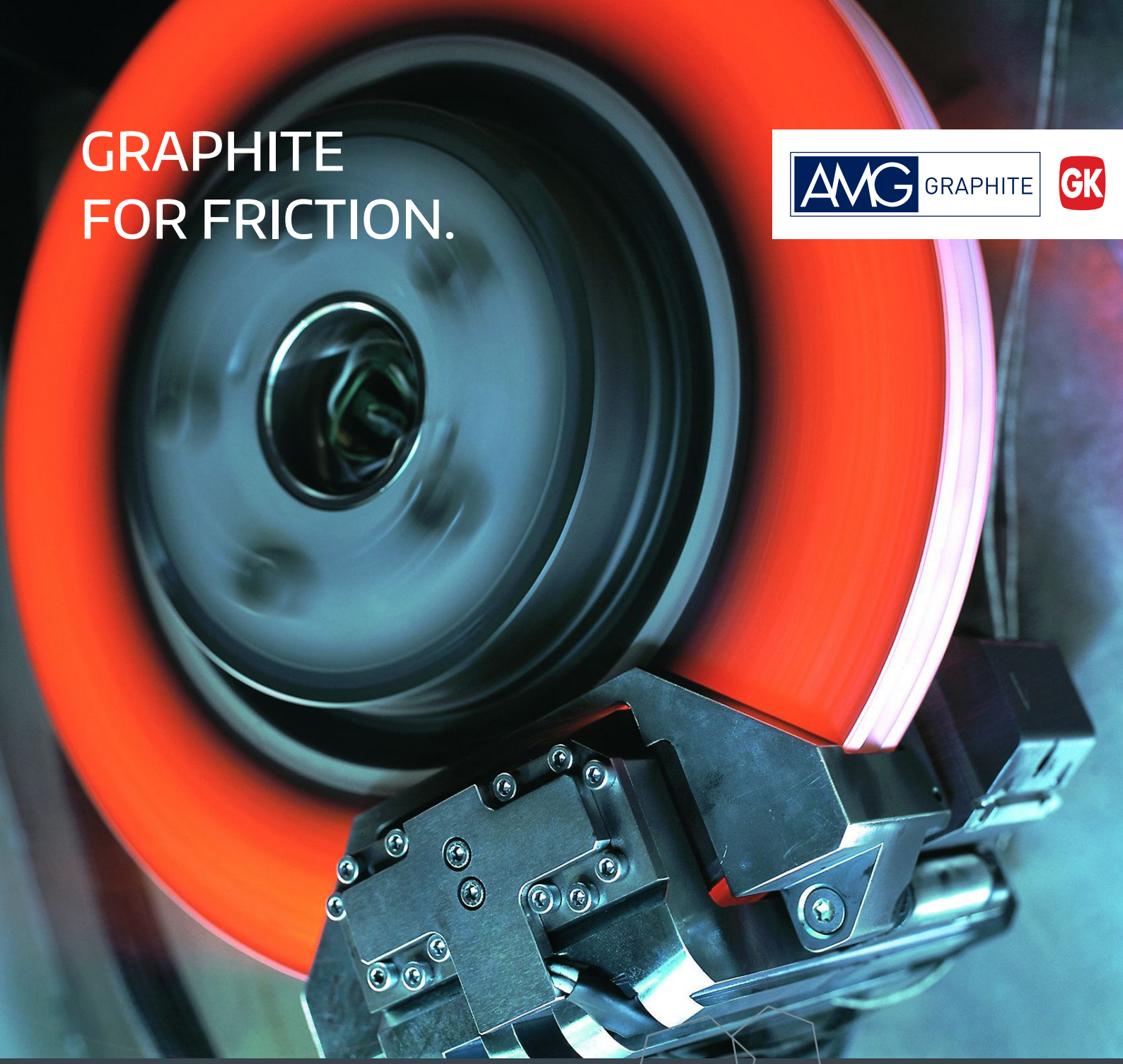

GRAPHITE FOR FRICTION.

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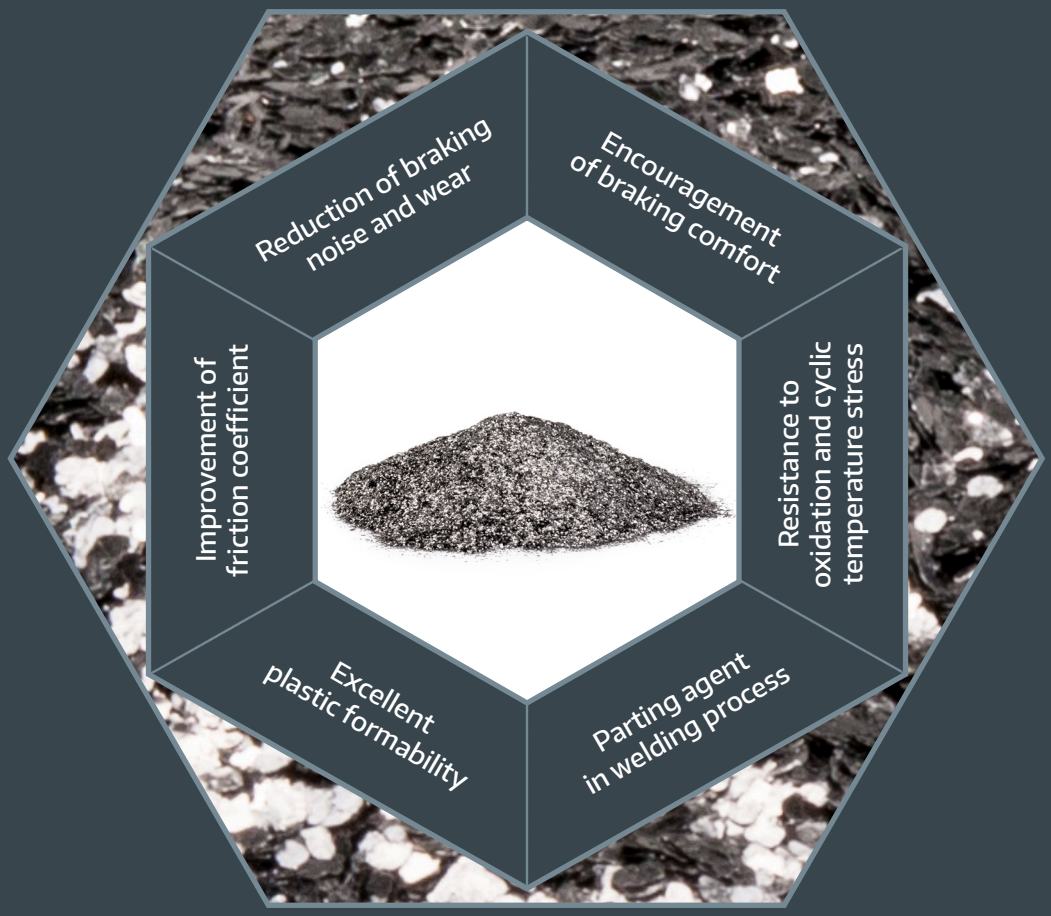
GRAPHITE IN FRICTION LININGS.

Graphite is a critical material in the friction industry, especially in the production of brake and clutch linings. Numerous components are combined with graphite for the production of brake linings, including metals, mineral fibres, sulphides and resins. With its lubricating properties, graphite modulates the braking effect of friction linings and essentially contributes to braking comfort and noise reduction.

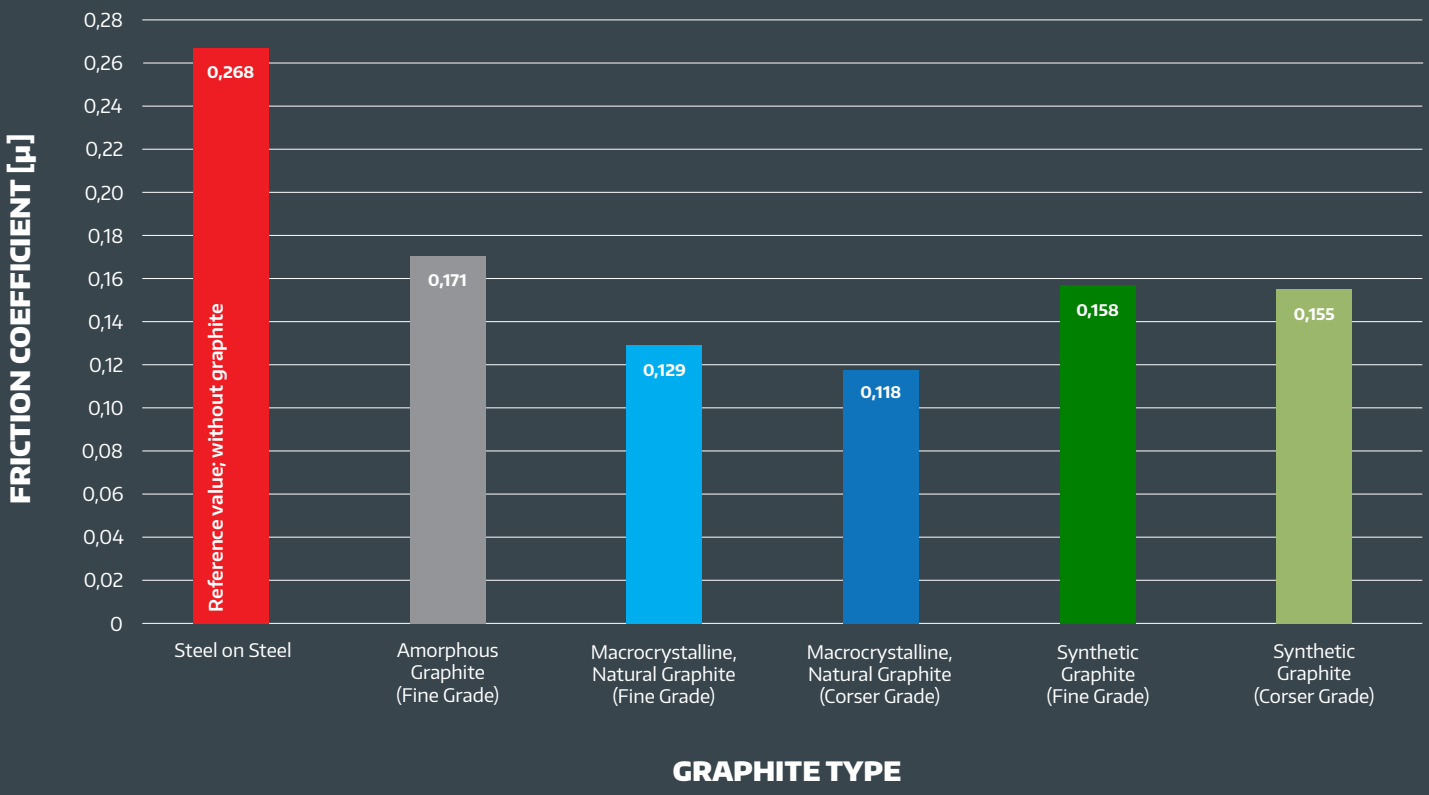
OUTSTANDING GRAPHITE PROPERTIES.

The outstanding thermal conductivity properties of graphite also play an important role in friction linings. The main fields of application are the automotive sector and rail range (e.g. brake and clutch linings) as well as multilayered applications in the industry (e.g. sinter surfaces).

ADVANTAGES OF GRAPHITE IN FRICTION.



COEFFICIENT OF FRICTION.



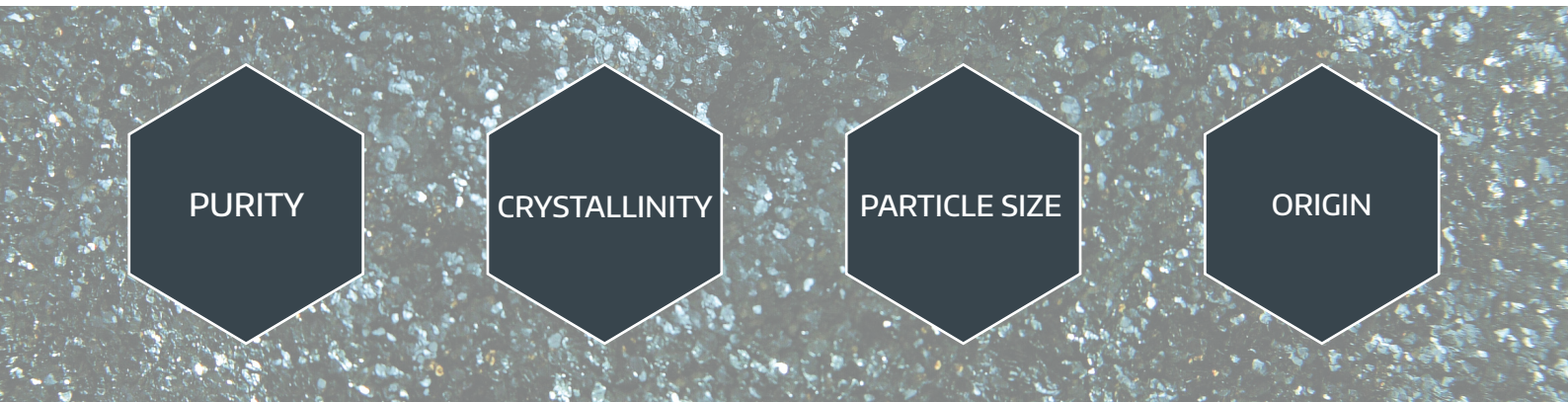
Note: Results are based on own investigations.

SPECIFICATIONS.

- **Friction coefficient**: Increasing graphite content minimizes the friction coefficient
- **Thermal conductivity**: Reduction of „hot spots“
- **Lubricating properties**: Filling and smoothing of unevenness
- **Plastic formability**: Balancing of unevenness on coat and disc

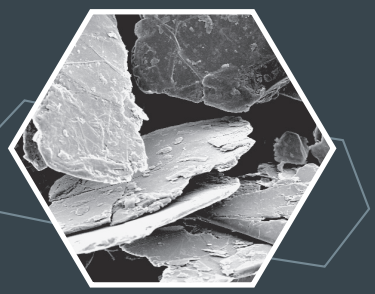
The main objective of using graphite is to sustain the heat dissipation after kinetic energy is transformed into thermal energy. The different compositions in the respective brake lining must be mixed homogeneously. The graphite film, applied by the friction, will be removed by the rough petroleum coke. This interaction then leads to the appropriate braking effect.

PARAMETERS FOR GOOD LUBRICATING EFFECTIVENESS.



OUR PRODUCT PORTFOLIO.

BRAKE / CLUTCH SYSTEM	GK GRAPHITE GRADE		PARTICLE SIZE
Organic or resin bonded brake and clutch linings (automotive, rail range)	NATURAL GRAPHITE		
	GP 90/92	Shiny powder	max. 5% > 100 µm
	KP 90/92	Crystal powder	max. 10% > 160 µm
	NFL 90/92	Normal flake	min. 70% > 160 µm
	MFL 87/90	Medium flake	min. 70% > 160 µm min. 20% > 315 µm
	SYNTHETIC GRAPHITE		
	Q809	Artificial	min. 4% > 75 µm min. 16% > 45 µm max. 80% < 45 µm
	Q813	Artificial	min. 5% > 840 µm min. 25 - 45% > 400 µm min. 35 - 55% > 150 µm max. 5 - 20% < 150 µm
Sintered metal brake linings	NATURAL GRAPHITE		
	UF 4 99,5	Ultra fine grinding	d_{90} ≤ 15 µm d_{50} 5,5 - 7 µm
	FP 96/97	Fine powder	max. 10% > 71 µm
Based on carbon	NATURAL GRAPHITE		
	UF 2 99,9	Ultra fine grinding	d_{90} ≤ 12 µm d_{50} 4 - 5,5 µm



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