

## General Principles of Safety

Abrasive products improperly used can be very dangerous.

- Always follow the instructions provided by the abrasive product and machine supplier.
- Ensure that the abrasive product is suitable for its intended use. Examine all abrasive products for damage or defects before mounting.
- Follow the correct procedures for handling and storage of abrasive products.

Be aware of the hazards likely during the use of abrasive products and observe the recommended precautions to be taken:

- Bodily contact with the abrasive product at operating speed.
- Injury resulting from product breakage during use.
- Grinding debris, sparks, fumes and dust generated by the grinding process.
- Noise
- Vibration

Use only abrasive products conforming to the highest standards of safety. These products will bear the relevant EN standard number and/or the inscription "oSa".

- EN 12413 for Bonded Abrasives.
- EN 13236 for Superabrasives.
- EN 13743 for Specific Coated Abrasives (vulcanised fibre discs, flap wheels, flap discs and spindle-mounted flap wheels).

Never use a machine that is not in good working order or one with defective parts.

Employers should carry out a risk assessment on all individual abrasive processes to determine the appropriate protective measures necessary. They should ensure that their employees are suitably trained to carry out their duties.

More detailed information on the safe use of abrasive products, comprehensive Safety Codes are available from FEPA or your National Trade Association:

- FEPA Safety Code for Bonded Abrasives and Precision Superabrasives.
- FEPA Safety Code for Superabrasives for Stone and Construction.
- FEPA Safety Code for Coated Abrasives.

## Precautions against likely hazards

### Bodily contact with the abrasive product

- Always take great care and attention when using abrasive products. Tie back long hair and do not wear loose clothing, ties and jewellery.
- Prevent accidental start-up of the machine before mounting or changing an abrasive product. Isolate machines from their power source where necessary.
- Never remove guards from machines where fitted and ensure they are in good condition and properly adjusted before starting the machine.
- Always use gloves and suitable clothing where the workpiece or machine is hand-held. For gloves, a minimum protection level of EN 388 Category 2 is recommended.
- After switching off the machine, ensure the product has come to rest before leaving the machine unattended.

## Injury caused by product breakage

- Always handle abrasives with great care, they are easily damaged. Examine all products for defects or damage before use.
- Store abrasives in dry, frost-free conditions avoiding wide variations in temperature. Ensure they are properly protected and supported to prevent damage and distortion.
- Coated abrasives should be stored at 18-22° C, 45-65% relative humidity.
- Abrasive belts should be hung on a rod or peg not less than 50mm diameter.
- Never use an abrasive product beyond its expiry date where marked. Observe the recommended shelf life for the following specific products; Resinoid and Shellac products 3 years, Rubber products 5 years, Vitriified products 10 years.
- Check abrasive product or package for any warnings or other safety information:
- Ensure that the correct abrasive product is selected. Never use a product if it cannot be properly identified.
- Follow the instructions provided by the abrasive product or machine supplier when mounting abrasive products. Observe any mounting indications marked on the product such as direction of run or mounting position.
- Never force the abrasive product onto the mounting fixture or modify it to fit.
- Never exceed the maximum operating speed where specified.
- Check that the correct mounting devices are used and that they are undistorted, clean and free from burrs.
- Use mounting blotters where supplied.
- Do not tighten the mounting device excessively.
- After mounting or re-mounting an abrasive product, conduct a trial run at operating speed with the guard in place for at least 30 seconds, standing clear of the machine before use.



Not permitted for hand-held or manually-guided grinding



Not permitted for wet grinding



Not permitted for face grinding



Do not use if damaged



Only permitted with a back-up pad



Wear hearing protection



Read the instructions



Wear gloves



Wear eye protection



Wear a respirator

— Only permitted for wet cutting

— Only permitted for use on totally enclosed machines

- Never remove guards from machines where fitted and ensure they are in good condition and properly adjusted.
- Ensure that the workpiece is secure and properly supported. Ensure that work rests are properly adjusted and secure.
- Never start the machine with the workpiece in contact with the abrasive product.
- Never apply excessive force or shock to the abrasive product or let it overheat.
- Do not grind on the part of the product that is not designed for the operation. Avoid grinding with the edge of abrasive belts, use the centre of the belt if possible.
- Avoid clogging and uneven wear to ensure that the abrasive product is working efficiently. Dress frequently where appropriate.
- Let the abrasive product stop naturally, not by applying pressure to its surface.
- Turn off and spin out excess coolant before stopping the machine.
- Do not leave abrasive belts under tension when not in use.

## Grinding debris – sparks, dust and fumes

- Exposure to dust generated from workpiece and/or abrasive materials can result in lung damage and/or other physical injury
- All dry grinding processes should be provided with adequate extraction facilities.
- Do not use abrasive products near flammable materials.
- The use of respirators complying with EN149 is recommended for dry grinding processes even if extraction systems are provided.
- Guards where provided should be adjusted to deflect sparks and debris away from the operator.
- Take additional measures to protect people working nearby.
- Eye protection is recommended for all machine applications for abrasives. For hand-held machines or workpiece, goggles or full-face shields are recommended.
- Eye protection with a minimum protection of EN166 Grade B is recommended.
- Ensure that the correct abrasive product is selected. An unsuitable product can produce excessive debris and dust.

## Noise

- Ear protection complying with EN352 is recommended for all applications where the workpiece or machine is handheld, irrespective of the noise level.
- Ensure that the correct abrasive product is selected. An unsuitable product can produce excessive noise.

## Vibration

- Processes where the workpiece or machine is hand-held can cause vibration injury.
- Action needs to be taken if tingling, pins and needles or numbness is experienced after 10 minutes continuous use of the abrasive product.
- The effects of vibration are more pronounced in cold conditions so keep the hands warm and exercise hands and fingers regularly. Use modern equipment with low vibration levels.
- Maintain all equipment in good condition and stop the machine and have it checked if excessive vibration occurs.
- Use good quality abrasive products and keep them in good condition during their life.
- Maintain mounting flanges and back-up pads in good condition and replace if worn or distorted.
- Do not grip the workpiece or machine too tightly and do not exert excessive pressure on the abrasive product.
- Avoid continuous use of the abrasive product.
- Use the correct product. An unsuitable product can produce excessive vibration.
- Don't ignore the physical symptoms of vibration – seek medical advice.

## Disposal of abrasives

- Used or defective abrasives should be disposed in accordance with local or national regulations.
- Further information can be obtained from material safety data sheets provided by the supplier.
- Be aware that the abrasive product may be contaminated with material from the workpiece or process after use.
- Disposed abrasive products should be damaged to prevent them from being taken from waste skips and re-used.

## SAFETY RECOMMENDATIONS FOR THE USE OF ABRASIVE BELTS

### 1. General safety recommendations

- Ensure that quality and dimensions of the belt are correct for the machine and type of application. Refer to the machine manufacturer's instructions.
- Do not use near easily flammable material.
- Prevent long hair, loose clothes or jewellery from getting into contact with the machine and being pulled in. Take precautionary measures.
- Ensure that people nearby are protected from chips, sparks, debris, fumes, dust or noise. Belt grinding operations may produce high concentrations of dust, gas or mist, which can represent a health hazard as well as a risk of explosion.
- Do not open the guard or put down the machine until the belt has come to a complete standstill.

### 2. Specific safety recommendations

- Abrasive belts can tear. Please take precautions against risks by tearing of belt (e.g. protective clothing and devices, safety equipment of machinery).
- Abrasive machines, which do not have a completely closed guard require comprehensive protective equipment of the user (e.g. protective gloves, leather aprons, face shield, dust mask).
- Check the locking mechanism of the machine cover. Do not remove guards. Any contact with running belts can result in serious injuries.
- When mounting, refer to direction of running advice, if necessary.
- Make sure the workpiece is held correctly or is mechanically secured.
- Start the machine and wait until belt has reached its full operational speed before grinding.
- Belts should only be used dry unless specified as suitable for wet grinding (please contact the manufacturer if in any doubt).
- Use the center of the belt, if possible, and grind as flat as possible. Avoid grinding with the edge of the belt as well as strong punctual loading e.g. through sharp or sharp-edged workpieces.
- Do not exert excessive pressure and prevent the belt from overheating.
- Check the belts in use periodically for wear and tear or damage (e.g. cracks at edges, fracturing or strong wear and tear in the joint) and replace the belts if necessary.

Due to the extraordinary variety of applications and machine constructions, these recommendations are limited to basic aspects of safety. Further safety regulations and instructions can be taken from the respective legislation, decrees and technical standards.