

# A BIG NO!

## Side Grinding With Cut-Off Wheels

### ***Know The Dangers of Using the Side of Cut-off Wheels to Grind.***

This month we have received a call concerning using cut-off wheels to deburr freshly cut metal parts. This unsafe procedure was most likely started by a creative and well meaning customer. This customer was cutting metal parts and found burrs on these metal parts. He/She thought that since the wheel is made of abrasive; why not use the wheel for deburring. What harm can it do?

The purpose of cut-off wheels is to cut, using the surface located at the outer periphery of the wheel. Therefore, cut-off wheels are designed to withstand centrifugal, radial and tangential cutting forces in the plane of the wheel and not the side forces caused by side grinding. While reinforced cut-off wheels are better able to withstand some lateral and twisting forces, these thin wheels can be broken by excessive side forces. ANSI says, "Cutting-off wheels are thin and do not have great lateral strength. Care should be taken to avoid twisting, cocking, cramping, or exerting excessive side pressure on the side of the wheel." Side grinding could reduce the wheel's thickness and compromise any fiberglass reinforcing the wheel may have, thereby reducing the wheel's ability to resist side load. This reduction in wheel thickness, resulting in the reduction of the wheel's ability to resist side load, could lead to wheel breakages. Side grinding can also lead to excessive side pressure and wheel breakages. What harm can side grinding using cut-off wheels do? It can lead to wheel breakages and personal injury. That is why it is a big no!

### ***Cut-off Wheel - Don'ts***

- Don't mount cut-off wheels on machines not specifically designed and guarded for cut-off wheels or without the proper type and adjusted wheel guards.
- Don't use mounting flanges that are unequal in diameter, shape and bearing surface.
- Don't use mounting flanges on which the bearing surfaces are not clean, flat and free of burrs.
- Don't force a wheel onto the machine or alter the size of the wheel's hole. If the wheel won't fit the machine, get one that will.
- Don't tighten the mounting nut excessively. Over tightening a mounting nut can damage the mounting system and the cut-off wheel.
- Don't use damaged (cracked, chipped, dropped, warped, etc.) wheels.
- Don't abuse or drop wheels.
- Don't exceed the maximum operating speed marked on the cut-off wheel.
- Don't mount more than one cut-off wheel onto a single machine spindle. Stacking of cut-off wheels can be dangerous.
- Don't use cones or plugs as wheel flanges.
- Don't stand directly in front of a grinding wheel whenever a grinder is started. Allow the wheel to operate (at maximum operating speed) for one minute before attempting to cut.
- Don't jam, twist, bend, or pinch the wheel with the workpiece.
- Don't grind on the side of cut-off wheels.
- Don't force cutting. Excessive in-feed can cause the wheel to bend and break.
- Don't ignore the instructions provided with the abrasive wheel and the cut-off machine.
- Don't ignore ANSI, OSHA, other governmental safety regulations and those supplied by your employer.
- Don't "daydream" while using cut-off wheels. Pay attention!
- Don't attempt to cut with extremely cold cut-off wheels. Extremely cold outside temperatures and hot metal can "thermal shock" wheels causing them to break. Bring the wheels up to room temperature before using.
- Don't use non-reinforced cut-off wheels on portable cut-off machines.
- Don't store portable machines with cut-off wheels mounted on them.

*continued*

**PLAY IT  
SAFE  
AT THE  
WHEEL**



# A BIG NO! Side Grinding With Cut-Off Wheels *(continued)*

## Know The Dangers of Using the Side of Cut-off Wheels to Grind.

### ***Cut-off Wheel - Do's***

- Do always handle and store wheels in a careful manner.
- Do visually inspect all cut-off wheels before mounting.
- Do use cut off wheels only on machines that are designed and guarded for those specific cut-off wheels.
- Do check the machine speed against the maximum safe operating speed marked on the cut-off wheel.
- Do check all mounting flanges to ensure they are matched in size, shape and bearing surface, relieved, at least one-fourth the wheel's diameter, and are in good repair (i.e. no burrs, not bent or distorted, etc.).
- Do use properly adjusted cut-off wheel safety guards on machines.
- Do wear eye AND face protection while using cut-off wheels. Additional personal protective equipment (PPE) such as gloves, arm and leg guards, apron, hearing protection, hard hat, safety shoes, and respiratory protection as required by the job.
- Do cut only the material that the abrasive cut-off wheel is designed to cut (i.e. do not cut wood, etc.).
- Do follow all instructions provided by the cut-off wheel and machine manufacturers as well as all ANSI, OSHA, other governmental regulations and those supplied by your employer.
- Do clamp or fixture workpiece whenever possible to prevent part movement.
- Do use only reinforced cut-off wheels on portable machines.
- Do remember that abusive treatment of cut-off wheels may cause wheel breakages, resulting in serious injury or death.
- Do concentrate during cutting operations. Fatigue and distraction can cause accidents. Pay attention!

### ***TWO EXAMPLES OF CUT-OFF WHEELS BEING ABUSED (NOT SIDE GRINDING ABUSES)***



**14" CUT-OFF WHEEL USED WITH A 9" ANGLE GRINDER**



**CUT-OFF WHEEL WITH ABRASIVE CONE FOR FLANGE**

**PLAY IT  
SAFE  
AT THE  
WHEEL**

