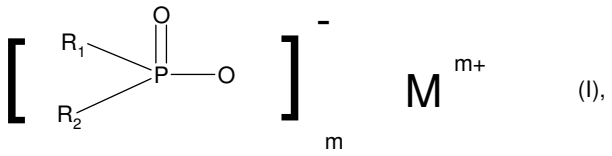
Patent claims

1. A flame-retardant polyamide composition having a heat deflection temperature HDT-A of not less than 280°C, comprising

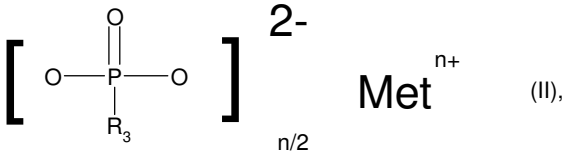
- polyamide having a melting point of not less than 290°C as component A, wherein said component A is an aromatic or semiaromatic polyamide or a mixture of two or more aromatic or semiaromatic polyamides.
- fillers and/or reinforcers as component B,
- phosphinic salt of the formula (I) as component C



(I),

in which $R_1$ and $R_2$ are ethyl,
M is Al, Fe, $TiO_p$ or Zn,
m is 2 to 3, and
$p = (4 - m) / 2$

- compound selected from the group of the Al, Fe, $TiO_p$ and Zn salts of ethylbutylphosphinic acid, of dibutylphosphinic acid, of ethylhexylphosphinic acid, of butylhexylphosphinic acid and/or of dihexylphosphinic acid as component D, and
- phosphonic salt of the formula (II) as component E



(II),

in which $R_3$ is ethyl,
Met is Al, Fe, $TiO_q$ or Zn,
n is 2 to 3, and
$q = (4 - n) / 2$.

2. The flame-retardant polyamide composition as claimed in claim 1 wherein M and Met are Al, m and n are 3, and component D is an aluminum salt.

3. The flame-retardant polyamide composition as claimed in at least one of claims 1 and 2, wherein

- the proportion of component A is 25% to 95% by weight,
- the proportion of component B is 1% to 45% by weight,
- the proportion of component C is 1% to 35% by weight,
- the proportion of component D is 0.01% to 3% by weight, and
- the proportion of component E is 0.001% to 1% by weight,

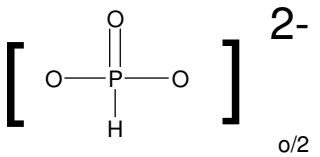
where the percentages are based on the total amount of the polyamide composition.

4. The flame-retardant polyamide composition as claimed in claim 3, wherein

- the proportion of component A is 25% to 75% by weight,
- the proportion of component B is 20% to 40% by weight,
- the proportion of component C is 5% to 20% by weight,
- the proportion of component D is 0.05% to 1.5% by weight, and
- the proportion of component E is 0.01% to 0.6% by weight, wherein the sum of each component is less than or equals to 100% by weight.

5. The flame-retardant polyamide composition as claimed in at least one of claims 1 to 4, wherein the polyamide composition comprises inorganic phosphonate as further component F.

6. The flame-retardant polyamide composition as claimed in claim 5, wherein the inorganic phosphonate is a compound of the formula (III)




(III),

in which Me is Fe, $TiO_r$, Zn or especially Al,

o is 2 to 3, and

r = (4 – o) / 2, in which

the amount of the compound of the formula (III) is 0.005% to 10% by weight, especially 0.02% to 5% by weight, based on the total amount of the polyamide composition.

7. The flame-retardant polyamide composition as claimed in at least one of claims 1 to 6, which has a comparative tracking index measured by International Electrotechnical Commission Standard IEC-60112/3 of not less than 500 volts.

8. The flame-retardant polyamide composition as claimed in at least one of claims 1 to 7, which attains a V-0 assessment according to UL94 from thickness 3.2 mm to 0.4 mm.

9. The flame-retardant polyamide composition as claimed in at least one of claims 1 to 8, which has a glow wire flammability index according to IEC-60695-2-12 of not less than 960°C at thickness 0.75-3 mm.

10. The flame-retardant polyamide composition as claimed in at least one of claims 1 to 9, which has a heat deflection temperature HDT-A according to DIN EN ISO 75-3 of at least 300°C.

~~11. The flame-retardant polyamide composition as claimed in at least one of claims 1 to 10, wherein component A is an aromatic or semiaromatic polyamide or a mixture of two or more aromatic or semiaromatic polyamides or a mixture of nylon-6,6 and one or more aromatic or semiaromatic polyamides.~~

~~12. The flame-retardant polyamide composition as claimed in claim 11, wherein component A is an aromatic or semiaromatic polyamide or a mixture of two or more aromatic or semiaromatic polyamides.~~

~~13~~11. The flame-retardant polyamide composition as claimed in at least one of claims 1 to ~~12~~10, wherein glass fibers are used as component B.

~~14~~12. The flame-retardant polyamide composition as claimed in at least one of claims 1 to ~~13~~11, wherein components C, D, E and optionally F are in particulate form, where the median particle size $d_{50}$ of these components is 1 to 100 µm.

~~15~~13. The flame-retardant polyamide composition as claimed in at least one of claims 1 to ~~14~~12, which comprises further additives as component G, where the further additives are selected from the group consisting of antioxidants, UV stabilizers, gamma ray stabilizers, hydrolysis stabilizers, costabilizers for antioxidants, antistats, emulsifiers, nucleating agents, plasticizers, processing auxiliaries, impact modifiers, dyes, pigments and/or further flame retardants other than components C, D, E and F.

~~16~~14. The use of the polyamide compositions as claimed in any of claims 1 to ~~15~~ 13 for production of fibers, films and shaped bodies, especially for applications in the electricals and electronics sector.