We Claim:

1. A polyamide composition comprising:

from 45 wt% to 95 wt% of polyamide polymer comprising PA10, PA11, PA12, PA6,6, PA6,9, PA6,10, PA6,11, PA6,12, PA6,13, PA6,14, PA6,15, PA6,16, PA6,17, PA6,18, PA10,10, PA10,12, PA12,12, PA9T, PA10T, PA11T, PA12T, PA6T/66, PA6T/6I, PA6T/6I/66, PA6T/DT, PA6,T/6,10, PA6,T/6,12, PA6,T/6,13, PA6,T/6,14, PA6,T/6,15, PA6,T/6,16, PA6,T/6,17, PA6,T/6,18, PA6,C/6,10, PA6,C/6,12, PA6,C/6,13, PA6,C/6,14, PA6,C/6,15, PA6,C/6,16, PA6,C/6,17, or PA6,C/6,18, or combinations thereof;

from 5 wt% to 55 wt% of a dimer modifier comprising a C_{18-44} dimer acid or a C_{18-44} dimer amine or a combination thereof;

wherein the polyamide composition has:

a number average molecular weight of the polyamide polymer is less than 30,000 g/mol;

a chemical resistance, as measured by exposure to HCl (10%) for 14 days at 58 °C, resulting in a weight loss of less than 3.0 wt%; and

a moisture uptake of less than about 2.0 wt% moisture at 95% RH.

2. The polyamide composition of claim 1, wherein the polyamide polymer comprises PA6,10, PA6,12, or combinations thereof.

3. The polyamide composition of claim 1, wherein the polyamide composition comprises a single modifier comprising either a single dimer acid or a single dimer amine.

4. The polyamide composition of claim 1, wherein the polyamide composition has a melting temperature from 165ºC to 270ºC.

5. The polyamide composition of claim 1, wherein the polyamide composition comprises from 20 wt% to 45 wt% of the modifier.

6. The polyamide composition of claim 1, wherein the polyamide composition has a methyl/amide ratio ranging from 6:1 to 15:1.

7. The polyamide composition of claim 1, wherein the number average molecular weight of the polyamide polymer ranges from 10,000 g/mol to 25,000 g/mol.

8. The polyamide composition of claim 1, wherein the polyamide polymer has an amine end group content ranging from 10 microeq/g to 110 microeq/g.

9. The polyamide composition of claim 1, further comprising at least one of:

glass fibers present in an amount greater than 5 wt%;

a lubricant present in an amount greater than 0.3 wt%; and

an impact modifier present in an amount greater than 3 wt%.

10. The polyamide composition of claim 1, wherein the polyamide polymer comprises PA6,12, and the dimer modifier is present in an amount ranging from 15 wt% to 50 wt%, wherein one of either:

the dimer modifier is a single dimer amine and the polyamide composition demonstrates a tensile elongation of at least 50%; and,

the dimer modifier is a single dimer acid and the polyamide composition demonstrates a tensile elongation of at least 20%.

11. The polyamide composition of claim 1, wherein the polyamide polymer comprises PA6,12, the dimer modifier is a single dimer amine present in an amount ranging from 35 wt% to 55 wt%, and wherein the polyamide composition demonstrates a notched Charpy impact energy loss at 23 °C that is greater than 4.5 kJ/m^2.

12. The polyamide composition of claim 1, wherein the polyamide polymer comprises PA6,12, the dimer modifier is in an amount of about 20 wt%, and wherein the polyamide composition demonstrates a notched Charpy impact energy loss at 23 °C that is greater than 3.5 kJ/m^2, a tensile strength greater than 50 MPa, and a tensile modulus greater than 1950 MPa.

13. A molded or extruded article comprising:

a polyamide composition comprising:

from 45 wt% to 95 wt% of polyamide polymer comprising PA10, PA11, PA12, PA6,6, PA6,9, PA6,10, PA6,11, PA6,12, PA6,13, PA6,14, PA6,15, PA6,16, PA6,17, PA6,18, PA10,10, PA10,12, PA12,12, PA9T, PA10T, PA11T, PA12T, PA6T/66, PA6T/6I, PA6T/6I/66, PA6T/DT, PA6,T/6,10, PA6,T/6,12, PA6,T/6,13, PA6,T/6,14, PA6,T/6,15, PA6,T/6,16, PA6,T/6,17, PA6,T/6,18, PA6,C/6,10, PA6,C/6,12, PA6,C/6,13, PA6,C/6,14, PA6,C/6,15, PA6,C/6,16, PA6,C/6,17, or PA6,C/6,18, or combinations thereof;

from 5 wt% to 55 wt% of a modifier comprising a C_{18-44} dimer acid or a C_{18-44} dimer amine or a combination thereof;

wherein the molded or extruded article composition has:

a number average molecular weight of the polyamide polymer is less than 30,000 g/mol;

a chemical resistance, as measured by exposure to HCl (10%) for 14 days at 58 °C, resulting in a weight loss of less than 3.0 wt%; and

a moisture uptake of less than about 2.0 wt% moisture at 95% RH.

14. A process for preparing a polyamide composition comprising:

preparing a high solids monomer solution in aqueous salts, wherein solid content of the high solids monomer solution is greater than 80%;

evaporating the high solids monomer solution in an evaporator to form a polyamide polymer, wherein starting concentrations are greater than 40wt%; and,

adding a modifier comprising a C_{18-44} dimer acid or a C_{18-44} dimer amine or a combination thereof to form a single mixture, wherein the modifier bypasses the evaporator;

wherein the polyamide composition demonstrates:

a number average molecular weight of the polyamide polymer is less than 30,000 g/mol;

a chemical resistance, as measured by exposure to HCl (10%) for 14 days at 58 °C, resulting in a weight loss of less than 3.0 wt%; and

a moisture uptake of less than about 2.0 wt% moisture at 95% RH.

15. An extruded article comprising the polyamide composition of any one of claims 1-12.