CLAIMS:

1. A rubber composition for tire tread comprising:

a polybutene derivative for rubber compounding prepared by mixing:

30% to 98% by weight of polyisobutylene having a terminal vinylidene content of 80 mol% or more based on 13C-NMR;

1% to 35% by weight of unsaturated dicarboxylic anhydride; and

1% to 50% by weight of at least one selected from among alkanolamines, amine-based compounds, and polyhydric alcohols;

a rubber base; and

a filler.

2. The rubber composition for tire tread of claim 1, wherein the polyisobutylene has a number average molecular weight of 300 to 10,000 g/mol.

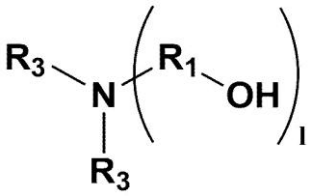
3. The rubber composition for tire tread of claim 1, wherein the polyisobutylene has a polydispersity of 1 to 6.

4. The rubber composition for tire tread of claim 1, wherein the unsaturated dicarboxylic anhydride comprises at least one selected from among maleic anhydride, itaconic anhydride, citraconic anhydride, propenyl succinic anhydride, and 2-pentendioic anhydride.

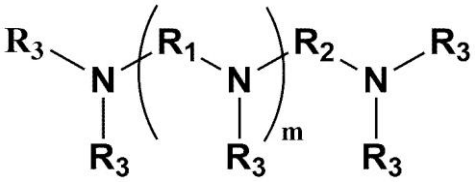
5. The rubber composition for tire tread of claim 1, wherein the alkanolamine includes an amino group and a hydroxy group, the amine-based compound includes two or more amino groups, and the polyhydric alcohol includes two or more hydroxy groups.

6. The rubber composition for tire tread of claim 5, wherein the alkanolamine is a compound represented by Formula 1, the amine-based compound is a compound represented by Formula 2, and the polyhydric alcohol is a compound represented by Formula 3,

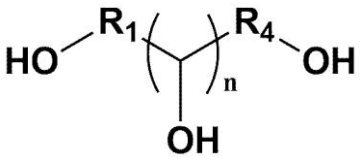
[Formula 1]



[Formula 2]



[Formula 3]



In Chemical Formula 1 to 3,

R_1 and R_2 are each independently a C1-C9 alkylene group or a C1-C9 alkyl carbonylene group,

R_3 is hydrogen, a C1-C9 alkyl group, or a C1-C9 alkyl carbonyl group,

R_4 is a directly bound, C1-C9 alkylene group or C1-C9 alkyl carbonyl group,

l is 1, and

m and n are each independently a real number in a range of from 0 to 6.

7. The rubber composition for tire tread of claim 5, wherein the alkanolamine compound is at least one selected from among ethanolamine, diethanolamine, triethanolamine, amino methanol, normal-propanolamine, isopropanol amine, diisopropanolamine, triisopropanolamine, butanolamine, dibutanolamine, tributanolamine, and 4-amino-1,2,3-butanetriol, or

the amine-based compound is at least one selected from among ethylene diamine, diethylenetriamine, triethylenetetraamine, tetraethylenepentaamine, pentaethylenehexaamine, hexaethyleneheptaamine, putrescine, spermidine, N^1-acetylspermidine, N^8-acetylspermidine, N^1,N^{12}-diacetylspermidine, cadaverine, spermine, thermospermine, caldopentamine, caldohexamine, tris(3-aminopropyl)amine,

tris(2-aminoethyl)amine, tetrakis(3-aminopropyl)ammonium, cyclen, 1,4,7-triazacyclononane, 1,1,1-tris (aminomethyl)ethane, and subunits of polyethylenimine, or

the polyhydric alcohol compound is at least one selected from among ethylenediol, 1,2-propylenediol, glycerol, 1,3-propanediol, 1,2-butanediol, 1,2,3-butanetriol, 1,2,4-butanetriol, 1,2-pentanediol, 1,3,5-pentanetriol, 2,3,4-pentanetriol, 1,2,4-pentanetriol, 1,2,5-pentanetriol, 1,2 - Hexanediol, 1,6-hexanediol, 1,2,6-hexanetriol, 1,2,3-hexanetriol, 1,2,5-hexanetriol, 1,2,4-hexanetriol , 1,3,6-hexanetriol, 1,2-heptanediol, 1,2,3-heptanetriol, 1,2,7-heptanetriol, 1,4,5-heptanetriol, 1,4,7-heptanetriol, 1,2-octanediol, 1,1,3-octanetriol, 1,3,8-octanetriol, 2,3,7-octanetriol, 1,3,5-octanetriol, 1,2-nonanediol, 1,2-decanediol, sugar alcohol having 4 to 6 carbon atoms, and span.

8. The rubber composition for tire tread of claim 1, wherein the polybutene derivative manufactured using the alkanolamine includes at least one selected from among an imide group, an amide group, and an ester group.

9. The rubber composition for tire tread of claim 1, wherein the polybutene derivative manufactured using the amine-based compound includes at least one selected from among an imide group and an amide group.

10. The rubber composition for tire tread of claim 1, wherein the polybutene derivative manufactured using the polyhydric alcohol includes an ester group.

11. The rubber composition for tire tread of claim 1, wherein the polybutene derivative has a glass transition temperature of -40°C or lower.

12. The rubber composition for tire tread of claim 1, wherein the polybutene derivative has a Brooke field viscosity of 1 to 10,000 cP at 150°C.

13. The rubber composition for tire tread of claim 1,

wherein the polybutene derivative has a number average molecular weight of 500 to 15,000 g/mol.

14. The rubber composition for tire tread of claim 1, wherein the polybutene derivative has a polydispersity of 1 to 6.

15. The rubber composition of claim 14, wherein the filler comprises at least one selected from among silica, carbon black, and both.

16. The rubber composition for tire tread of claim 1, wherein the rubber base comprises at least one selected from among butadiene rubber, butyl rubber, emulsion polymerization styrene butadiene rubber (E-SBR), solution polymerization styrene butadiene rubber (S-SBR), epichlorohydrin rubber, nitrile rubber, hydrogenated nitrile rubber, brominated polyisobutylisoprene-co-paramethyl styrene (BIMS) rubber, urethane rubber, fluoro rubber, silicone rubber, styrene-ethylenebutadiene styrene copolymer rubber, ethylenepropylene rubber, ethylenepropylenediene monomer rubber, hypalon rubber, chloroprene rubber, ethylene vinyl acetate rubber, and acrylic rubber.

17. The rubber composition of claim1, wherein the rubber composition comprises 50 to 150 parts by weight of silica, 5 to 20 parts by weight of carbon black, 2 to 40 parts by weight of the polybutene derivative, and 2 to 15 parts by weight of a silane coupling agent, with respect to 100 parts by weight of the rubber base.