

## FLAMESTAR – The mineral flame retardant

These flame retardants are based on metal hydrates, in particular on aluminium and magnesium hydroxide. Their environmental friendliness (halogen-free) and the favourable price / performance ratio have made them the most important flame retardants.

The flame retardant effect of metal hydrates is based on physical and chemical processes. In the presence of an ignition source – a hot object or an open flame – the thermal decomposition of the aluminium hydroxide into aluminium oxide and water takes place. During this process, energy is detracted from the ignition source, as the decomposition is an endothermic reaction.

Aluminium hydroxide:



At the same time, the released water vapour cools down the surface of the material and dilutes particularly the concentration of burnable gases in the surrounding area of the affected plastic material. The remaining aluminium oxide residue has a high internal surface where sooty particles or precursors of soot (polycyclic aromatic hydrocarbons, PAH) are absorbed.

Additionally the oxide layer acts as a “protective layer” containing the further release of low molecular weight decomposition products and it acts outward as a kind of “heat barrier” protecting the polymer against further decomposition.

