

We Claim:

1. A heat-stabilized polyamide composition comprising:
from 25 wt% to 99 wt% of an amide polymer having an amine end group level greater than 50 $\mu\text{eq/gram}$;
a first stabilizer comprising a lanthanoid-based compound;
a second stabilizer; and
from 0 wt% to 65 wt% filler;
wherein, when heat aged for 3000 hours over a temperature range of from 190°C to 220°C, the polyamide composition demonstrates a tensile strength retention of greater than 51%, as measured at 23°.
2. The polyamide composition of claim 1, wherein, when heat aged for 2500 hours over a temperature range of from 190°C to 220°C, the polyamide composition demonstrates a tensile strength retention of greater than 59%, as measured at 23°C.
3. The polyamide composition of claim 1, wherein, when heat aged for 3000 hours over a temperature range of from 190°C to 220°C, the polyamide composition demonstrates a tensile strength of greater than 102 MPa, as measured at 23°C.
4. The polyamide composition of claim 1, wherein, when heat aged for 2500 hours over a temperature range of from 190°C to 220°C, the polyamide composition demonstrates a tensile strength of greater than 119 MPa, as measured at 23°C.
5. The polyamide composition of claim 1, wherein, when heat aged for 3000 hours over a temperature range of from 190°C to 220°C, the polyamide composition demonstrates a tensile modulus of greater than 11110 MPa, as measured at 23°C.
6. The polyamide composition of claim 1, wherein, when heat aged for 3000 hours over a temperature range of from 190°C to 220°C, the polyamide composition demonstrates an impact resilience of greater than 17 kJ/m^2 , as measured at 23°C.

7. The polyamide composition of claim 1, wherein, when heat aged for 2500 hours at a temperature of 210°C; the polyamide composition demonstrates a tensile strength greater than 99 MPa, as measured at 23°C.
8. The polyamide composition of claim 1, wherein, when heat aged for 3000 hours at a temperature of 210°C; the polyamide composition demonstrates a tensile strength greater than 82 MPa, as measured at 23°C.
9. The polyamide composition of claim 1, wherein, when heat aged for 2500 hours at a temperature of 210°C; the polyamide composition demonstrates a tensile strength retention greater than 50%, as measured at 23°C.
10. The polyamide composition of claim 1, wherein, when heat aged for 3000 hours at a temperature of 210°C; the polyamide composition demonstrates a tensile strength retention greater than 41%, as measured at 23°C.
11. The polyamide composition of claim 1, wherein, when heat aged for 2500 hours at a temperature of 210°C; the polyamide composition demonstrates an impact resilience greater than 17 kJ/m², as measured at 23°C.
12. The polyamide composition of claim 1, wherein, when heat aged for 3000 hours at a temperature of 210°C; the polyamide composition demonstrates an impact resilience greater than 13 kJ/m², as measured at 23°C.
13. The polyamide composition of claim 1, wherein, when heat aged for 3000 hours at a temperature of 190°C; the polyamide composition demonstrates an impact resilience greater than 17 kJ/m², as measured at 23°C.
14. The polyamide composition of claim 1, further comprising from 1 ppm to 1 wt% cyclopentanone.

15. The polyamide composition of claim 1, wherein the amide polymer has an amine end group level ranging from 60 $\mu\text{eq/gram}$ to 105 $\mu\text{eq/gram}$.
16. The polyamide composition of claim 1, comprising at least 1 wppm amine/metal complex.
17. The polyamide composition of claim 1, wherein the composition comprises halide and the weight ratio of the first heat stabilizer to the halide ranges from 0.1 to 25.
18. The polyamide composition of claim 1, wherein the second heat stabilizer comprises a copper-based compound and wherein the second heat stabilizer is present in an amount ranging from 0.01 wt% to 5 wt%.
19. The polyamide composition of claim 1, wherein the lanthanoid-based heat stabilizer is a cerium-based heat stabilizer and wherein the lanthanoid-based heat stabilizer is present in an amount ranging from 0.01 wt% to 10 wt%.
20. The polyamide composition of claim 1, wherein the composition comprises an additional polyamide.
21. The polyamide composition of claim 1, wherein the lanthanoid-based compound comprises a lanthanoid ligand selected from the group consisting of acetates, hydrates, oxyhydrates, phosphates, bromides, chlorides, oxides, nitrides, borides, carbides, carbonates, ammonium nitrates, fluorides, nitrates, polyols, amines, phenolics, hydroxides, oxalates, oxyhalides, chromoates, sulfates, or aluminates, perchlorates, the monochalcogenides of sulphur, selenium and tellurium, carbonates, hydroxides, oxides, trifluoromethanesulphonates, acetylacetonates, alcoholates, 2-ethylhexanoates, or combinations thereof.
22. The polyamide composition of claim 1, wherein the first stabilizer is a lanthanoid-based compound and the second stabilizer is a copper-based compound; and wherein, when heat aged

for 2500 hours at a temperature of 220°C, the polyamide composition demonstrates a tensile strength greater than 99 MPa and a tensile strength retention greater than 50%.

23. The polyamide composition of claim 1, wherein:

the amide polymer has an amine end group level greater than 65 µeq/gram;

the lanthanoid-based compound comprises cerium oxide, cerium oxyhydrate, or cerium hydrate, or combinations thereof and wherein the polyamide composition has a cerium content ranging from 10 ppm to 9000 ppm;

the second heat stabilizer comprises a copper-based compound;

the polyamide composition comprises at least 1 wppm amine/cerium/copper complex;

when heat aged for 2500 hours over a temperature range of from 190°C to 220°C, the polyamide composition demonstrates a tensile strength retention of greater than 59%, as measured at 23°C; and

when heat aged for 3000 hours over a temperature range of from 190°C to 220°C, the polyamide composition demonstrates an impact resilience of greater than 17 kJ/m², as measured at 23°C.

24. The polyamide composition of claim 1, wherein:

the amide polymer has an amine end group level greater than 65 µeq/gram

the amide polymer comprises PA-6,6;

the composition further comprises an additional polyamide;

the lanthanoid-based compound comprises a cerium-based compound;

the second heat stabilizer comprises a copper-based compound; and

when heat aged for 3000 hours at a temperature of 210°C; the polyamide composition demonstrates a tensile strength greater than 82 MPa, as measured at 23°C;

when heat aged for 3000 hours at a temperature of 210°C; the polyamide composition demonstrates a tensile strength retention greater than 41%, as measured at 23°C; and

when heat aged for 3000 hours at a temperature of 210°C; the polyamide composition demonstrates an impact resilience greater than 13 kJ/m², as measured at 23°C.

25. An automotive part comprising the heat-stabilized polyamide composition of claim 1, wherein, when heat aged for 3000 hours at a temperature of 210°C, the automotive part demonstrates an impact resilience greater than 13 kJ/m², as measured at 23°C.

26. An article for use in high temperature applications, wherein the article is formed from the heat-stabilized polyamide composition of claim 1, wherein the article is used for fasteners, circuit breakers, terminal blocks, connectors, automotive parts, furniture parts, appliance parts, cable ties, sports equipment, gun stocks, window thermal breaks, aerosol valves, food film packaging, automotive/vehicle parts, textiles, industrial fibers, carpeting, or electrical/electronic parts.