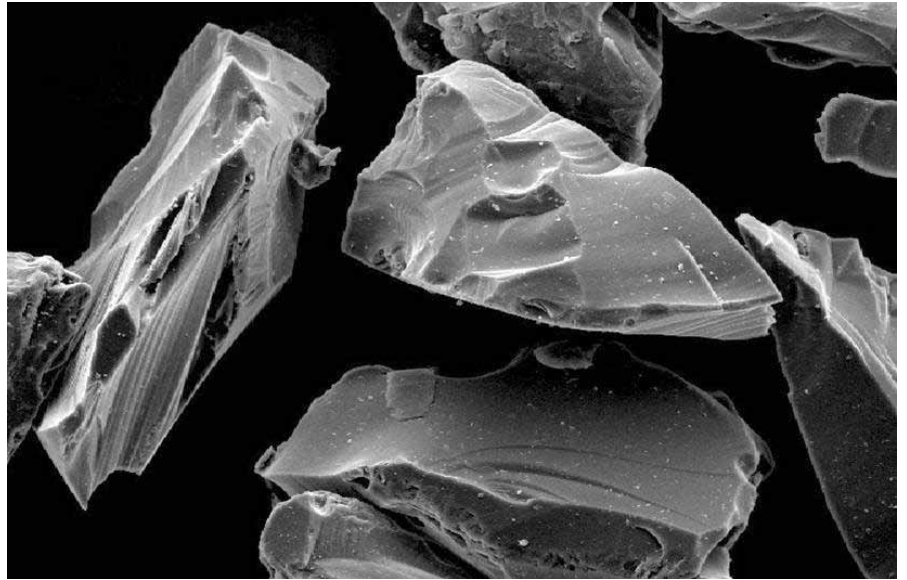




# TETRABOR® BORON CARBIDE GRAINS AS ABRASIVES AND LAPPING AGENTS

ESK has been a manufacturer of boron carbide since 1940, and is now the biggest producer in the western world.

Our many years of experience have made us your expert partner for grains, R&D and laboratory testing. TETRABOR® from ESK has a constant high purity thanks to the way it is manufactured. It contains almost the exact theoretical boron to carbon ratio of 4.3.



TETRABOR® boron carbide is a high-performance abrasive with a hardness and chemical resistance comparable to that of diamond. Thanks to its extreme hardness, TETRABOR® is often known as “black diamond,” and is ideal for machining hard materials by lapping, sawing or ultrasonic drilling.

## Advantages

- Rapid machining thanks to extreme hardness
- Constant quality

## Typical Assay

Product data	
B	min. 76
C	min. 19.5
B <sub>2</sub> O <sub>3</sub>	max. 0.5
Fe	max. 0.2
O	max. 1.0
N	max. 1.0
Si	max. 0.3



## Application

### Lapping

Lapping is the most common final machining method for flat and plane surfaces. TETRABOR® has a much higher hardness (Mohs 9.5+) than tungsten carbide (WC), titanium carbide (TiC), aluminum oxide (Al<sub>2</sub>O<sub>3</sub>), zirconium oxide (ZrO) and silicon carbide (SiC), thus ensuring fast and problem-free machining of wear-resistant hard metal and ceramic grades.

### Ultrasonic Boring of Glass, Semi-Precious Stones and Ceramics

Ultrasonic boring is suitable for boring almost any desired profile of hard and brittle materials. As abrasive, TETRABOR® achieves, in a single machining operation, dimensional stability, contour fidelity and sharp angles at all corners, as well as at the inlet and outlet. At the same time, outstanding surface quality is achieved without the slightest change of the structure of the machined surfaces.

### Wire Sawing of Ceramics with Boron Carbide

TETRABOR® is ideally suited for wire sawing of oxidic and non-oxidic ceramics, and especially sapphire.

TETRABOR® makes the sawing of ceramics easy, since it has a higher hardness than aluminum oxide (Al<sub>2</sub>O<sub>3</sub>), zirconium oxide (ZrO), silicon carbide (SiC) and synthetic sapphire.

Thanks to the use of TETRABOR®, the cut surfaces have excellent quality with a planarity of +5 µm, which makes lapping much easier and more cost effective.

## Delivery Program

TETRABOR® boron carbide can be supplied either as grain mixtures and in narrow grain size ranges according to the FEPA standard. Grain size range 0.8 µm to over 20 mm. For grain sizes and typical assay values, see the table.

### Standard Delivery Program acc. to FEPA

Grain designation	Mean diameter	
F10	2360 - 1700 µm	Macrogrit
F20	1180 - 850 µm	
F40	500 - 355 µm	
F60	300 - 212 µm	
F80	212 - 160 µm	
F100	150 - 106 µm	
F150	106 - 63 µm	
F180	90 - 53 µm	
F220	75 - 45 µm	
F240	70 - 28 µm	
F280	59 - 22 µm	
F320	49 - 16,5 µm	
F360	40 - 12 µm	
F400	32 - 8 µm	
F500	25 - 5 µm	
F600	19 - 3 µm	
F800	14 - 2 µm	
F1000	10 - 1 µm	
F1200	7 - 1 µm	

### Outside the FEPA Standard

Grain designation	Mean diameter
1500 F	approx 5 µm and finer
3000 F	approx. 0.8 µm

Other grains, special grades and high-purity B<sub>4</sub>C grains are available on demand

### Storage

TETRABOR® should be properly stored.