



Easy grinding of single crystal c-plane sapphire wafers.

Introduction

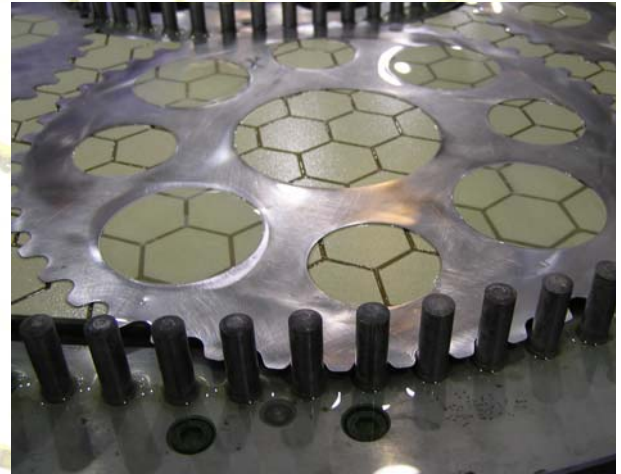
Single crystal sapphire (Al_2O_3) is widely used to produce optical windows and laser components [A-plane, R-plane]. For this emerging application it is used as prime substrate for growing gallium nitride films on the [C-plane] face for the manufacture of blue LEDs.

Due to the increased hardness and fracture toughness the grinding processes of c-plane sapphire becomes more difficult. Additional requirements in the prime wafer manufacture like grinding at very low forces, low speed and self sharpening behaviour of the abrasive tool, makes the manufacture of a diamond super abrasive grinding structure for this material very challenging.

As the technology leader in the manufacture of vitrified super abrasives, Meister Abrasives has undertaken process trials on this difficult material and developed a new innovative range of vitrified diamond super abrasives that enable coarse and fine grinding of these sapphire wafers.

Application from coarse to fine grinding

The objective of fine grinding is to avoid the costly lapping processes and reduce or eliminate the long CMP or polishing process by using ultra fine diamond crystals in the grinding wheel.



2" Sapphire wafers ground in common double disk grinder(DDG)

The solution

Depending on wafer thinning requirements Meister Abrasives offers various solutions:

Grinding Process	Roughness Ra*	Material Removal Rate*
Coarse	0.4 - 0.5 μm	10 – 25 $\mu m/min$
Fine	< 0.03 μm	30 – 50 $\mu m/h$

Attention: These rates may change due to different conditions

Benefits of vitrified diamond bonding

- Higher and more consistent precision stock removal
- Very low grinding forces
- Free cutting and self sharpening capabilities
- Better process control
- Improved flatness control

Our service to you

Based on your particular grinding machine we customize the specific abrasive solution that suits your coarse or fine grinding requirements. All leading single or double side grinding machines models are supported.

Make a Quality Decision and contact Meister Abrasives today. We will be pleased in helping you to improve your production.



MEISTER ABRASIVES AG
Switzerland

Phone: +41 (0)52 304 22 22
 Fax: +41 (0)52 304 22 12
sales@meister-abrasives.ch
www.meister-abrasives.ch

MEISTER ABRASIVES USA Inc.
United States of America

Phone: +1 401 294 2530
 Fax: +1 401 294 7326,
sales@meister-abrasives-usa.com
www.meister-abrasives-usa.com

MEISTER ABRASIVES UK Ltd.
United Kingdom

Phone: +44 (0)1327 703 813
 Fax: +44 (0)1327 871 617
sales@meister-abrasives.co.uk
www.meister-abrasives.co.uk

MEISTER ABRASIVI s.r.l.
Italy

Phone: +39 02931 82 080
 Fax: +39 02931 63 437
sales@meister-abrasivi.it