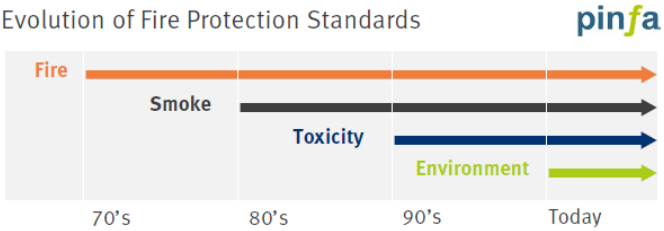
BUDIT® 3 and BUDIT® 6 series: Halogen-Free Flame Retardants

Researchers at Budenheim (member of the Cefic group *Pinfa*, phosphorous, inorganic and nitrogen flame retardants association) have developed three major routes to attack fire: intumescent systems, gas phase activity and unflammable dripping.



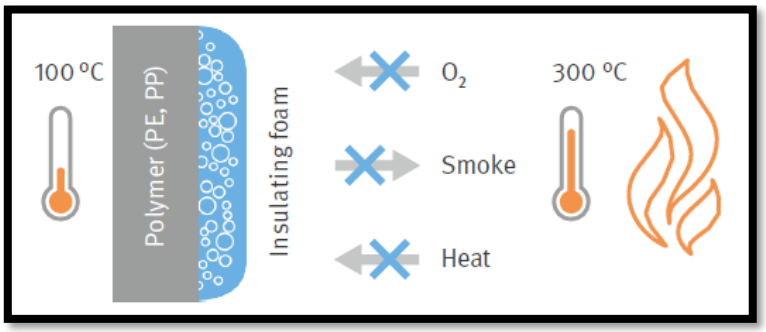
How do we protect plastics in a world of electricity?

BUDIT®3 Series provides a variety of ingredients for creating high performing flame-retardant compounds. The BUDIT®6 Series provides ready to use systems that are designed for direct use in plastics. The full product range covers the entire application spectrum within engineering plastics (e.g., PA, PBT) as well as polyolefins (e.g., PE, PP).

Budenheim's halogen-free flame retardants provide non-toxic and non-corrosive fire protection with minimized release of smoke and an outstanding ecological profile. Circular economy demands the recyclability of flame retarded plastics. BUDIT® proved effective fire retardancy over multiple recycling cycles.

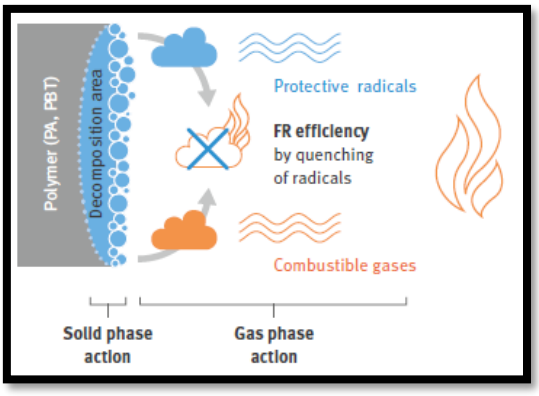
How do the BUDIT intumescent and charring with gas systems work?

Intumescent System



Intumescent System:
The plastic decomposes at the surface and creates a foam and anon-flammable char. The foam insulates and cuts off the heat transfer.

Charing with Gas Phase Activity



Charing with Gas Phase:
Protective char sets a barrier to the flame. Flammable degradation gases from the plastics are neutralized by radicals in the gas phase.

Budenheim

BUDIT ® 3 Series	Halogen-Free Flame-Retardant Ingredients: Chemical components for creating sophisticated flame-retardant formulations to precisely adjust flammability in certain applications.				
Product	Preferred Resin Application			Description	Starting Formulation for UL94 V-0
	PA-GF, PBT	PA, TPU	Epoxy		
BUDIT® 315		X	X	Based on melamine cyanurate. Suitable for use in non-glass filled polyamides. Flame side tracking.	8.0% in PA6 and P6,6 15.0% in PA12
BUDIT® 316		X	X	Based on melamine cyanurate. Suitable for use in non-glass filled polyamides. Flame side tracking.	8.0% in PA
BUDIT® 341	X	X		Melamine polyphosphate (fine), synergist with phosphinates. Suitable for glass filled or unfilled polyamides systems.	7.0% BUDIT 341 + 14.0% phosphinates in PA (GF)
BUDIT® 342	X	X		Melamine polyphosphate (higher melt flow index), synergist with phosphinates. Suitable for glass filled or unfilled polyamides systems.	7.0% BUDIT 341 + 14.0% phosphinates in PA (GF)

BUDIT ® 6 Series	Halogen-Free Flame Retardant Systems: Ready to use flame retardant systems for direct use in extrusion and injection molding.			
Product	Preferred Resin Application		Description	Starting Formulation for UL94 V-0
	PE, PP	WPC		
BUDIT® 667	X		Partially coated intumescent system based on ammonium polyphosphate. Forms a protective char layer to prevent polymer ignition and smoldering. Product also available in a low dust, compressed pellet version.	25.0–30.0 % in PP, 30 % in PE
BUDIT® 669S	X		Fully coated intumescent system based on ammonium polyphosphate. Forms a protective char layer to prevent polymer ignition and smoldering. Superior mechanical properties.	25.0–30.0 % in PP, 30 % in PE
BUDIT® 678	X		Partially coated intumescent system based on ammonium polyphosphate. Forms a protective char layer to prevent polymer ignition and smoldering.	22.5 % in PP, 27.5 % in PE
BUDIT® 620	X	X	Eco-friendly flame-retardant system for natural fiber reinforced plastic	20.0–25.0 % in PP, PE