



SVENSKA TANSO
- Full range of high quality
EDM graphite materials

TANSO
Svenska Tanso AB

EDM GRAPHITE

GENERAL INFORMATION ABOUT TOYO TANSO

*Toyo Tanso Co.,Ltd, Osaka/Japan was established 1941 and has the following manufacturing programme:
Graphite and technical carbon for electrical, metallurgical and mechanical branches.*

We acquire our graphite from the Japanese company Toyo Tanso Co. Ltd. and are included in their business group. Toyo Tanso Co., Ltd. has been the torchbearer of synthetic graphite and is currently the biggest producer of isostatic pressed graphite.

Toyo Tanso developed and started 1974 as the first Japanese company to manufacture isostatic pressed graphite.

Toyo Tanso received 1978, from the Japanese government, a gold medal for the pioneering achievements within this field. Other important honours for prominent industrial development were awarded 1972, 1989 and 2001.





CARBON IS ONE OF THE MOST COMMON ELEMENTS OF OUR PLANET!

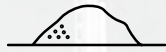
Carbon is to be found in nature as diamond, natural graphite and in various combinations, in solid, liquid and gas form. Amorphous carbon (missing crystalline structure) can be transformed into graphite and get a crystal structure when heated to high temperatures.

INDUSTRIAL PRODUCTION OF SYNTHETIC GRAPHITE

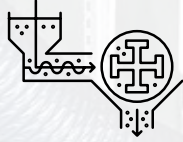
Industrial production of synthetic graphite started at the end of the 18th century and the process has since then successively been developed. The raw material is composed of petroleum coke, carbon black, anthracite etc as well as filler and binding agents. Normally among 30 different raw materials are needed for the production of a complete programme of coal and graphite products.

The raw material in the form of fine-grained powder is pressed in an isostatic press under a very high pressure. Afterwards the burning is done at a very high temperature of 900-1800°C and at a cycle time of 20-30 days. The next step is graphitising at which the material is converted into graphite and gets developed crystal structure. The temperature is 2500-3000 C and the cycle time about 15 days. The manufacturing process is an arduous task.

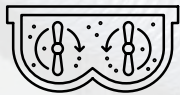
MANUFACTURING PROCESS



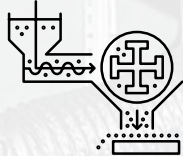
1 Raw Materials



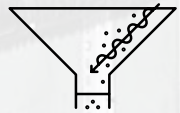
2 Pulverizing



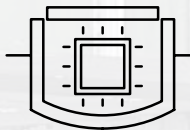
3 Kneading



4 Pulverizing & Sievering



5 Mixing



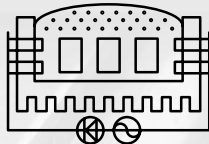
6 Isostatic Pressing



7 Baking
Up to 3000°C
for 15 days



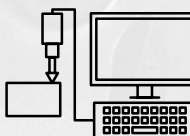
8 Impregnation



9 Graphitizing



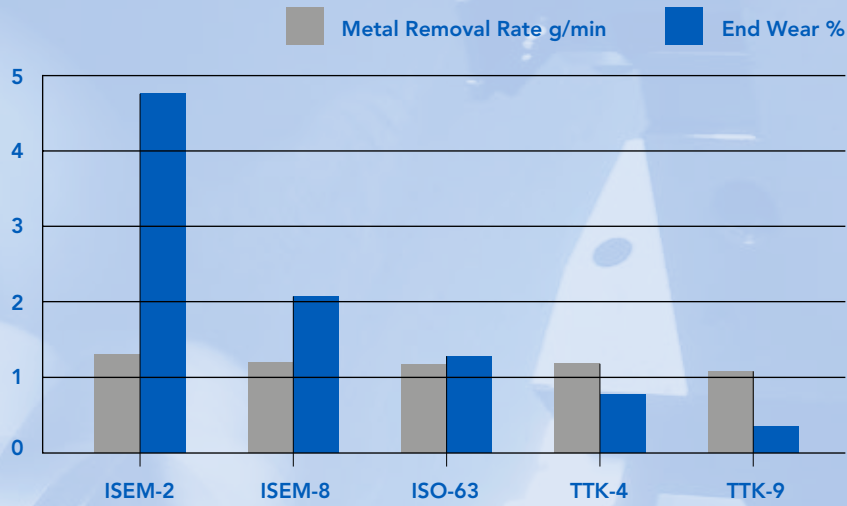
10 Purification
35-70 days at ~1100°C



11 Inspection

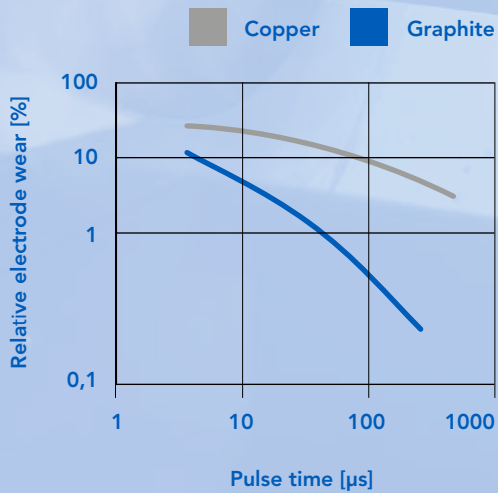


METAL REMOVAL RATE AND WEAR RESISTANCE

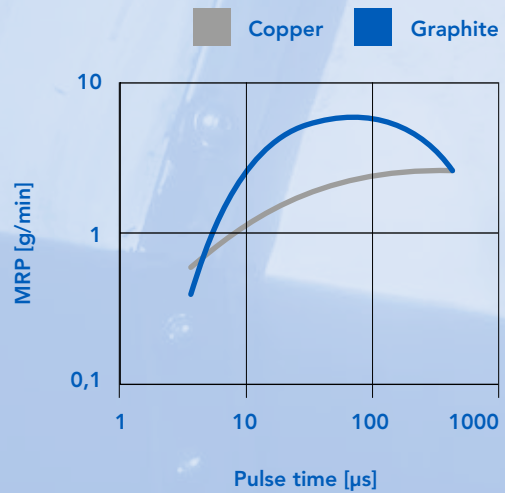


GRAPHITE VS COPPER

WEAR



METAL REMOVAL RATE



ISEM-2

ISEM-2 is a performance grade, particularly suited for roughing, drop-forging dies, pressure die-casting moulds as well as for some plastic injection mould tools.

ISEM-2 is normally the best economical choice when used together with a superfine grain graphite. High metal removal rate and relatively low electrode wear.

ISEM-2 is the standard grade for general roughing.

Surface: [VDI 35~28]

Maximum block size: 310 x 625 x 1010 mm

ISEM-2

Grain size [μm]	Density [g/cm^3]	Hardness [Shore]	Resistivity [$\mu\Omega\text{m}$]	Flexural strength [MPa]	Compressive strength [MPa]
10	1.78	55	11.0	41	83



ISEM-8

ISEM-8 belong to the group fine grain, this grade is considered to be an universal grade material. The material combines a high metal removal rate together with the possibility to get a good surface finish.

ISEM-8 the machinability of this grade makes it the choice when you have somewhat detailed electrodes.

Surface: [VDI 30~24]

Maximum block size: 310 x 625 x 1050 mm

ISEM-8

Grain size [μm]	Density [g/cm^3]	Hardness [Shore]	Resistivity [$\mu\Omega\text{m}$]	Flexural strength [MPa]	Compressive strength [MPa]
8	1.78	63	13.4	52	106



ISO-63

ISO-63 is a superfine grain graphite material, this grade provide very good surface finish together with a high metal removal rate. If used in combination with ISEM-2 you'll get an efficient and economical erosion process when taking advantage of the very high metal removal rate from ISEM-2 and reaching a very good surface finish with ISO-63.

ISO-63 since long well proven to be a premium graphite, used in a variety of applications. This is the only grade in it's class available in very big dimensions. High density and strength together with a very low wear have made this grade very popular among users expecting very good surfaces, good machinability and very low wear. Particularly suited for complex thin rib electrodes.

Surface: [VDI 26~19]

Maximum block size: 230 x 540 x 1000 mm

	Grain size [μm]	Density [g/cm^3]	Hardness [Shore]	Resistivity [$\mu\Omega\text{m}$]	Flexural strength [MPa]	Compressive strength [MPa]
ISO-63	5	1.78	76	15.0	65	135



TTK-4

TTK-4 has high strength and hardness which make this an excellent pick for electrodes having very fine details and requirements for the surface finish.

TTK-4 is a high grade material which is well recognized for its excellent machinability, this without any compromise in terms of wear resistance.

Surface: [VDI 23 - < 17]

Maximum block size: 210 x 510 x 950 mm

TTK-4

Grain size [μm]	Density [g/cm^3]	Hardness [Shore]	Resistivity [$\mu\Omega\text{m}$]	Flexural strength [MPa]	Compressive strength [MPa]
4	1.78	72	14.0	73	135



TTK-9

TTK-9 is superior to other grades suitable for extreme tasks. TTK-9 has very high strength and hardness. The extreme strength makes it easy to machine even the most complex super fine detailed electrodes.

TTK-9 the toughest grade used when you can't accept almost no wear at the electrode.

Surface: VDI < 14]

Maximum block dimension: 100 x 400 x 700 mm

TTK-9

Grain size [μm]	Density [g/cm^3]	Hardness [Shore]	Resistivity [$\mu\Omega\text{m}$]	Flexural strength [MPa]	Compressive strength [MPa]
2	1.77	90	18.0	92	180

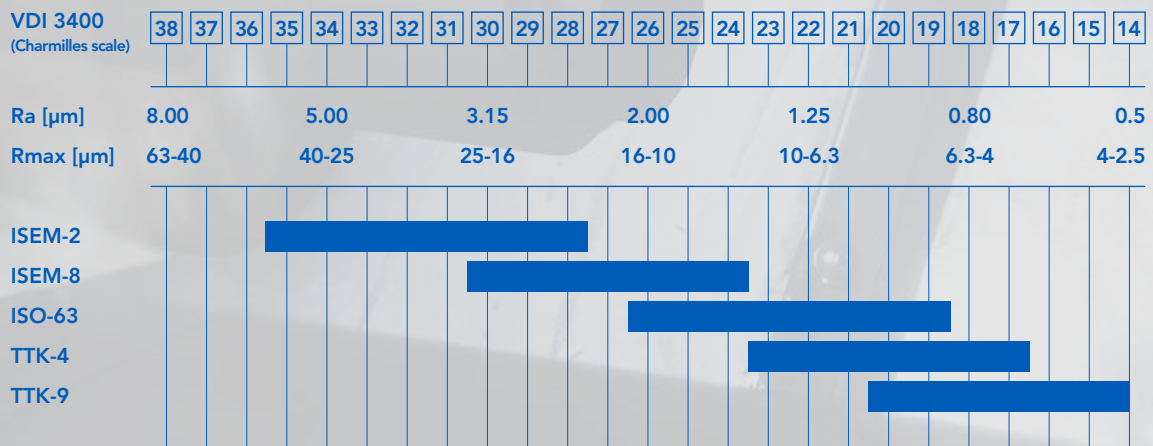


OVERVIEW

GRADES

	Grain size [μm]	Density [g/cm ³]	Hardness [Shore]	Resistivity [μΩm]	Flexural strength [MPa]	Compressive strength [MPa]
ISEM-2	10	1.78	55	11.0	41	83
ISEM-8	8	1.78	63	13.4	52	106
ISO-63	5	1.78	76	15.0	65	135
TTK-4	4	1.78	72	14.0	73	135
TTK-9	2	1.77	90	18.0	92	180

SURFACE FINISH



TANSO

Svenska Tanso AB

Svenska Tanso AB
Källebacksvägen 9
555 93 Jönköping
Tel: 036 - 36 85 00
www.tanso.se
sales@tanso.se

