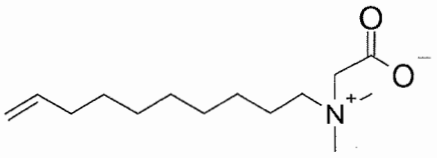
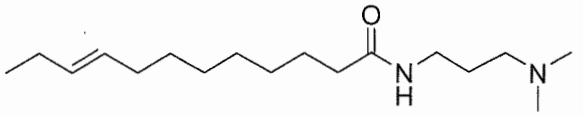
We claim:

1. A laundry detergent useful for cold-water cleaning, comprising 1 to 70 wt.% of an anionic surfactant, 5 to 70 wt.% of a nonionic surfactant, 3 to 25 wt.% of a fatty alkyl ester sulfonate, and 0.5 to 10 wt.% of a metathesis-based surfactant composition selected from the group consisting of:

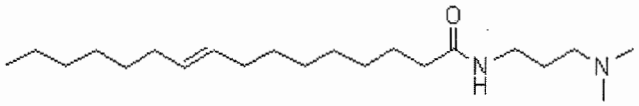
(a) a C_{10} betaine having the structure:



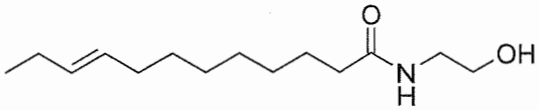
(b) a C_{12} or C_{16} amidoamine having the structure:



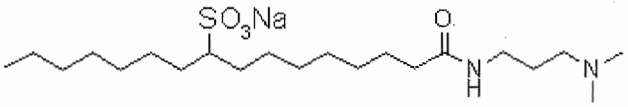
or



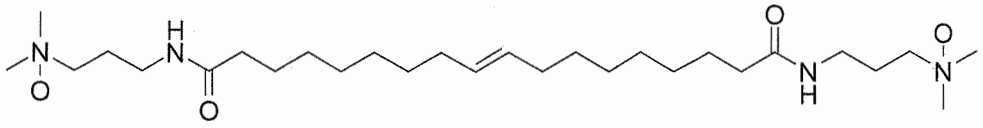
(c) a C_{12} ethanolamine amide having the structure:



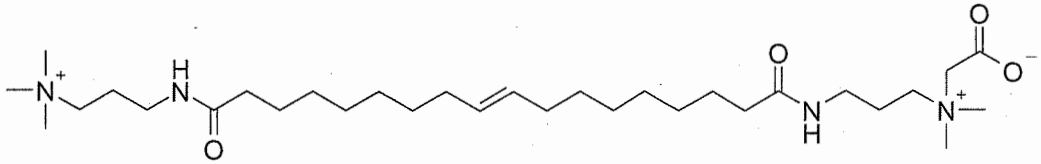
(d) a C_{16} amidoamine sulfonate having the structure:



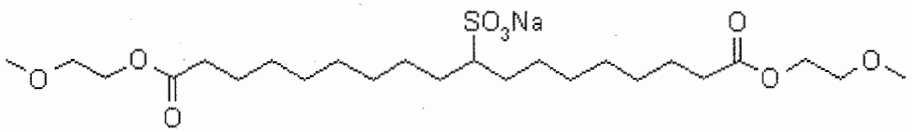
(e) a C_{18} diamidoamine dioxide having the structure:



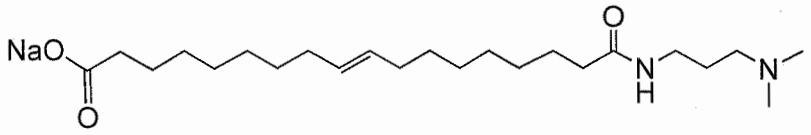
(f) a quaternized C_{18} diamidoamine betaine having the structure:



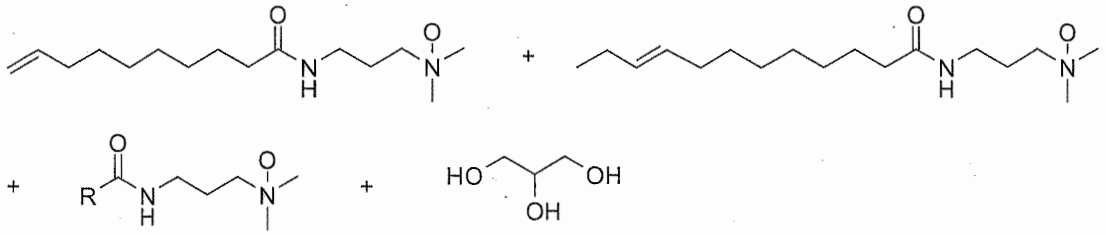
(g) a sulfonated C_{18} low-EO fatty ester alkoxylates having the structure:



(h) a C_{18} amidoamine carboxylate having the structure:



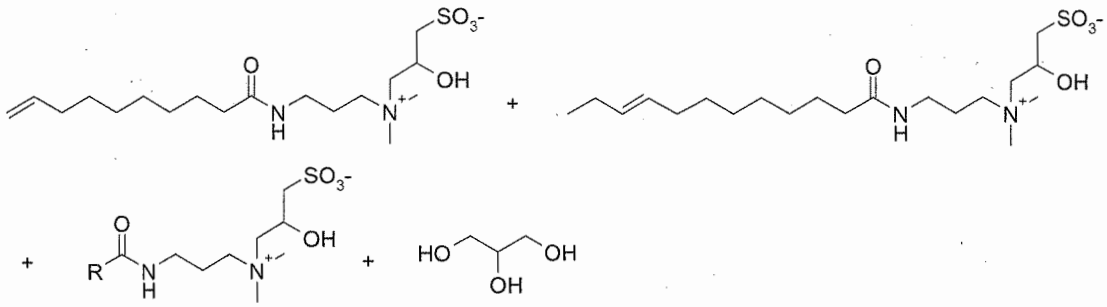
(i) an amidoamine oxide derived from cross-metathesis of palm or soybean oil having the structure:



R = C16, C18 Sat.

and

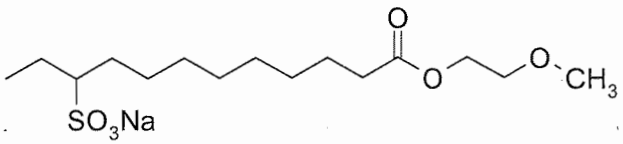
(j) a sulfobetaine derived from cross-metathesis of palm or soybean oil having the structure:



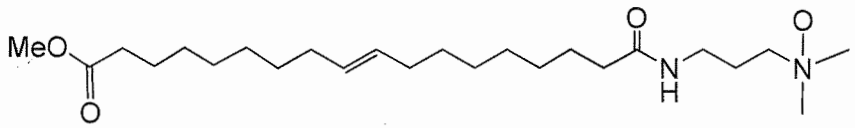
R = C16, C18 Sat.

2. A boosted bargain laundry detergent, comprising 1 to 70 wt.% of an anionic surfactant, 5 to 70 wt.% of a nonionic surfactant, and 0.1 to 5 wt.% of a metathesis-based performance booster selected from the group consisting of:

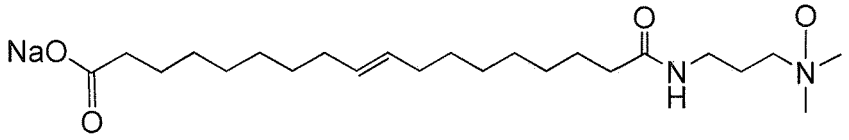
(a) a C_{12} low-EO fatty ester alkoxylate sulfonate having the structure:



(b) a C_{18} amidoamine oxide ester having the structure:

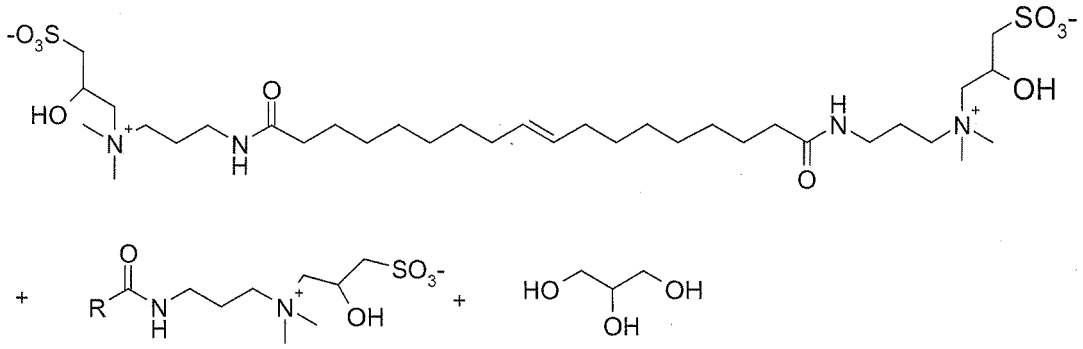


(c) a C_{18} amidoamine oxide carboxylate having the structure:



and

(d) an amidoamine sulfobetaine made from self-metathesized palm or soybean oil having the structure:



R = C16, C18 Sat. + Unsat.

3. The detergent of claim **1** wherein the nonionic surfactant is a fatty alcohol ethoxylate.

4. The detergent of claim **1** or **2** wherein the surfactant composition has at least 1 mole % of *trans*-Δ^9 unsaturation.

5. A liquid, powder, paste, granule, tablet, molded solid, water-soluble sheet, or water-soluble sachet comprising the detergent of claim **1** or **2**.

6. The detergent of claim **1** further comprising 30 to 80 wt.% of water.

7. A storage-stable liquid detergent of claim **6**.

8. The detergent of claim **1** that is a liquid at 20°C and exhibits a phase transition below 5°C.

9. The detergent of claim **2** further comprising 40 to 90 wt.% of water.

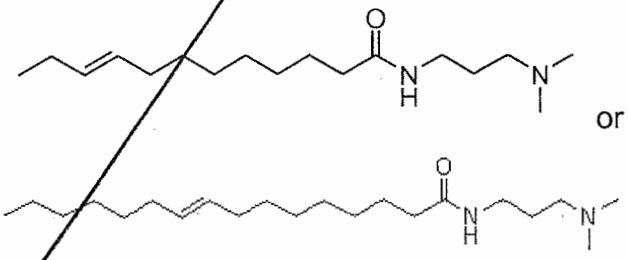
We claim:

1. A laundry detergent useful for cold-water cleaning, comprising an anionic surfactant, a nonionic surfactant, a fatty alkyl ester sulfonate, and a surfactant composition derived from a metathesis-derived C_{10}-C_{17} monounsaturated acid, octadecene-1,18-dioic acid, or their ester derivatives and selected from the group consisting of C_{10} betaines, C_{12} or C_{16} amidoamines, C_{12} ethanolamine amides, C_{16} amidoamine sulfonates, C_{18} diamidoamine dioxides, quaternized C_{18} diamidoamine betaines, sulfonated C_{18} low-EO fatty ester alkoxylates, C_{18} amidoamine carboxylates, and amidoamine oxides and sulfobetaines derived from cross-metathesis of palm or soybean oil.

2. The detergent of claim **1** wherein the composition is selected from the group consisting of C_{10} betaines, C_{12} or C_{16} amidoamines, C_{12} ethanolamine amides, and C_{16} amidoamine sulfonates.

3. The detergent of claim **1** wherein the composition is a C_{12} or C_{16} amidoamine made by reacting a C_{12} or C_{16} monounsaturated acid or ester derivative with dimethylaminopropylamine.

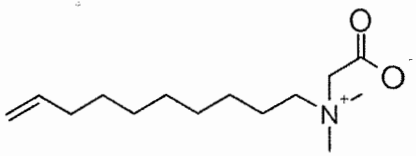
4. The detergent of claim **3** wherein the C_{12} or C_{16} amidoamine has the structure:



or

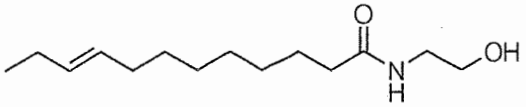
5. The detergent of claim **1** wherein the composition is a C_{10} betaine made by reacting a C_{10} monounsaturated acid or ester derivative with dimethylamine, followed by reduction of the resulting amide, followed by quaternization to give the betaine.

6. The detergent of claim **5** wherein the C_{10} betaine has the structure:

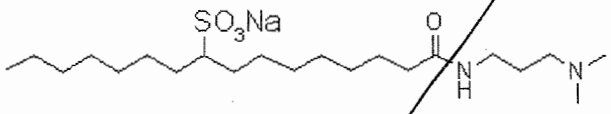


7. The detergent of claim **1** wherein the composition is a C_{12} ethanolamine amide made by reacting a C_{12} monounsaturated acid or ester derivative with monoethanolamine.

8. The detergent of claim **1** wherein the C_{12} ethanolamine amide has the structure:

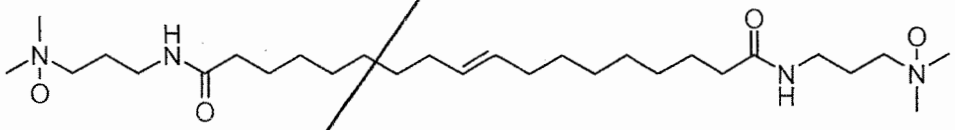


9. The detergent of claim **1** wherein the C_{16} amidoamine sulfonate has the structure:



10. The detergent of claim **1** wherein the composition is a C_{18} diamidoamine dioxide made by reacting an octadecene-1,18-dioic acid or its ester derivative with dimethylaminopropylamine, followed by oxidation of the resulting diamine.

11. The detergent of claim **10** wherein the C_{18} diamidoamine dioxide has the structure:



12. The detergent of claim **1** wherein the composition is an amidoamine oxide or sulfobetaine derived from cross-metathesis of palm or soybean oil.

13. The detergent of claim **1** wherein the nonionic surfactant is a fatty alcohol ethoxylate.

14. The detergent of claim **1** wherein the acid or ester derivative reactant has at least 1 mole % of *trans*-Δ^9 unsaturation.

15. A liquid, powder, paste, granule, tablet, molded solid, water-soluble sheet, or water-soluble sachet comprising the detergent of claim **1**.

16. The detergent of claim **1** further comprising water.

17. A storage-stable liquid detergent of claim **16**.

18. The detergent of claim **1** that is a liquid at 20°C and exhibits a phase transition below 5°C.

19. A boosted bargain laundry detergent, comprising an anionic surfactant, a nonionic surfactant, and a performance booster derived from a metathesis-derived C_{10}-C_{17} monounsaturated acid, octadecene-1,18-dioic acid, or their ester derivatives and selected from the group consisting of C_{12} low-EO fatty ester alkoxylate sulfonates, C_{18} amidoamine oxide esters, C_{18} amidoamine oxide carboxylates, and amidoamine sulfobetaines made from self-metathesized palm or soybean oil.

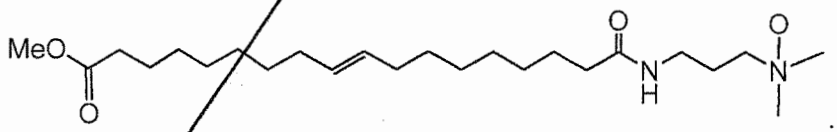
20. The detergent of claim **19** wherein the booster is a C_{12} low-EO fatty ester ethoxylate sulfonate made by reacting a C_{10} monounsaturated acid or ester derivative with an ethylene glycol alkyl ether, followed by sulfitation of the olefin.

21. The detergent of claim **20** wherein the booster has the structure:

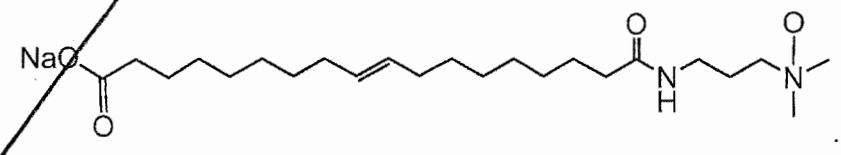


22. The detergent of claim **19** wherein the booster is an amidoamine sulfobetaine made from self-metathesized palm or soybean oil.

23. The detergent of claim **19** wherein the booster is a C_{18} amidoamine oxide ester having the structure:



24. The detergent of claim **19** wherein the booster is a C_{18} amidoamine oxide carboxylate having the structure:



25. The detergent of claim **19** wherein the acid or ester derivative reactant has at least 1 mole % of *trans*-Δ^9 unsaturation.

26. The detergent of claim **19** further comprising water.

27. A liquid, powder, paste, granule, tablet, molded solid, water-soluble sheet, or water-soluble sachet comprising the detergent of claim **19**.