

CLAIMS

We claim:

1. An additive formulation for a fuel comprising:
nitroparaffin substantially free of nitroethane;
lubricant; and
aromatic hydrocarbon;
wherein combustion in an internal combustion engine of a fuel containing the additive results in reduced emissions relative to the combustion of a fuel not containing the additive.
2. The formulation of claim 1, wherein the nitroparaffin comprises at least one nitroparaffin selected from the group consisting of nitropropane and nitromethane.
3. The formulation of claim 1, wherein the nitroparaffin comprises about 40 to about 65 weight percent nitropropane.
4. The formulation of claim 1, wherein the nitroparaffin comprises about 10 to about 30 weight percent nitromethane.
5. The formulation of claim 2, wherein the nitroparaffin comprises about 40 to about 65 weight percent nitropropane and about 10 to about 30 weight percent nitromethane.
6. The formulation of claim 1, comprising from about 0.5 to about 5 weight percent lubricant.
7. The formulation of claim 1, wherein the lubricant is a polyester.

8. The formulation of claim 1, wherein the lubricant is a C₅-C₁₀ fatty acid ester.
9. The formulation of claim 8, wherein the lubricant is a C₅-C₁₀ fatty acid ester comprising at least one of pentaerythritol and dipentaerythritol.
10. The formulation of claim 9, wherein the lubricant is a C₅-C₁₀ fatty acid ester with pentaerythritol.
11. The formulation of claim 9, wherein the lubricant is a C₅-C₁₀ fatty acid ester with dipentaerythritol.
12. The formulation of claim 9, wherein the lubricant is a C₅-C₁₀ fatty acid ester with pentaerythritol and dipentaerythritol.
13. The formulation of claim 10, comprising about 75 wt.% to about 80 wt.% C₅-C₁₀ fatty acid ester with pentaerythritol.
14. The formulation of claim 11, comprising about 19 wt.% to about 24 wt.% C₅-C₁₀ fatty acid ester with dipentaerythritol.
15. The formulation of claim 12, wherein the ratio of C₅-C₁₀ fatty acid ester with pentaerythritol to C₅-C₁₀ fatty acid ester with dipentaerythritol is about 1:2.5 to about 1:4.5.
16. The formulation of claim 1, comprising from about 10 to about 40 weight percent aromatic hydrocarbon.
17. The formulation of claim 1, wherein the aromatic hydrocarbon is selected from the group consisting of: ethyl benzene, xylene, and toluene.
18. The formulation of claim 1, wherein the aromatic hydrocarbon is toluene.

19. The formulation of claim 1, wherein the reduced emissions are comprised of at least one of total hydrocarbons, non-methane hydrocarbons, carbon monoxide, and NO_x.

20. The formulation of claim 1, wherein combustion in an internal combustion engine of a fuel containing the additive results in a reduction in particulate matter emissions relative to the combustion of a fuel not containing the additive.

21. The formulation of claim 1, wherein combustion in an internal combustion engine of a fuel containing the additive results in enhanced engine performance relative to the combustion of a fuel not containing the additive.

22. An additive formulation for a fuel comprising:
about 40 to about 65 weight percent nitropropane;
about 10 to about 30 weight percent nitromethane;
about 0.5 to about 5 weight percent lubricant;
about 10 to about 40 weight percent aromatic hydrocarbon;
wherein the additive is substantially free of nitroethane.

23. The formulation of claim 22, wherein the lubricant is a polyester.

24. The formulation of claim 22, wherein the lubricant is a C₅-C₁₀ fatty acid ester, and the aromatic hydrocarbon is toluene.

25. The formulation of claim 22, wherein the aromatic hydrocarbon is toluene.

26. An additive formulation for a fuel comprising:
about 40 to about 65 weight percent nitropropane;
about 10 to about 30 weight percent nitromethane;

about 0.5 to about 5 weight percent C₅-C₁₀ fatty acid ester;
about 10 to about 40 weight percent aromatic hydrocarbon;
wherein the additive is substantially free of nitroethane.

27. The formulation of claim 22, wherein combustion in an internal combustion engine of a fuel containing the additive results in reduced emissions, including particulate matter emissions, and enhanced engine performance, relative to the combustion of a fuel not containing the additive.

28. An additive formulation for a fuel comprising:
about 40 to about 65 weight percent nitropropane;
about 10 to about 30 weight percent nitromethane;
about 0.5 to about 5 weight percent C₅-C₁₀ fatty acid ester with pentaerythritol and dipentaerythritol;
about 10 to about 40 weight percent toluene;
wherein the additive is substantially free of nitroethane.

29. A fuel comprising the additive of claim 1.