威科特瑞
发挥非金属资源无限潜能

Technical Data Sheet

VC-M6004

Charring Agent

Product Overview: VC-M6004 is an organically modified special layered silicate structure designed as a flame-retardant synergistic carbonizing agent for low-smoke, halogen-free flame-retardant thermoplastic materials. Its unique layered stacking architecture effectively blocks gas penetration to achieve synergistic flame-retardant effects; during combustion, the layers migrate and concentrate, enhancing carbonization density and strength, suppressing dripping, and improving the mechanical properties of thermoplastic materials.

Product Indicators

Item	Specification
Composition	Organically modified flaky silicate
Appearance	Off-white powder
Whiteness	80±2
Density (25°℃, g/ml)	1.5-1.7
Moisture Content (105°C), %	≤3.5
Particle Size (D97, dry powder), μm	≤35
Bulk Density, g/cm^3	0.25-0.40
XRD（d001,nm)	≈4.0

Storage and Transportation

Store and transport at temperatures below 50℃, dry storage.

Application Fields

- Ethylene-vinyl acetate copolymer (EVA)
- Low-density polyethylene (LDPE)
- High Impact Polystyrene (HIPS)
- sulan （PP)
- Polyamide (PA 6)
- lactic acid （PLA)

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Product Characteristics and Advantages

It is particularly suitable for halogen-free flame-retardant thermoplastic materials, as its addition enhances flame retardancy, improves dripping resistance and carbon formation capability. It can be blended with phosphorus-nitrogen-based flame retardants to reduce the usage of aluminum hydroxide or magnesium hydroxide, thereby improving processability and physical/mechanical properties while reducing overall weight. Additionally, it enhances barrier performance against oxygen, water vapor, and hydrocarbons.

Recommended Dosage

2–5% of the total formula

The recommended amounts above are for reference only; the optimal amount should be determined through a series of experiments.

Usage Method

To achieve the best dispersion and exfoliation of the additive, it is recommended to use a co-rotating twin-screw extruder or kneader when mixing thermoplastic composites.The twin-screw extruder should preferably adopt a screw combination structure with large length/diameter ratio and high shear strength. The melting temperature during extrusion should not be too high to maintain high viscosity of the polymer melt, ensuring strong shear effect on the polymer during extrusion, which is conducive to improving the dispersion performance of organic clay.

Precautions

Avoid "excessive shearing" of clay, which may sometimes cause agglomeration and reduction of aspect ratio. It is better to use distributive mixing units, which provide exfoliation without excessive heat generation due to the synergistic effect of chemical affinity with clay.

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