

# Expandable Graphite

Black magic.



PURITY.  
PERFORMANCE.  
**PASSION.**

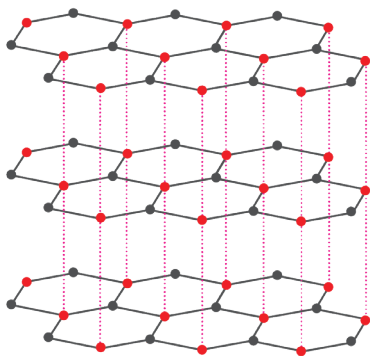
# Expandable Graphite

Due to graphite's layered structure, atoms or small molecules can be intercalated between the carbon layers. This process produces, what is known as expandable graphite salt, or a Graphite Intercalation Compound (GIC). High quality expandable graphite grades contain a high proportion of intercalated layers. Typically, sulfur- or nitrogen-based compounds are used as intercalation agents.

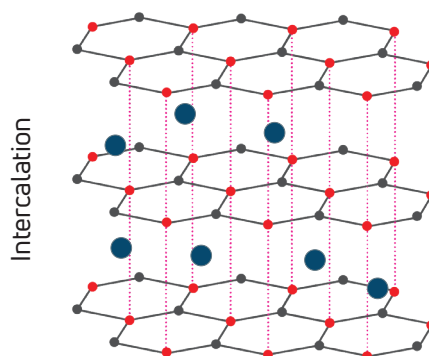
When exposed to heat, the carbon layers separate like an accordion, causing the graphite flakes to expand. Depending on the grade, expansion can begin at approximately 160°Celsius and may occur suddenly and rapidly. In free expansion, the final volume can be several hundred times greater than the initial volume.

Key properties of expandable graphite, such as initial expansion temperature and expansion volume, are primarily determined by the quality of intercalation (i.e., the proportion of intercalated layers) and the type of intercalation.

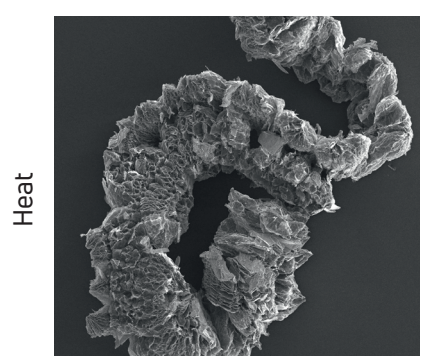
## Expansion process



Natural graphite flake



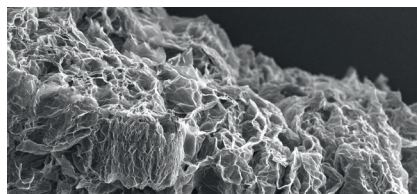
Graphite layers with intercalated molecules  
• Sulphuric acid



Expanded graphite - the intercalated layers separate, leading to expansion.



Untreated graphite in its original form.



The introduction of intercalation agents modifies the structure.



The final product, significantly increased in volume.

## Expandable graphite - a highly effective flame retardant

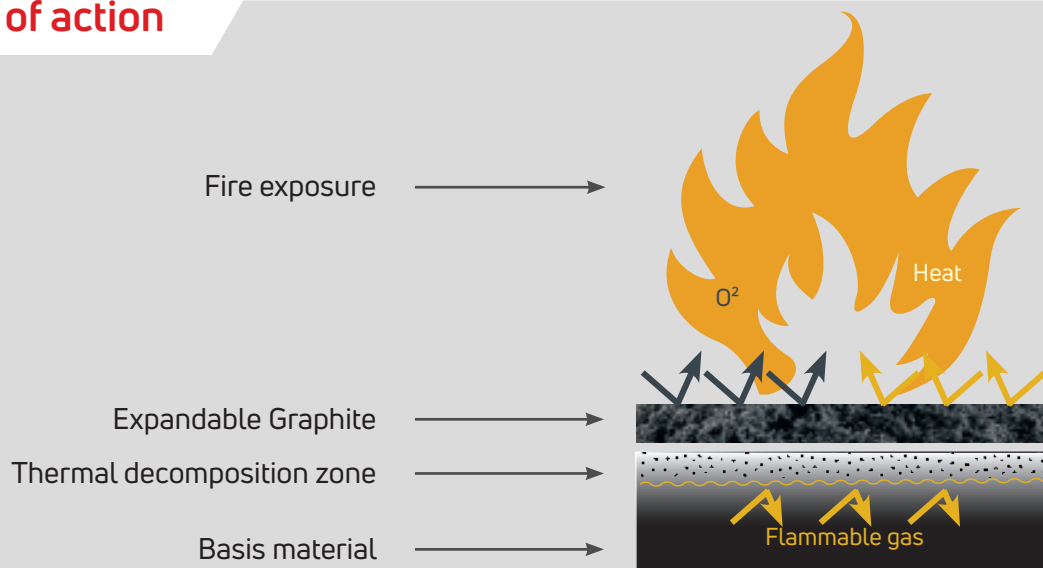
- High efficiency, even with low quantities
- Easy dosage
- Synergistic effects when combined with other additives
- Environmentally friendly
- Halogen-free
- Not toxic
- REACH-compliant

## Flame retardant properties of expandable graphite

Expandable graphite is an innovative flame retardant that offers numerous advantages for modern applications across a wide range of industries.

Its unique properties, such as intumescent behavior, high thermal stability and environmental friendliness, make it a valuable material for improving fire safety in construction, electronics, automotive, textiles, and more. As the demand for safer and more efficient flame retardants continues to rise, expandable graphite is set to play an increasingly important role in fire protection solutions.

### Mode of action



In the event of a fire, the expandable graphite expands significantly when exposed to heat, forming an intumescent layer on the surface of the material.

This layer slows or stops the spread of fire and reduces the spread of toxic gases and smoke.

### Our expertise

AMG Graphite is a leading manufacturer of exclusive Natural Graphite and known for our extensive expertise and commitment to quality. Our focus on environmental sustainability is demonstrated through our eco-friendly, highly automated production processes designed for optimal efficiency.

Additionally, we understand that every customer has unique needs, which is why we offer the flexibility to adjust all product parameters according to your specific requirements.



## Fields of application

Expandable graphite is easy to machine and shape into various forms, making it well-suited for manufacturing a wide range of products. The main applications include:

### PLASTICS



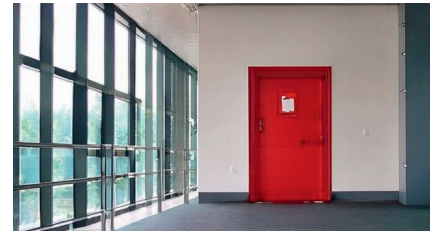
- Compounds & masterbatches
- Automotive and machine components

### INSULATING FOAM



- PU foam blocks

### FIRE PROTECTION SYSTEMS



- Building fire protection in doors and bulkheads
- Cable bushings

### COATINGS



- Textiles, wood, steel and metals

### BITUMEN ROOF SHEETS



- Roofing membranes at flat roofs

### ELECTRONIC



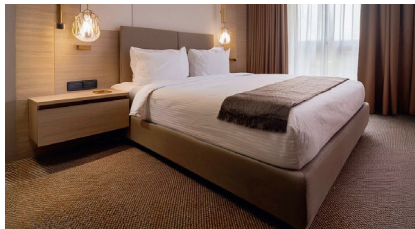
- Seals and housing components of batteries

### GASKETS



- Sealing capabilities and protects against leaks
- Pipe insulation

### FLEXIBLE FOAM



- Carpets and mattresses
- Seats in vehicles airplanes / trains
- Interior lining in vehicles

### TEXTILES



- Fire protection in functional textiles

## Product list

GRADE	CARBON CONTENT [IN %]	ASH [IN %]	PARTICLE SIZE	EXPANSION RATE [IN ML/G]	STARTING TEMPERATURE [IN °C]	pH VALUE
ES 20 C200	min. 92	max. 8	min. 80 % < 71 µm	min. 20	≥ 220	3 - 6
ES 100 C10	min. 92	max. 8	min. 80 % < 150 µm	min. 100	≥ 220	3 - 6
ES 200 B8DS	min. 90	max. 10	min. 65 % > 180 µm	min. 200	≥ 180	5 - 9
ES 250 B5	min. 95	max. 5	min. 80 % > 300 µm	min. 250	≥ 190	3 - 6
ES 250 B5 pH	min. 95	max. 5	min. 70 % > 300 µm	min. 250	≥ 180	6 - 8
ES 250 F5 pH	min. 98	max. 2	min. 70 % > 300 µm	min. 250	≥ 180	5 - 8
ES 250 B8 B	min. 95	max. 5	min. 65 % > 180 µm	min. 250	≥ 210	6 - 8
ES 280 G5L	min. 99	max. 1	min. 80 % > 300 µm	min. 280	≥ 150	6 - 8
ES 350 B5 B	min. 90	max. 10	min. 70 % > 300 µm	min. 350	≥ 200	5 - 9
ES 350 F5	min. 98	max. 2	min. 80 % > 300 µm	min. 350	≥ 190	3 - 6
ES 350 F5 pH	min. 98	max. 2	min. 70 % > 300 µm	min. 350	≥ 190	6 - 8
ES 500 F5 pH	min. 98	max. 2	min. 70 % > 300 µm	min. 500	≥ 190	6 - 8
ES 700 F5 pH	min. 98	max. 2	min. 70 % > 300 µm	min. 700	≥ 180	6 - 8

**Packaging:** 25 kg paper bag/ 35 x 25 kg pallet  
**ES 100 C10 + ES 20 C200:** 40 x 25 kg pallet  
**on request:** 900 kg big bag



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