



ANTI-FLAME™
INNOVATIVE FLAME-RETARDANT MASTERBATCH



LIFE-SAVING PROTECTION

In order to improve safety, many everyday objects are equipped with flame retardants designed to prevent or delay the spread of fire. The list of applications is almost endless, ranging from private and public vehicles, electrical appliances and cables, to furniture, textiles and building and construction materials.

Plastic products require a special focus as they can be ignited by a short circuit, overheating, and other external influences resulting in a blazing fire within minutes. Flame retardants can inhibit, or at least delay, the combustion and spread of fire so that valuable time is gained to enable fire-fighting and evacuation measures to be carried out. This in turn, reduces the chance of serious damage to property or in extreme cases, injuries or the loss of life.



NEW REQUIREMENTS

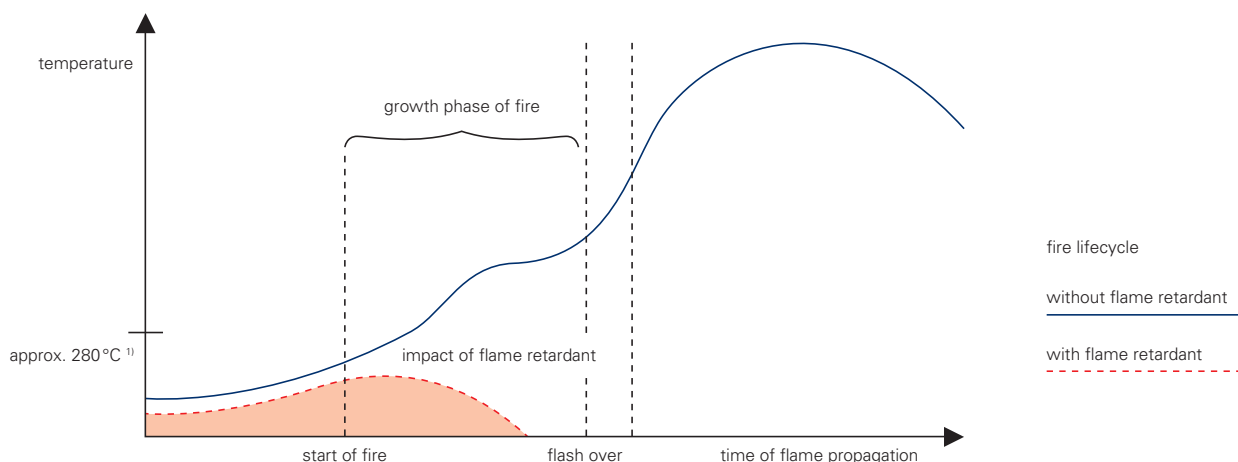
In recent years, the demands on flame retardants have changed considerably. Environmental awareness and sustainability are becoming increasingly important factors for consumers. Modern flame retardant masterbatches also need to fulfill increasingly demanding material requirements.

Gabriel-Chemie Group offers state-of-the-art-products that maintain the same high quality flame retardant properties, but offer a much improved environmental footprint. Our products meet and even exceed upcoming environmental legislation. The ecologically optimized flame retardant masterbatches delay the ignition of plastics and slow down the spread of flames.

METHOD OF OPERATION

In order for a fire to start burning, the combination of a flammable material and the presence of oxygen are required. Flame retardants work by using a chemical reaction to disrupt the interaction between the flammable material and oxygen. They are designed so that the chemical reaction starts with the addition of considerable heat energy. The products of this chemical reaction work both physically and chemically, to reduce the temperature of the flame and to cut off the oxygen supply. The result is effectively a suffocation of the fire that either extinguishes the fire completely, or at the very least, delays the spread of the fire considerably.

Flame retardants that are effective in the gas phase have proved popular due to their high efficiency even when used in low dosages. As a result, the host plastic experiences almost no mechanical or optical degradation and the processability remains virtually unaffected.



¹⁾ depends on fuel type

OUR FLAME RETARDANT SERIES: MAXITHEN® ANTI-FLAME™

Gabriel-Chemie has been producing masterbatch since 1970 and so the ANTI-FLAME™ range is based on a wealth of experience. Our technical support will help to find the right product for your application and can also customize masterbatches to meet your exact needs.

Our conventional flame retardant masterbatches are based on halogenated agents, are extremely effective in low doses, have a good price / performance ratio and provide good processing stability. Society is however pushing for a substantial reduction in the use of halogens and Gabriel-Chemie is leading this trend with the development of a range of low-halogen and halogen-free flame retardant batches for equipping thin and thick wall polyolefin products. This range of complete solutions enables customers to meet the diverse requirements of the numerous industry flame retardant standards.

Our new low-halogen and halogen-free systems are compatible with widely available UV stabilizers, enabling solutions that provide protection for plastics in outdoor applications such as stadium seating. Our highly concentrated masterbatches are effective in very low dosages meaning that the original mechanical properties of base polymers such as good impact resistance, high elasticity and low brittleness are not affected. Last but not least our masterbatches are easy to process and enable very flexible colouration.



LOW HALOGEN FLAME RETARDANTS

MAXITHEN® PP 7A8150 FR	Low halogen formulation for polypropylene tapes
MAXITHEN® PP 7A8630 FR	Low halogen formulation for polypropylene fibers
MAXITHEN® PP 7A4070 FR	Halogen-free flame-retardant agent, combined with a halogenated catalyst for PP-thick wall products. Due to its very low dosage, some products can still be declared as „halogen-free“, depending on the legal ppm threshold values.

HALOGEN-FREE FLAME RETARDANTS

MAXITHEN® HP 7AA1460 FR	Halogen-free flame retardant masterbatch series for thin-walled polyethylene products on polyethylene carriers. The concentration of active ingredients is variable and can be aligned to customer dosing equipment. Additionally a variable melt index of the carrier polymer is possible, allowing optimization for the respective customer polymer.
MAXITHEN® HP 7AA1590 FR	
MAXITHEN® HP 7AA1110 FR	
MAXITHEN® HP 7AA0640 FR	
MAXITHEN® PP 7AA1940 UVFR	Halogen-free agent for thin-walled polypropylene products (fibers, films, tapes), on a polypropylene carrier. Equipped with UV light protection for outdoor applications.
MAXITHEN® PP 7A9850 FR	Halogen-free agent for thick-walled polypropylene products on polypropylene carriers.

Upon request, we can also provide all low halogen and halogen-free flame retardant formulations as a combination of several functionalities such as UV protection, antioxidants, processing aids and lubricants, anti-block, and with any desired colour tone. Additionally, production-ready compounds are available that can be processed directly into final products without the need for additional dosing equipment.



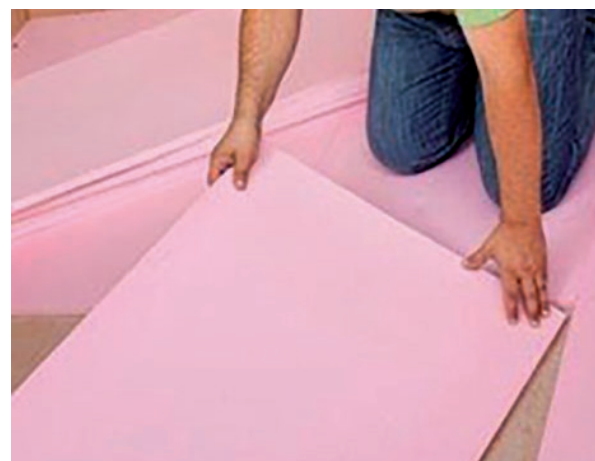
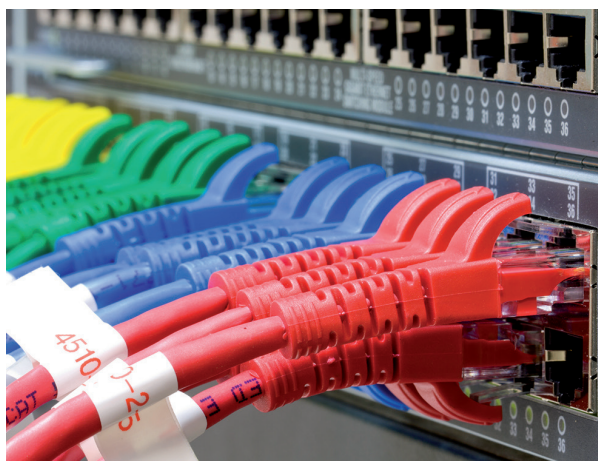
HBCD-FREE FLAME RETARDANTS FOR XPS

Gabriel-Chemie Group offers state-of-the-art HBCD-free products for polystyrene (XPS) insulation boards which offer the same high quality flame retardant properties as in the past, but with an improved environmental footprint and increased sustainability.

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| MAXITHEN® PS 7AA4060 FR | Polymer flame retardant with high thermal stability. |
| MAXITHEN® PS 7AA3260 FR | HBCD-free brominated flame retardants with high thermal stability. |

CONVENTIONAL FLAME RETARDANTS

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| MAXITHEN® HP 72521 FR | Universally applicable flame retardant masterbatch with high temperature stability for flame protection of polyolefin films and profiles. |
| MAXITHEN® HP 73940 FR | Flame retardant masterbatch for LDPE films, profiles and foams. |
| MAXITHEN® HP 78900 FR | Flame retardant masterbatch for HDPE and PP injection-moulded products and profiles for achieving protection according to UL94 V2. |
| MAXITHEN® SB 795470 FR | Flame retardant masterbatch for higher temperature ranges (extrusion, injection moulding). |
| MAXITHEN® UNS 76200 FR | Flame retardant masterbatch for technical polymers. High temperature stability allows usage in polymers such as ABS, PA6, PA6.6 and PBT to achieve protection according to UL94 V1, V2 and V0 depending on the polymer type and design. |



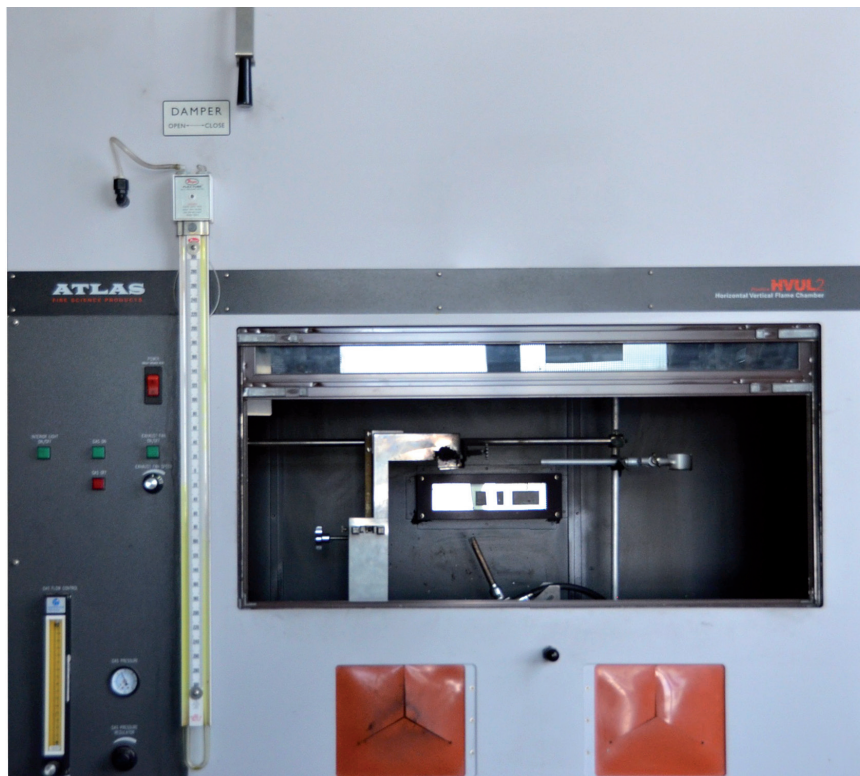
FLAMMABILITY STANDARDS

Flammability standards regulate the characteristics, test methods and regulatory approvals of plastics in different applications: building, interior furnishing, vehicles, electrical and electronics, furniture, textiles and many more. Worldwide, there are about 700 standards relating to flame retardants and fire safety testing.

The most important and most widespread are:

UL 94 V and HB, „glow wire test“ (IEC), SBI („Single Burning Item“), Cone Calorimeter test, LOI („Limiting Oxygen Index“), BS („British Standard“), ASTM („American Standard Method“), ISO, EN, DIN, M, in varying definitions and test set-ups, adapted to the respective requirements for the final article and its application.

Gabriel-Chemie Group has over 40 years of experience in flame retardants and provides not only products, but also serves as your partner for application and technical support. We look forward to working with you to find the perfect solution for your product and application.



Flammability chamber located at the Gabriel-Chemie plant in Gumpoldskirchen



GABRIEL-CHEMIE Gesellschaft m. b. H.
Industriestraße 1
2352 Gumpoldskirchen
AUSTRIA
Tel.: +43 2252 636 30-0
Fax: +43 2252 627 25-0
www.gabriel-chemie.com
info@gabriel-chemie.com