

Novel classes of halogen-free flame retardants

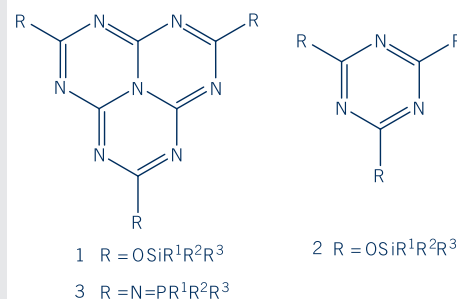
The innovation

Flame retardants play a decisive role in many important industrial fields such as plastics, electronics, construction, textiles and timber. Flame retardants help to use plastics in many applications with high fire safety demands.

According to their chemical structure, flame retardants are divided into halogenated (chlorinated and brominated) and halogen-free (phosphorous- and nitrogen-containing as well as mineral) compounds. Due to new regulations relating to toxicity and environmental aspects, it is necessary to replace many commonly used critical halogenated flame retardants. Thus, the focus of interest has shifted towards non-halogenated flame retardants. As mineral flame retardants cannot be used for many applications, non-halogenated phospho-

rous and nitrogen compounds in particular offer an alternative. Our two patent families claim the property rights for two new halogenfree classes of substances. The siliconcontaining heptazine and triazine derivatives (1) and (2) as well as phosphorouscontaining heptazine derivatives (3) are interesting targets for new environmentally friendly flame retardants due to their highchemical and thermal stability.

The innovative synthetic access described for the silicon and phosphorous compounds offers the possibility of synthesising a large amount of derivatives and optimising the chemical and physical properties of monomer and polymer compounds. Thus, the development of application-optimised flame retardants with special characteristics becomes possible.



Keywords

- Halogen-free flame retardants
- Fire prevention
- Classes of flame retardants
- Flame retardant polymers
- Heptazine derivatives
- Triazin derivatives
- Melamine

Areas of application

- MEPAs: flame retardants
- PSCs: flame retardants precursors for Si/(Me)/C/N/(O) ceramics xerogels aerogels

Patent status

The invention is filed internationally and partially granted. It is owned by ZYLUM Beteiligungsgesellschaft mbH & Co. Patente II KG. The basis application was filed in September 2005.

Advantages at a glance

Silicon and phosphorus containing derivatives combine many advantages:

- Halogen-free
- High chemical resistance
- Solubility in polymers is controllable
- Low migration rate in the polymer
- Covalent binding to the polymer is possible
- Very easy chemical access
- Application-optimised design is possible

To acquire a licence for this new technology, please don't hesitate to contact us!



IP Bewertungs AG (IPB)

Stephansplatz 10
20354 Hamburg
Germany

Sönke Jessel
Ref. no. 001537

Tel +49 (0)40 8787 90-00
Fax +49 (0)40 8787 90-01

CHEMFOOD@IPB-AG.com
www.IPB-AG.com