molding compositions may occur which can have negative consequences on the flame retardant properties of the flame retardant polymeric molding compositions.

CN-A-104059101A describes the advantageous effect of adding process aids to the production of dialkylphosphinic acid salts on the flowability, namely the angle of repose. The shortcoming of this method is that the addition of process aids to the production can have wide spread negative consequences on other product properties, adds a lot of more complexity to the production process and can even contribute security hazards.

Surprisingly, it was found that addition of a small amount of additives can have advantageous effects on the flowability of the flame retardant without the need to change the whole production process. Furthermore the possibility to use the additive in different amounts offers great flexibility in choosing the desired flowability.

It is therefore an object of the present invention to provide flame retardant combinations for thermoplastics, said flame retardant combinations, in addition to flame retardancy, exerting high flowability. This object is achieved by the addition of telomeric phosphinic acid salts, organo phosphonic acid salts and/or phosphonic acid salts to phosphinic acid salts.

The obtained flame retardant-stabilizer combination of the present invention is prepared by adding one or more components defined above to phosphinic acid salts. The flame retardant-stabilizer combination according to the present invention shows a high flowability, and the angle of repose is up to 5°- 45°, so that it can fundamentally solve the problems of poor flowability and uneven distribution of flame retardants in resins.

Summary

In one aspect, there is provided a flame retardant-stabilizer combination for thermoplastic polymers, comprising, as component A, from 25 to 99.9 % by weight

of a phosphinic acid salt of the formula (I)

wherein,

R^1, R^2 are the same or different and are each C_1-C_{18}-alkyl, linear or branched, C_6-C_{18}-aryl, C_7-C_{18}-arylalkyl or C_7-C_{18}-alkylaryl, or R^1 and R^2 form one or more rings with each other,

M is Mg, Ca, Al, Sb, Sn, Ge, Ti, Zn, Fe, Zr, Ce, Bi, Sr, Mn, Li, Na, K and/or a protonated nitrogen base;

m is from 1 to 4;

as component B, from 0 to 75% by weight of a synergist or of a phosphorus/nitrogen flame retardant and,

as component C, from 0.1 to 30 % by weight of telomeric phosphinic acid salts

as component D, from 0 to 20 % by weight of organo phosphonic acid salt,.

as component E, from 0 to 5 % by weight of phosphonic acid salt, the sum of the components always being 100 % by weight, and wherein the angle of repose of said flame retardant-stabilizer combination is between 5° and 45°.

In another aspect, there is provided the use of the flame retardant-stabilizer combination as described herein, as a flame retardant or as an intermediate for preparation of flame retardants for thermoplastic polymers, for thermoset polymers, for clearcoats, for intumescent coatings, for wood and other cellulosic products, for polymer shaped body, film, thread or fiber, for production of flame-retardant polymer molding compositions, for production of flame-retardant polymer moldings and/or for rendering pure and blended polyester and cellulose fabrics flame-retardant by impregnation.

In another aspect, there is provided a flame-retardant plastics molding composition, polymer shaped body, film, thread or fiber comprising the flame retardant-stabilizer combination as described herein.

The invention therefore provides a flame retardant-stabilizer combination for thermoplastic polymers, comprising, as component A, from 25 to 99.9 % by weight of a phosphinic acid salt of the formula (I)