



Worksite: _____ Instructor: _____ Date/Time: _____

Topic C139: Portable Abrasive Wheels (Hand Grinders)

Introduction: Portable abrasive wheels come in a wide range of types and sizes. They can be electric, gas, or air powered and are used for cutting, shaping, and cleaning of metal, masonry, wood, and plastic materials. Various abrasive compounds, including diamonds, are bonded together with polymers into flat or cupped discs, or to circular blades and are designed to operate at high speeds and temperatures. Wire brush wheels and assorted sanding disks are used for cleaning, de-scaling, and paint preparation of metal and wood materials.

Tool categories:

- Water cooled and lubricated “wet saws” that use circular diamond blades allow smooth, precision cutting and shaping on dense, hard ceramic and masonry materials. Table mounted versions are used for cutting bricks and tiles while walk-behind versions are used for cutting control joints in concrete slabs. The water controls the blade temperature and dust.
- Flat, circular blades are available to fit your skilsaw or chop saw with different abrasive compounds designed to cut metal or masonry. Roofers use masonry type blades on a skilsaw to cut roof tiles and usually the metal cutting blades are used on chop saws. Both applications generate extreme amounts of heat, noise levels, and particulates or vapors.
- Large gas powered circular cut-off saws are for heavy-duty use.
- Very small, high-speed “Dremel” types are for fine, intricate work.
- Flat (platen) or cupped faced grinding wheels are for free-hand grinding and shaping of metals, their welds, and other materials.

Safety guidelines for general operations:

- Employees using grinding tools are exposed to the hazards of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, or vapors. These workers must be provided with, and required to use, the personal protective equipment necessary to protect them from the hazard. This PPE includes eye and face, respiratory, hearing, and hand protection.
- All power grinding tools shall be maintained in a safe condition. Tools are designed with guards, must have them in place when the tool is being used. The safety guards must be strong enough to retain flying fragments and withstand the effects of a bursting wheel.
- All abrasive wheels shall be carefully inspected and “ring-tested” before mounting, to ensure that they are free from cracks or defects. To perform a sound or ring test, wheels should be suspended and tapped gently with a light, non-metallic instrument. If they sound cracked or dead, they should be discarded. An undamaged wheel will give a clear metallic tone or “ring”.
- Only portable grinders with wheels 2 inches in diameter or less may be equipped with a positive on/off control switch. Grinders with wheels greater than 2 inches in diameter must be equipped with a momentary contact on/off switch and may have a lock-on control.
- All grinders must be used on a 3-wire grounded circuit unless they are double insulated.
- Do not use the tool’s power cord for raise or lower it from a work place.
- All grinding or cutting wheels must fit freely on the spindle and not be forced on.
- Tighten the spindle nut only enough to hold the wheel in place.
- When grinding metal, it is easy to leave razor-sharp edges; these must be removed before leaving the work piece.

Conclusion: Be aware of fire hazards before beginning work, because sparks fly everywhere when grinding metal. Clear the work zone of any flammable material and keep a fire extinguisher close. Remember that abrasive wheels are high-speed, rotary tools and appropriate clothing should be worn. Avoid long, loose sleeves and necklaces when grinding; if you have long hair, keep it tied back. By following these safety guidelines you can complete your grinding or cutting operations safely.

Employee Attendance: (Names or signatures of personnel who are attending this meeting)

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_____	_____	_____
_____	_____	_____
_____	_____	_____
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These guidelines do not supersede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.