

INSTRUCTIONS FOR THE SAFE USE OF GRINDING TOOLS

Superabrasive tools are manufactured in accordance with EN 13236 and OSA provisions which determine the safety requirements for their production and use.

Therefore, products usually indicate the following (when possible):

- EN 13236,
- OSA,
- maximum peripheral speed,
- maximum revolutions (min^{-1}),
- symbol for limited use.

Restriction to use	Description	Safety sign
Do not use with hand-held machine	Abrasive product only for use on stationary and mobile machines NOTE: This restriction only applies to abrasive products not for use on hand-held machines but capable of being mounted on such machines.	
Do not use for grinding	Abrasive product only for cutting-off NOTE: This restriction only applies to abrasive products for use on hand-held machines.	
Only permitted for totally enclosed working area	Abrasive product only for use on stationary machines the guarding of which is accepted as TOTALLY ENCLOSED WORKING AREA.	
Only permitted for wet grinding and cutting-off	Abrasive product only suitable for wet grinding and cutting-off	

THE FOLLOWING SUBJECTS ARE RESPONSIBLE FOR SAFETY DURING GRINDING:

GRINDING TOOL MANUFACTURER

The grinding tool manufacturer must manufacture a safe tool, which is achieved through the correct selection of raw materials, a correct technological manufacturing procedure and the required product control.

The control methods are prescribed by the SIST EN 13236 and the FEPA international standards as well as our internal standards.

MACHINE MANUFACTURER

The grinding machine manufacturer must ensure a stable machine installation and the strength of the protective housings. The strokes and displacements must be set so that the required product accuracy can be achieved. Instructions for the correct and safe use of the machine must also be prepared.

MACHINE/TOOL USER

Follow the manufacturer's instructions for the machine and the tool:

- Take care to store the grinding tools properly.
- Check the grinding tool before mounting (in case of damage, contact the grinding tool manufacturer).
- If necessary, balance and properly mount the grinding tool.
- Prepare the grinding machine correctly.
- Test the grinding tool without any load.

Description	Safety sign	Description	Safety sign
Refer to instruction manual/booklet		Wear a mask	
Wear ear protection		Wear protective gloves	
Wear eye protection		Wear a face shield	

GENERAL INSTRUCTIONS

THE MACHINE/TOOL USER SHOULD CONSIDER THE FOLLOWING:

MOUNTING THE GRINDING TOOLS

High-quality grinding requires grinding machines with a rigid construction, a powerful drive and high-quality spindle bearings. During mounting, it is recommended that the grinding tool is first partially tightened and that the run out is minimized using a measuring device. All contact surfaces must be clean. Once mounted, the grinding tools should not be removed from the spindle until they are worn out.

COOLING

Cooling should be performed whenever the grinding procedure **allows for it**, since the coolant takes away the heat and the chips and enables a finer surface finish to the workpiece. We recommend the use of a water solution with up to 2% oil, and oil with additives.

Feeding the coolant at the contact area is significantly better than feeding it to the grinding tool core or workpiece.

DRESSING GRINDING TOOLS AND OPENING THE STRUCTURE

Vitrified bonded grinding tools are used for dressing. Their grit size must be one grade coarser than that of the superabrasive grits which are dressed. Both grinding tools here revolve in the same direction, whereby the peripheral speed of the vitrified bonded grinding tool is 15 - 25m/s, and that of the superabrasive grinding tool is lower by half. Grinding tools with abrasive rings on the face can also be dressed by rubbing them against abrasive grits, which are applied onto a flat metal or glass surface.

This reopens the surface of a dulled grinding tool, even though the grinding tools are already self-sharpening when correctly used.

The structure of dulled grinding tools can also be opened using a vitrified bonded tool, which is enclosed with the grinding tool (only for resin and hybrid bonded tools). Resin bonded CBN grinding tools for flat surface grinding hardened steels are sometimes also dressed by grinding into soft steels at a peripheral speed of 15m/s.

Dressing and profiling of vitrified bonded superabrasive grinding tools is also possible with diamond systems.

STORAGE OF GRINDING TOOLS

Grinding tools are sensitive to atmospheric influences and impacts which cause cracks that are invisible to the human eye but may cause the tool to break when the machine is started. Grinding tools must be stored well-protected, preferably in the original packaging. The storage area should not be damp and the temperature not below freezing.

The lifespan of resin and hybrid bonded grinding wheels is three years from the date of manufacture. Vitrified, metal and electroplated grinding wheels do not have limited durability if stored properly.

All grinding wheels have a 3-year warranty.

INSPECTION OF GRINDING TOOLS

Even though the packaging protects the product during transport, the boxes or crates should be moved carefully. After admission to the warehouse and prior to mounting the grinding wheel on the grinding machine, be sure to make a visual inspection.

If the grinding wheel is inadequate, consult the manufacturer about its suitability for use prior to mounting.

INCORRECT HANDLING

DON'T ever handle the grinding tools roughly.

STORAGE

DON'T store the grinding wheels and tools in a damp atmosphere or in extreme temperatures.

TOOL SELECTION

DON'T ever use a grinding tool without first checking its intended application.

VISUAL INSPECTION

DON'T ever use a damaged or incorrectly used grinding tool.

MOUNTING

DON'T ever mount a damaged grinding tool.

DON'T use mounting flanges that are inappropriate, damaged, dirty or worn out.

DON'T tighten the mounting flange excessively, as this could damage it.

DON'T exceed the maximum permitted operating circumferential speed marked on the wheel.

FURTHER INFORMATION

DON'T ever grind without using a safety guard which must cover at least one half of the grinding tool.

DON'T ever use a machine not in a good mechanical condition or not maintained regularly.

DON'T apply excessive force to grinding tools as this may slow down the machine.

DON'T ever use a machine without an appropriate dust removal system.

DON'T apply side pressure to thin grinding wheels.

DON'T stop the grinding tool after use by applying pressure to the tool edge or side.

Always switch the machine off and allow the tool to stop revolving.

DON'T use the machine in a position where you do not have full control of its operation.

DON'T force a wheel onto a machine spindle.

DON'T grind on the side of cutting-off wheels.

CORRECT HANDLING

DO always handle the grinding tools with extreme caution, especially those which have already been used.

STORAGE

DO always protect the grinding tools from mechanical damage and adverse environmental influences during storage.

TOOL SELECTION

DO always follow the information on the label or tool when selecting a grinding tool, as well as the information on the limitations of use from the catalogue.

DO always request additional information from the manufacturer or supplier when in doubt concerning tool selection.

VISUAL INSPECTION

DO always visually inspect grinding tools before mounting and eliminate damaged ones.

MOUNTING

DO always mount the grinding tool onto the machine in accordance with the tool and machine manufacturer's instructions.

DO always use the original tools supplied by the machine manufacturer to change the grinding tool.

DO always use correct mounting flanges for grinding tools and check that they are undamaged and free of burrs.

DO always check to see that the workpiece is firmly secured before beginning grinding.

DO always run newly mounted grinding tools at the maximum operating speed first, then reduce the rpm to the operating speed and allow the tool to run at least 60 seconds before you begin grinding.

FURTHER INFORMATION

DO always install a safety guard on the machine before grinding.

DO regularly check the operating speed of the machine, and always after maintenance and repairs.

DO always check the driving belt tension to achieve optimum power transmission.

DO always wear personal protective gear, depending on the machine type and application: protective wear for the eyes and face, protective footwear, gloves, ear protection, respiratory protection and other safety gear.

DO always use the grinding tools for the applications they were designed for.

DO always place the machine in an appropriate place where there is no possibility of mechanical damage.

DO always keep the workplace tidy to prevent slips or falls during grinding operations.

DO store portable machines appropriately when not being used, to avoid accidental physical damage to the wheel.

DO always use portable machines in a comfortable position, where the body is well balanced and the machine is well supported.