

CLAIMS

1. An article formed from a polymer composition in molten form comprising polyamide
 5 10,6, said polyamide 10,6 having a number-average molecular weight of greater than
 12 000 g/mol and representing at least 70% by weight relative to the total weight of
 polymer in said polymer composition.

2. The article as claimed in claim 1, characterized in that the number-average molecular
 10 weight of the polyamide (expressed in g/mol) is calculated by the equation

$$Mn = \frac{2\,000\,000}{\sum_i GT_i - \sum_j (f_j - 2) \times P_j}, \text{ wherein } GT_i \text{ is the concentration (expressed in}$$

meq/kg of polymer) of end groups of type i of the polyamide, and P_j is the
 concentration of polyfunctional species j (expressed in meq/kg of polyamide) of
 functionality f_j , this functionality being equal to the number of reactive functions per
 15 polyfunctional species, and wherein the GT_i and P_j are determined, depending on the
 nature of the species i and j as explained in the description, by potentiometry or by
 the ratio between the initial molar amount of the species introduced into the
 polymerization and the amount by weight of polyamide produced.

20 3. The article as claimed in claim 1 or 2, characterized in that the polyamide 10,6 is the
 only polymer present in the polymer composition.

4. The article as claimed in any one of claims 1 to 3, characterized in that said polymer
 composition has a number-average molecular weight of greater than 15 000 g/mol.

25 5. The article as claimed in any one of claims 1 to 4, characterized in that the polymer
 composition comprises at least one heat, light or ultraviolet stabilizer.

6. The article as claimed in claim 5, characterized in that the heat, light or ultraviolet
 30 stabilizer is selected from: copper compounds such as CuI/KI mixtures, phosphites,
 hindered amines, hindered phenol compounds, polyhydric alcohols, elemental iron,
 zinc oxide and mixtures thereof in any proportion.

7. The article as claimed in either one of claims 5 and 6, characterized in that the heat,
 35 light or ultraviolet stabilizer represents between 0.02% and 5% by weight of the total
 weight of the polymer composition.

8. The article as claimed in any one of claims 1 to 7, characterized in that it is a molded or extruded article.
- 5 9. The article as claimed in claim 8, characterized in that it is an article molded by injection molding, injection blow molding, rotomolding, or by impregnation of a glass fiber or carbon fiber fabric.
- 10 10. The article as claimed in claim 8, characterized in that it is an extruded or extruded-blow molded article selected from: a hollow body, a tube, a strip, a film, a fiber, a yarn or a filament.
- 15 11. A woven, nonwoven or knitted part comprising at least one fiber, one yarn or one filament as claimed in claim 10.
12. A process for preparing an article as defined in any one of claims 1 to 10, characterized in that it comprises the following steps:
- 20 a. in a reactor, adipic acid, 1,10-diaminodecane and water are mixed in order to obtain an aqueous solution of 1,10-decamethylene diammonium adipate salt at a concentration by weight ranging from 30% to 85%,
- b. the decamethylene diammonium adipate salt solution resulting from step a. is polymerized by polycondensation,
- c. optionally, the polymer obtained in step b. is granulated,
- 25 d. optionally, the granules of polymer resulting from step c. are remelted with polymeric or non-polymeric fillers and/or additives,
- e. optionally, the polymer composition formed in step d. is granulated,
- f. the polymer composition in molten form is shaped.
- 30 13. The process as claimed in claim 12, wherein, in step a., the aqueous solution of 1,10-decamethylene diammonium adipate salt has a concentration by weight of between 50% and 60%.

CLAIMS

1. A molded or extruded article formed from a polymer composition in molten form comprising polyamide 10,6, said polyamide 10,6 comprising at least 90 mol% of 10,6 units obtained by reaction between 1,10-decanediamine and adipic acid and having a number-average molecular weight of greater than 12 000 g/mol and representing at least 70% by weight relative to the total weight of polymer in said polymer composition, characterized in that the number-average molecular weight of the polyamide (expressed in g/mol) is calculated by the equation

$$Mn = \frac{2\,000\,000}{\sum_i GT_i - \sum_j (f_j - 2) \times P_j},$$

wherein GT_i is the concentration (expressed in meq/kg of polymer) of end groups of type i of the polyamide, and P_j is the concentration of polyfunctional species j (expressed in meq/kg of polyamide) of functionality f_j , this functionality being equal to the number of reactive functions per polyfunctional species, and wherein the GT_i and P_j are determined, depending on the nature of the species i and j , by potentiometry or by the ratio between the initial molar amount of the species introduced into the polymerization and the amount by weight of polyamide produced, and wherein:

 - a) when the species i is an amine or a carboxylic acid, the GT_i values are determined by potentiometry;
 - b) when the species i is a chain limiter and for all the polyfunctional species j , GT_i and P_j are determined by the ratio between the initial molar amount of the species introduced into the polymerization reactor and the amount by weight of polyamide produced.
2. The article as claimed in claim 1, characterized in that the polyamide 10,6 is the only polymer present in the polymer composition.
3. The article as claimed in claim 1 or claim 2, characterized in that said polymer composition has a number-average molecular weight of greater than 15 000 g/mol.
4. The article as claimed in any one of claims 1 to 3, characterized in that the polymer composition comprises at least one heat, light or ultraviolet stabilizer.
5. The article as claimed in claim 4, characterized in that the heat, light or ultraviolet stabilizer is selected from: copper compounds such as CuI/KI mixtures, phosphites,

hindered amines, hindered phenol compounds, polyhydric alcohols, elemental iron, zinc oxide and mixtures thereof in any proportion.

- 5 6. The article as claimed in claim 4 or claim 5, characterized in that the heat, light or ultraviolet stabilizer represents between 0.02% and 5% by weight of the total weight of the polymer composition.
- 10 7. The article as claimed in claim 1, characterized in that it is an article molded by injection molding, injection blow molding, rotomolding, or by impregnation of a glass fiber or carbon fiber fabric.
- 15 8. The article as claimed in claim 1, characterized in that it is an extruded or extruded-blow molded article selected from: a hollow body, a tube, a strip, a film, a fiber, a yarn or a filament.
- 20 9. A woven, nonwoven or knitted part comprising at least one fiber, one yarn or one filament as claimed in claim 8.
- 25 10. A process for preparing an article as defined in any one of claims 1 to 8, characterized in that it comprises the following steps:
 - a. in a reactor, adipic acid, 1,10-diaminodecane and water are mixed in order to obtain an aqueous solution of 1,10-decamethylene diammonium adipate salt at a concentration by weight ranging from between 50% to 60%,
 - b. the decamethylene diammonium adipate salt solution resulting from step a. is polymerized by polycondensation,
 - c. optionally, the polymer obtained in step b. is granulated,
 - d. optionally, the granules of polymer resulting from step c. are remelted with polymeric or non-polymeric fillers and/or additives,
 - e. optionally, the polymer composition formed in step d. is granulated,
 - 30 f. the polymer composition in molten form is shaped.