor, antiwear, extreme pressure agent, friction modifier, and anti-rust additive.

7. The use of claims 1-6, wherein the lubricating composition is an axle fluid or a manual transmission fluid (MTF).

8. The use of claims 1-7, further comprisingimproving fuel efficiency or shear stability.

9. The use of claims 1-8, wherein the driveline device comprises gears or transmissions.