

EDM graphite: a complete range of graphite and services

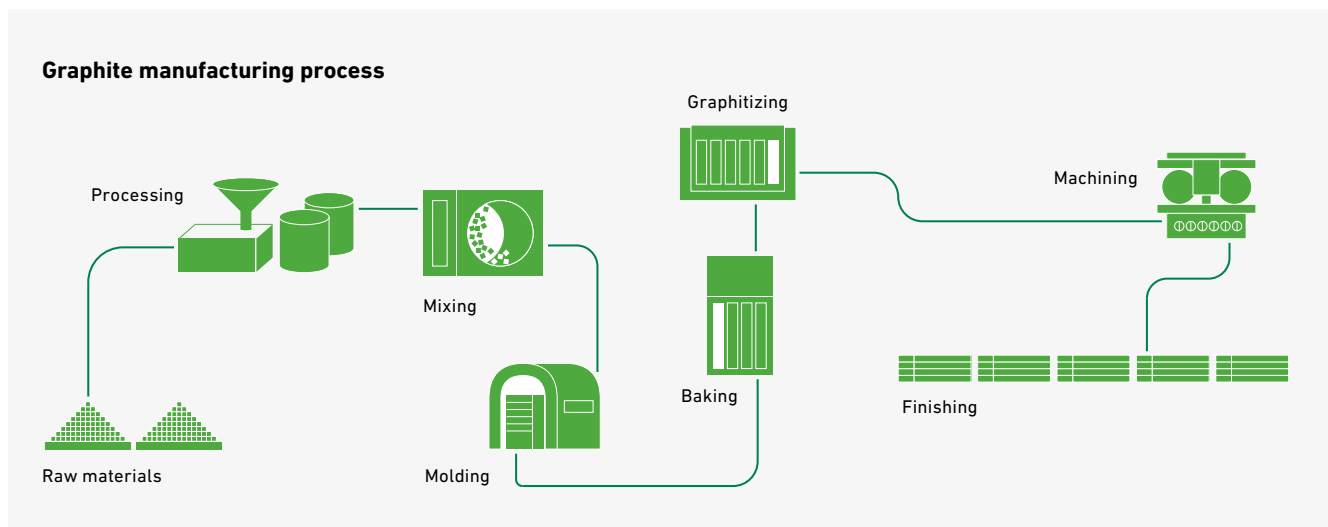
**Increase your productivity,  
optimize your costs and time**



# Introduction

## Why choose graphite?

Graphite's extraordinary characteristics make it the perfect material for electrodes. Graphite is largely used for electrical discharge machining (EDM) in production and other applications fields like mold making, general engineering and micro machining. It offers many advantages, including low wear, easy machining and thermostability to provide very high cost-effectiveness.



Graphite used in the EDM machining process is the same as in ceramics production. In a first step, raw materials are milled, then mixed with a binding agent to produce a homogeneous product. Next is isostatic pressing to shape the blocks. EDM graphite is made only by isostatic presses, re-

sulting in large, homogeneous and isotropic semi-finished graphite blocks, which are then baked. The final step is graphitization to transform carbon into crystalline graphite. In electrode projection, a big benefit is uniformity of the material throughout the entire graphite block.

# Graphite features and benefits

## Easy and quick machining, no deburring

Excellent machinability combined with high resistance and dimensional stability result in high cutting speed rate and time savings in electrode production. In contrast to copper electrodes, graphite electrodes require no additional deburring operation.

## Higher removal rate and high resistance to wear compared to copper

Optimal erosion time and minimal electrode wear results in both cost and time savings.

## Light weight with density four times lower than copper

Graphite's light weight makes it easier to manage and handle large electrodes and optimize electrode costs.

## High thermal stability and high resistant to thermal shock

Electrode dimensions remain stable during the erosion process and high current densities are maintained. This results in highly precise machining results, so you achieve very fine geometries.



# Grades and specifications

GF Machining Solutions offers various grades of graphite with a wide range of performance characteristics. Each grade can be dedicated to a specific range of applications.

## Five different grades of graphite

### AC-K900 for fine and super-fine finishing

Premium super fine grade especially suitable for the most demanding processes. It allows the finest machining with maximum detail (molds for finest structures, high requirements for surface quality, multi-cavity dies)

### AC-K800 for finishing and fine finishing

Premium ultra-fine grade suitable for difficult contours and very thin details. Excellent machinability, applicable for high surface quality requirements, high shape precision.

### AC-K700 for roughing and finishing

Fine grade suitable for a large range of applications: molds for fine contours, ribs, and multi-cavity dies.

### AC-K600 for roughing and finishing

Universal and versatile grade suitable for molds with large contours, as well as aluminum die casting. The best solution for cost optimization.

### AC-K500 for roughing and finishing

Standard grade suitable for applications such as roughing.

GF MS Graphite	Grain size (µm)	Density (g/cm <sup>3</sup> )	Hardness (Shore)	Electrical resistivity (µΩm)	Flexural strength (MPa)	CTE (10 <sup>-6</sup> K <sup>-1</sup> )
AC-K900	2	1.77	78	15.0	80	4.9
AC-K800	4	1.78	72	14.0	73	5.0
AC-K700	5	1.79	72	14.2	63	5.8
AC-K600	8	1.78	63	13.4	52	5.6
AC-K500	10	1.78	55	11.0	41	4.6

## Achievable surface qualities

Ra max. (µm)	12.50	9.00	6.30	4.50	3.15	2.24	1.60	1.12	0.80	0.56	0.40	0.28	0.20
VDI	42	39	36	33	30	27	24	21	18	15	12	9	6
AC-K900	[Bar chart showing Ra max. from 12.50 to 0.20]												
AC-K800	[Bar chart showing Ra max. from 9.00 to 0.20]												
AC-K700	[Bar chart showing Ra max. from 6.30 to 0.20]												
AC-K600	[Bar chart showing Ra max. from 4.50 to 0.20]												
AC-K500	[Bar chart showing Ra max. from 3.15 to 0.20]												

# Product range and services

## Saw-cut service

- We can cut your graphite block to the size you need and in the grade that best fits your application.
- Contact your local partner to discuss your desired dimensions and graphite grade.

## Special requests service

- We can support you with special graphite preparation for tool holders (System 3R, Erowa, Hirschmann), and with milling and grinding services for specific manufacturing needs.
- Contact your local partner to discuss how we can support you with your special request.

## A large range of standard electrodes



Square, staged square, T-block, and cylindrical electrodes, ready to machine and suitable for standard electrode holders.



Thin plate and tempered plate ground electrodes, designed for deep and complex cavities.

Visit our online catalog to discover our full range of graphite and services.

## At a glance

We enable our customers to run their businesses efficiently and effectively by offering innovative Milling, EDM, Laser, Additive Manufacturing, Spindle, Tooling and Automation solutions. A comprehensive package of Customer Services completes our proposition.

[www.gfms.com](http://www.gfms.com)

