

Powder Metallurgy

The magic of
Graphite powder

PURITY.
PERFORMANCE.
PASSION.

Vital Connections

Graphite powder for the PM industry

AMG Graphite has more than 140 years of experience in refining natural graphite. As an internationally operating graphite specialist with its own mines, we produce high-quality products tailored to our customers' demands. A strong focus on R&D work ensures that our product range is continuously optimised.

Fields of application

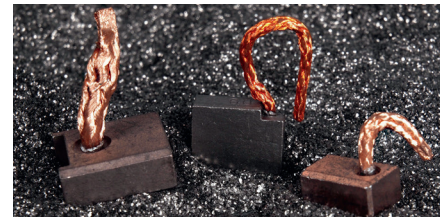
METAL POWDER



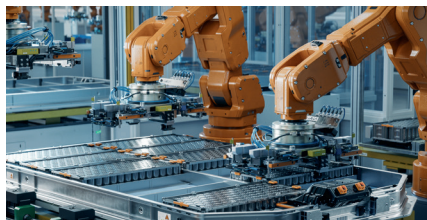
SINTERED PARTS



CARBON BRUSHES



INDUSTRIAL APPLICATIONS



AUTOMOTIVE



CONSUMER GOODS



Constant quality

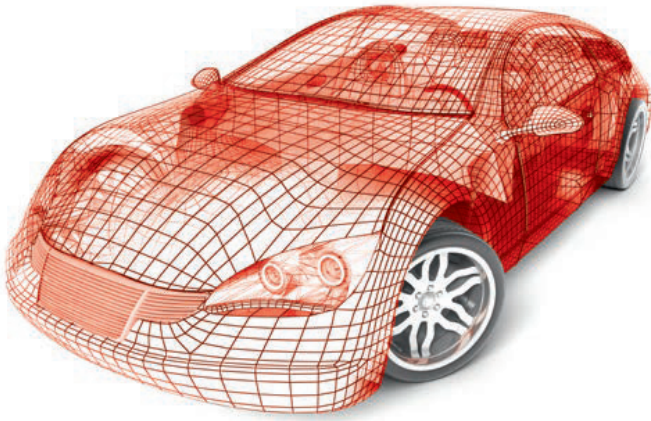
In the PM industry, graphite is an essential additive in metal powder mixes for the production of sintered parts. The main issue in PM in general is that a constant graphite quality is required to secure absolute process stability for the producer and obtain the ultimate consistency in the quality of the sintered part. This is only possible with a stable raw material source and controlled refining steps such as purification, micronising and quality assurance.

When looking specifically at different applications within the PM industry, parameters of graphite such as particle size, purity, particle shape and surface show that very specific solutions or tailor-made graphite grades are generally needed. AMG Graphite products specifically designed for the PM industry are mostly UF (ultra fine) grades with a very distinctive crystalline structure.

Graphite for the PM Industry

- Good mixability
- Dust-free handling
- Low die wear
- High mechanical strength
- High consistency of PM part properties
- Smooth and defect-free surface of the PM Parts
- Consistent dimensional change after sintering

PM Automotive parts



- Transmission & drive train
- Pumps & hydraulics
- Engine & exhaust
- Body & chassis
- Carbon brush
- Interior

From powder to car parts

Especially in the automotive industry, parts made in powder metallurgy processes are of ever increasing importance. Every conventional car includes between 80 and 100 sintered parts containing graphite. For the production of sintered parts, metal powders are mixed with small quantities of additives such as waxes and graphite.

Under pressure

These powder mixtures are pressed under high pressure into so-called green compacts. Because it allows maximum compression, graphite both ensures reduced wear of the die and internal lubrication of the powder mixture in this process. In the sintering process, where the green compacts are heated up to slightly below the melting point, the material is further compressed. Fine graphite goes into solution in the metal and increases the mechanical strength of the workpiece.

Carbon brush - small but mighty

Carbon brushes are contained in almost every electrical motor in a car e.g. windscreen, wipers, fuel pumps etc. These small sintered parts establish electrical contact to the rotating component of a machine via sliding rings or collectors. This proven technique has long been known as a reliable solution in the automotive industry.

The exact composition of a carbon brush depends on the application. Graphite plays a central role as an important component of carbon brush formulations. It increases not only the lubrication effect and the wear resistance, but also leads to outstanding electrical conductivity and corrosion resistance.

PM Products		
Grade	Carbon content	Particle size - D50 [µm]
UF 4	96.0 - 99.5	5.5 - 7.0
EDM	99.5 - 99.95	9.0 - 14.0

Carbon brush products		
Grade	Carbon content	Particle size - D50 [µm]
KFL	94.0 - 99.5	min. 20 % > 100 µm
RFL	98.0 - 99.5	min. 90 % > 160 µm



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