Due to their production, injection molded parts usually comprise weld lines (seams). In these weld lines two melt strands of the polymer meet each other, and there is practically no reinforcement by fibres. In addition, the interaction in the polymer matrix is disturbed in this area. Therefore, weld lines are a point of mechanical weakness and usually also show reduced chemical resistance.

It is the object of the present invention to provide a polyamide molding composition that allows the production of molded articles, which do not have this weak point or only have it to a lesser extent.

It was now surprisingly found that this object is achieved if a small amount of a low-melting semi-aromatic polyamide is added to a major amount of a high-melting semi-aromatic polyamide, and the resulting polyamide mixture is used for the production of reinforced polyamide molding materials.

SUMMARY OF THE DISCLOSURE

In a first aspect, there is provided a polyamide mixture comprising:

- 80 to 97% by weight of at least one polyamide A), containing repeat units derived from at least one aromatic dicarboxylic acid and at least one aliphatic diamine, wherein the at least one aromatic dicarboxylic acid comprises or consists of terephthalic acid, having a melting temperature T_{m1}, and

- 3 to 20% by weight of at least one polyamide B), containing repeat units derived from at least one aromatic dicarboxylic acid and at least one aliphatic diamine, wherein the at least one aromatic dicarboxylic acid comprises or consists of terephthalic acid, having a melting temperature T_{m2},

wherein T_{m1} is at least 10°C higher than T_{m2}.

In a second aspect, there is provided a polyamide molding composition comprising

i) 25 to 100% by weight of at least one polyamide mixture as defined above,
ii) 0 to 75% by weight of at least one filler and reinforcing material,
iii) 0 to 50% by weight of at least one additive,

where components i) to iii) together add up to 100% by weight.

In a third aspect, there is provided a process for producing a polyamide molding composition, comprising mixing a polyamide composition comprising at least one polyamide A) and a polyamide composition comprising at least one polyamide B), as defined above, to give a dry blend, wherein the polyamide compositions optionally contain at least one filler and reinforcing material and optionally at least one additive different from fillers and reinforcing materials.

In a fourth aspect, there is provided a process for producing a polyamide molding composition, comprising melt-blending at least one polyamide A) and at least one polyamide B), as defined above, optionally at least one filler and reinforcing material and optionally at least one additive different from fillers and reinforcing materials.

In a fifth aspect, there is provided a molded article produced from a polyamide molding composition as defined above or prepared by the process as defined above.

In a sixth aspect, there is provided a process for producing a molded article by subjecting a polyamide molding composition as defined above or prepared by the process as defined above to an injection molding.

In a seventh aspect, there is provided the use of a polyamide mixture as defined above or of a molding composition as defined above for production of a molded article with improved mechanical properties, in particular with improved weld line strength.

DESCRIPTION OF THE INVENTION

Polyamide mixture

The polyamide mixture (polymer blend) according to the invention is based on a physical mixture of the at least one polyamide A) and the at least one polyamide B). The two components can be blended on a macroscopic scale or on a molecular scale. A simple embodiment of a polyamide mixture on a macroscopic scale is a physical mixture of polyamide granules or pellets comprising at least one polyamide A) and at least one polyamide B). For preparing a polyamide mixture on a molecular scale the at least one polyamide A) and the at least one polyamide B) can be compounded by known methods, by mixing or/and blending the polyamides and optionally filler and reinforcing materials and/or additives in a molten state. Suitable compounders are co-kneaders and twin screws (co- and counter rotating) as well internal mixers.

The blends of the at least one polyamide A) and the at least one polyamide B) are generally miscible. Therefore, it is possible to prepare polyamide mixtures according to the invention that are homogeneous according to DSC analysis. The corresponding