Claims

1. A method of manufacturing a motor for an electrical submersible pumping assembly, comprising: assembling a stack of stator laminations in a motor housing, the stack of stator laminations having slots formed therethrough; winding magnet wires through the slots; mixing ceramic particles with polymer matrix powder to form a dry mixture; elevating an upperend of the motor housing above a lowerend of the motor housing; pouring the dry mixture into the upper end of the motor housing and down into spaces in the slots between and around the magnet wires; then heating the stack of stator laminations to melt the polymer matrix between and around the magnet wires; then cooling the stack of stator laminations causing the melted polymer matrix to bond the ceramic particles to each other and to the magnet wires; then installing a rotor within the stack of stator laminations and filling the motor housing with a dielectric lubricant to form the motor for the electrical submersible pumping assembly.

2. The method according to claim 1, further comprising: vibrating the motor housing while pouring the dry mixture into the upper end of the motor housing.

3. The method according to claim 1, wherein the polymer matrix powder comprises a fluoropolymer.

4. The method according to claim 1, wherein the ceramic particles have a size of 20 mesh to 140 mesh (105 microns to 840 microns).

5. The method according to claim 1, wherein the polymer matrix powder has a size in a range from 20 to 200 microns.

6. The method according to claim 1, wherein mixing the ceramic particles with the polymer matrix powder comprises using more parts of the ceramic particles than the polymer matrix powder.

7. The method according to claim 1, wherein heating the stack of stator laminations comprises placing the motor housing in an oven.

8. The method according to claim 7, further comprising circulating a gas through the motor housing while the motor housing is being heated in the oven to remove volatiles released during heating.

9.The method according to claim 1, wherein the polymer matrix powder comprises a fluoropolymer that is selected from a group consisting of perfluoroalkoxy ("PFA") and fluorinated ethylene propylene ("FEP").

10. A method of manufacturing a motor for an electrical submersible pumping assembly, comprising: assembling a stack of stator laminations in a motor housing, the stack of stator laminations having slots formed therethrough; winding magnet wires through the slots; mixing rounded, porous ceramic particles with a fluoropolymer matrix powder to form a dry mixture; elevating an upperend of the motor housing above a lowerend of the motor housing; pouring the dry mixture into the upper end of the motor housing and down into spaces in the slots between and around the magnet wires; heating the stack of stator laminations to a temperature sufficient to melt the polymer matrix powder between and around the magnet wires; then cooling the stack of stator laminations causing the melted polymer matrix to form a rigid encapsulate in the slots around the magnet wires; then installing a rotor within the stack of stator laminations and filling the motor housing with a dielectric lubricant to form the motor for the electrical submersible pumping assembly; and infiltrating a portion of the dielectric lubricant into the ceramic particles to enhance heat transfer while the motor is operating.

11. The method according to claim 10, wherein pouring the dry mixture down the spaces in the slots further comprises vibrating the motor housing.

12. The method according to claim 10, wherein the fluoropolymer matrix powder is selected from a group consisting of perfluoroalkoxy ("PFA") and fluorinated ethylene propylene ("FEP").

13. The method according to claim 10, wherein mixing the ceramic particles with the fluoropolymer matrix powder comprises mixing more parts of the ceramic particles than the fluoropolymer matrix powder.

14. The method according to claim 10, wherein: the ceramic particles have a size of 20 mesh to 140 mesh (105 microns to 840 microns); and the fluoropolymer matrix powder has a size in a range from 20 to 200 microns.

15. A method of manufacturing a motor of an electrical submersible pumping ("ESP") assembly, comprising: assembling a stack of stator laminations in a motor housing, the stack of stator laminations having slots formed therethrough; winding magnet wires through the slots; mixing more parts of rounded, porous ceramic particles to a less parts of a fluoropolymer matrix powder to form a dry mixture; elevating an upperend of the motor housing above a lowerend of the motor housing; pouring the dry mixture into the upper end of the motor housing and down into spaces in the slots between and around the magnet wires; heating the stack of stator laminations to a temperature sufficient to melt the

fluoropolymer matrix powder contained between and around the magnet wires; then cooling the stack of stator laminations causing the melted polymer matrix to form a rigid encapsulate in the slots around the magnet wires; then installing a rotor within the stack of stator laminations and filling the motor housing with a dielectric lubricant to form the motor for the electrical submersible pumping assembly; and infiltrating a portion of the dielectric lubricant into the ceramic particles to enhance heat transfer while the motor is operating.

16. The method according to claim 15, wherein pouring the dry mixture down the spaces in the slots further comprises: vibrating the motor housing.

17. The method according to claim 15, wherein heating the stack of stator laminations comprises heating the motor housing in an oven.

18. The method according to claim 17, further comprising: circulating nitrogen gas through the motor housing while it is being heated.

19. The method according to claim 15, wherein each of the slots has a perimeter; and at least some of the magnet wires are in contact with the perimeter and at least some of the encapsulate is in contact with the perimeter.

20. The method according to claim 15, wherein the ceramic particles are spherical.