$[Al_2(HPO_3)_3*4aq]$, aluminum phosphonate, $Al_7(HPO_3)_9(OH)_6$(1,6-hexanediamine)$_{1.5}*12H_2O$, $Al_2(HPO_3)^{3}*xAl_2O_3*nH_2O$ where x = 2.27 - 1 and/or $Al_4H_6P_{16}O_{18}$.

Preferably, in the aluminum phosphite of the formula (I),

q is 0.01 to 0.1.

Preferably, in the aluminum phosphite of the formula (II),

z is 0.15 to 0.4

y is 2.80 to 3

v is 0.1 to 0.4 and

w is 0.01 to 0.1.

Preferably, in the aluminum phosphite of the formula (III),

u is 2.834 to 2.99

t is 0.332 to 0.03 and

s is 0.01 to 0.1.

The invention also relates to flame retardant mixtures as ~~claimed in one or more of claims 1 to 9~~defined herein, comprising 0.1 to 99.9% by weight of flame retardant and 0.1 to 99.9% by weight of aluminum phosphites of the formulae (I), (II) and/or (III) and/or mixtures of aluminum phosphite of the formula (I) with sparingly soluble aluminum salts and nitrogen-free extraneous ions and/or mixtures of aluminum phosphite of the formula (III) with aluminum salts.

The flame retardant mixtures preferably comprise 50 to 99.9% by weight of flame retardant and 0.1 to 50% by weight of aluminum phosphites of the formulae (I), (II) and/or (III) and/or mixtures of aluminum phosphite of the formula (I) with sparingly soluble aluminum salts and nitrogen-free extraneous ions and/or mixtures of aluminum phosphite of the formula (III) with aluminum salts.

The invention also relates to a process for preparing flame retardant mixtures as ~~claimed in one or more of claims 1 to 11~~ defined herein, which comprises mixing pulverulent flame retardants with pulverulent aluminum phosphites of the formulae (I), (II) and/or (III) and/or mixtures of aluminum phosphite of the formula (I) with sparingly soluble aluminum salts and nitrogen-free extraneous ions and/or mixtures of aluminum phosphite of the formula (III) with aluminum salts.

The invention also relates to the use of flame retardant mixtures as ~~claimed in one or more of claims 1 to 11~~ defined herein as an intermediate for further syntheses, as a binder, as a crosslinker or accelerator in the curing of epoxy resins, polyurethanes, unsaturated polyester resins, as polymer stabilizers, as crop protection compositions, as sequestrants, as a mineral oil additive, as an anticorrosive, in washing and cleaning composition applications, in electronics applications.

Preference is given to the use of flame retardant mixtures as ~~claimed in one or more of claims 1 to 11~~ defined herein in or as a flame retardant, especially in or as a flame retardant for clearcoats and intumescent coatings, in or as a flame retardant for wood and other cellulosic products, in or as a reactive and/or nonreactive flame retardants for polymers, for production of flame-retardant polymer molding compositions, for production of flame-retardant polymer moldings and/or for rendering polyester and pure and blended cellulose fabrics flame-retardant by impregnation, and/or as a synergist and/or as a synergist in further flame retardant mixtures.

The invention also encompasses flame-retardant thermoplastic or thermoset polymer molding compositions or polymer moldings, films, filaments and/or fibers comprising 0.1 to 45% by weight of flame retardant mixtures as ~~claimed in one or more of claims 1 to 11~~defined herein, 55 to 99.9% by weight of thermoplastic or thermoset polymer or mixtures thereof, 0 to 55% by weight of additives and 0 to 55% by weight of filler or reinforcing materials, where the sum of the components is 100% by weight.

The invention relates to preferably flame-retardant thermoplastic or thermoset polymer molding compositions or polymer moldings, films, filaments and/or fibers comprising 1 to 30% by weight of flame retardant mixtures as ~~claimed in one or more of claims 1 to 11~~defined herein, 10 to 97% by weight of thermoplastic or thermoset polymer or mixtures thereof, 1 to 30% by weight of additives and 1 to 30% by weight of filler or reinforcing materials, where the sum of the components is 100% by weight.

The polymer in the flame-retardant thermoplastic or thermoset polymer molding composition or polymer moldings, films, filaments and/or fibers preferably comprises thermoplastic polymers of the HI (high-impact) polystyrene, polyphenylene ether, polyamide, polyester or polycarbonate type, and blends or polymer blends of the ABS (acrylonitrile-butadiene-styrene) or PC/ABS (polycarbonate/acrylonitrile-butadiene-styrene) or PPE/HIPS (polyphenylene ether/HI polystyrene) polymer type, and/or thermoset polymers of the unsaturated polyester or epoxy resin type.

The inventive mixtures preferably have a particle size of 0.1 to 1000 µm.

The inventive mixtures preferably have a bulk density of 80 to 800 g/l, more preferably of 200 to 700 g/l.

The inventive mixtures preferably have an L color value of 85 to 99.9, more preferably of 90 to 98.

The inventive mixtures preferably have an a color value of -4 to +9, more preferably of -2 to +6.

The inventive mixtures preferably have a b color value of -2 to +6, more preferably of -1 to +3.