What is claimed is:

1. A telechelic polyamide comprising:

a) repeat units derived from polymerizing monomers connected by linkages between the repeat units and functional end groups selected from carboxyl or primary or secondary amine;

b) a polyamide segment comprising at least two amide linkages characterized as being derived from reacting an amine with a carboxyl group, and the polyamide segment comprises repeat units derived from polymerizing dicarboxylic acid monomeric units with monomeric units of at least one other monomer type, wherein at least 50 percent of the dicarboxylic acid monomeric units each contain 34 to 36 carbon atoms, and wherein the at least one other monomer type comprises diamine monomeric units;

c) wherein at least 10% of the total number of the heteroatom containing linkages connecting hydrocarbon type linkages are characterized as being amide; and

d) wherein less than 25% of the amide linkages are characterized as being tertiary amide linkages;

wherein at least 20 mole percent of the telechelic polyamide has exactly two functional end groups of the same functional type comprising amino end groups or carboxylic end groups; and

wherein the telechelic polyamide without solvents has a viscosity of less than 100,000 mPa.s (100,000 cps) at 70°C as measured by a Brookfield circular disc viscometer with the circular disc spinning at 5 rpm.

2. The telechelic polyamide of claim 1, wherein at least 70 mole percent of the telechelic polyamide has exactly two functional end groups of the same functional type selected from the group consisting of amino or carboxylic end groups.

3. The telechelic polyamide of either claim 1 or claim 2, wherein the at least one other monomer type further comprises at least one of lactams or aminocarboxylic acids.

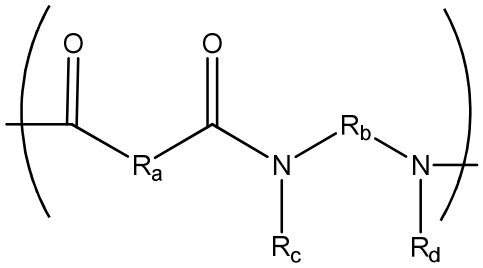
4. The telechelic polyamide of any one of claims 1 to 3, wherein the telechelic polyamide comprises repeat units derived from monomeric units of the dicarboxylic acid monomeric units and at least one of lactam monomeric units, aminocarboxylic acid monomeric units, or diamine monomeric units, such that the amide linkages in the telechelic polyamide comprise at least 50 wt.% of the telechelic polyamide.

5. The telechelic polyamide of any one of claims 1 to 4, wherein the telechelic polyamide comprises repeat units derived from monomeric units of the dicarboxylic acid monomeric units and at least one of lactam monomeric units, aminocarboxylic acid monomeric units, or diamine monomeric units, such that the amide linkages in the telechelic polyamide comprise at least 80 wt.% of the telechelic polyamide.

6. The telechelic polyamide of any one of claims 1 to 5, wherein the dicarboxylic acid monomeric units comprise at least 50 wt.% of the telechelic polyamide.

7. The telechelic polyamide of any one of claims 1 to 6, wherein the dicarboxylic acid monomer units comprise at least 80 wt.% of the telechelic polyamide.

8. The telechelic polyamide of any one of claims 1 to 7, wherein at least 50 wt.% of the polyamide segment comprises repeat units of the structure



wherein R_a is the alkylene portion of the dicarboxylic acid and is a branched alkylene of 34 to 36 carbon atoms, optionally including up to 1 heteroatom per 3 or 10 carbon atoms of the diacid;

wherein R_b is a direct bond or a linear or branched (optionally being or including cyclic, heterocyclic, or aromatic portion(s)) alkylene group (optionally containing up to 1 or 3 heteroatoms per 10 carbon atoms) of 2 to 60 carbon atoms; and

wherein R_c and R_d are individually hydrogen, a linear or branched alkyl group of 1 to 8 carbon atoms, or R_c and R_d connect together to form a single linear or branched alkylene group of 1 to 8 carbon atoms or optionally with one of R_c and R_d is connected to R_b at a carbon atom.

9. The telechelic polyamide of any one of claims 1 to 8, wherein the polyamide segment has two carboxyl end groups and is further reacted with a polyether molecule having one

terminal amine and one terminal hydroxyl group or two terminal hydroxyl groups to provide endblocks for the telechelic polyamide, the telechelic polyamide after adding the endblocks having at least 80 mole % terminal primary or secondary hydroxyl end groups.

10. The telechelic polyamide of any one of claims 1 to 9, having functional end groups, wherein at least 80 mole % of the functional end groups are primary amine groups.

11. The telechelic polyamide of any one of Claims 1 to 10, wherein the telechelic polyamide without solvents has a viscosity of less than 100,000 mPa.s (100,000 cps) at 60°C as measured by a Brookfield circular disc viscometer with the circular disc spinning at 5 rpm.

12. The telechelic polyamide of any one of claims 1 to 11, wherein the telechelic polyamide further comprises at least one oligomer segment selected from the group of a polyester segment, a polyether segment, and a polycarbonate segment.

13. The telechelic polyamide of any one of claims 1 to 8, wherein the polyamide segment has two carboxyl end groups and is further reacted with an amino alcohol having 3 to 16 carbon atoms and having one secondary amine group and one hydroxyl group to provide hydroxyl terminal groups for the telechelic polyamide.