What is claimed is:

1. A thermally conductive polymer compound, comprising:

(a) polyamide,

(b) pitch-based carbon fiber,

(c) boron nitride, and

(d) a non-halogenated organic phosphinate,

wherein the compound has an in-plane thermal conductivity of more than 8 W/mK as measured using ASTM E1461.

2. The compound of Claim 1, wherein the polyamide is polyamide 6.

3. The compound of Claim 1 or Claim 2, wherein the boron nitride is hexagonal boron nitride.

4. The compound of Claim 1 or Claim 2 or Claim 3, further comprising an additive selected from the group consisting of adhesion promoters; biocides; anti-fogging agents; anti-static agents; bonding, blowing and foaming agents; dispersants; fillers and extenders; smoke suppressants; impact modifiers; initiators; lubricants; micas; pigments, colorants and dyes; plasticizers; processing aids; release agents; silanes, titanates and zirconates; slip and anti-blocking agents; stabilizers; stearates; ultraviolet light absorbers; viscosity regulators; waxes; catalyst deactivators, and combinations of them.

5. The compound of any of the above claims, wherein the compound has ingredients in amounts expressed in weight percent:

Polyamide Matrix	20 - 45
Boron Nitride	15 - 45
Pitch-based Carbon	10 - 30

Fiber	
Non-halogenated Flame Retardant	10 - 35
Optional Other Additives	0 - 20

6. The compound of any of the above claims, wherein the compound has ingredients in amounts expressed in weight percent:

Polyamide Matrix	25 - 40
Boron Nitride	20 - 40
Pitch-based Carbon Fiber	15 - 25
Non-halogenated Flame Retardant	15 - 25
Optional Other Additives	0.2 -15

7. The compound of any of the above claims, wherein the compound has ingredients in amounts expressed in weight percent:

Polyamide Matrix	27 – 37
Boron Nitride	25 - 35
Pitch-based Carbon Fiber	18 - 22
Non-halogenated Flame Retardant	15 - 20
Optional Other Additives	0.2 -10

8. A molded article made from the compound of any of Claims 1-7.

9. An extruded article made from the compound of any of Claims 1-7.

10. A method of using the compound of Claim 1, wherein the compound is extruded or molded into an article designed to contact a headed object and conduct that heat away from that object or contact a heated object and conduct that heat toward a second object that needs heat also.

11. The method of Claim 10, wherein the polyamide of the compound is polyamide 6.

12. The method of Claim 10, wherein the boron nitride of the compound is hexagonal boron nitride.

Claims

1. A thermally conductive polymer compound, comprising:

(a) polyamide,

(b) pitch-based carbon fiber,

(c) boron nitride, and

(d) a non-halogenated organic phosphinate,

wherein the compound has an in-plane thermal conductivity of more than 8 W/mK as measured using ASTM E1461.

2. The compound of Claim 1, wherein the polyamide is polyamide 6.

3. The compound of Claim 1, wherein the boron nitride is hexagonal boron nitride.

4. The compound of Claim 1, further comprising an additive selected from the group consisting of adhesion promoters; biocides; anti-fogging agents; anti-static agents; bonding, blowing and foaming agents; dispersants; fillers and extenders; smoke suppressants; impact modifiers; initiators; lubricants; micas; pigments, colorants and dyes; plasticizers; processing aids; release agents; silanes, titanates and zirconates; slip and anti-blocking agents; stabilizers; stearates; ultraviolet light absorbers; viscosity regulators; waxes; catalyst deactivators, and combinations of them.

5. The compound of Claim 1, wherein the compound has ingredients in amounts expressed in weight percent:

Polyamide Matrix	20 - 45
Boron Nitride	15 - 45
Pitch-based Carbon Fiber	10 - 30
Non-halogenated Flame Retardant	10 - 35
Optional Other Additives	0 - 20

6. The compound of Claim 1, wherein the compound has ingredients in amounts expressed in weight percent:

Polyamide Matrix	25 - 40
Boron Nitride	20 - 40
Pitch-based Carbon Fiber	15 - 25
Non-halogenated Flame Retardant	15 - 25
Optional Other Additives	0.2 -15

7. The compound of Claim 1, wherein the compound has ingredients in amounts expressed in weight percent:

Polyamide Matrix	27 – 37
Boron Nitride	25 - 35
Pitch-based Carbon Fiber	18 - 22
Non-halogenated Flame Retardant	15 - 20
Optional Other Additives	0.2 -10

8. A molded article made from the compound of Claim 1.

9. An extruded article made from the compound of Claim 1.

10. A method of using the compound of Claim 1, wherein the compound is extruded or molded into an article designed to contact a heated object and conduct that heat away from that object or contact a heated object and conduct that heat toward a second object that needs heat also.

11. The method of Claim 10, wherein the polyamide of the compound is polyamide 6.

12. The method of Claim 10, wherein the boron nitride of the compound is hexagonal boron nitride.