GI Part 1A. Abrasive Wheels
Detailed Comparison With
29 C.F.R. Subpart O – Machinery and Machine Guarding
29 C.F.R. Subpart I – Tools – Hand and Power

The comparisons show only those provisions where MIOSHA rules are different than OSHA or where MIOSHA rules are not included in 29 C.F.R.

MIOSHA	OSHA
R 408.10111. Handling and storage of abrasive wheels. **Rule 111**. (1) An abrasive wheel shall not be dropped, bumped or rolled. (2) An abrasive wheel shall be stored in a rack, bin, box or drawer in a manner to prevent damage to the wheel. (3) An abrasive wheel shall be disbursed on a first-in first-out basis. (4) An abrasive wheel shall not be stored subject to: (a) Exposure to high humidity, water or other liquids. (b) Freezing temperatures, or any temperature low enough to cause condensation on the wheel when moving it from storage to an area of higher temperature.	**No comparable OSHA provision**
R 408.10115. Machine spindles. **Rule 115.** (1) A wheel or flange that is secured by a spindle nut shall have the direction of the thread opposite that of the spindle rotation so that the nut will tighten as the spindle revolves. (2) A spindle shall be long enough to engage all the threads within the nut. (3) Spindle threads shall extend inside the flange, but not more than halfway within the hole of the abrasive wheel. (4) The spindle shall not be larger than the nominal size, with the undersize tolerance limited as required to prevent a hazardous condition. (5) A spindle on which a threaded-hole wheel is mounted shall be threaded to allow the abrasive wheel to be screwed flat against the back flange. In addition, all of the following requirements shall be complied with: (a) The direction of the thread shall be such that removing the abrasive wheel requires rotation of the wheel in the same direction that it turns when in use. (b) A spindle shaft shall not touch the bottom of a blind hole in an abrasive wheel. (c) A back flange that is specified in this rule shall be flat, unrelieved, and square to the spindle axis.	**No comparable OSHA provision**
R 408.10121. General requirements. **Rule 121.** (e) Lapidary grinding. A metal diamond lapidary blade which is notched, segmented, or continuous rim which is used within a coolant deflector does not require guards for speeds of not more than 3,500 sfpm. (2) The guard shall be constructed of material that is capable of retaining pieces of a broken wheel. See material tables. The guard shall be mounted so as to maintain alignment with the abrasive wheel to contain wheel breakage, and the strength of the fastenings shall exceed the strength of the guard. The guard shall be in	**No comparable OSHA provision**

position before starting the wheel.	
R 408.10124. Guarding cup wheels. **Rule 124.** (2) A band-type guard shall be constructed as prescribed in figures 6 and 7 of R 408.10198 and tables 4 and 5 of R 408.10199 and adjusted within 1/2 inch of the working surface of the abrasive wheel. (3) A revolving cup guard shall not be used as a method of safe guarding. (4) A guard for a tool and cutter grinder cup wheel shall be not less than 180 degrees of the periphery and the back side of the wheel shall be guarded. The spindle end and nut and front of the wheel need not be guarded if the spindle end and nut are inside the plane of the working face of the wheel. See figure 5 of R 408.10198.	**1910.215** **(b)(1)(iii) Special "Revolving Cup Guards**" which mount behind the wheel and turn with it. They shall be made of steel or other material with adequate strength and shall enclose the wheel sides upward from the back for one-third of the wheel thickness. The mounting features shall conform with all requirements of this section. It is necessary to maintain clearance between the wheel side and the guard. This clearance shall not exceed one-sixteenth inch.
R 408.10127. Construction of fabricated guards. **Rule 127**. (1) A fabricated guard made of structural steel shall be as prescribed in table 8. (2) Column A of table 8 shall also apply to cast guards. (3) Column B of table 8 shall apply where an adjustable tongue is held by bolts. (4) Any means of fastening shall be considered satisfactory if, when assembled, it has strength at least equal to the members being joined.	**No comparable OSHA provision**
R 408.10128. Construction of drawn steel guards. **Rule 128**. (1) A drawn steel guard for an abrasive wheel 8 inches and smaller on a portable grinder shall be as prescribed in figure 3 and table 2. (2) A drawn steel guard for a depressed center wheel shall be as prescribed in figure 4 and table 3. The lip, shown as dimension B in figure 4, shall curl inward to deflect pieces if an abrasive wheel breaks.	**No comparable OSHA provision**
R 408.10141. General requirements. **Rule 141.** (2) …A depressed center cutting-off wheel more than 16 inches in diameter shall be mounted between flat unrelieved flanges and not less than ¼ the wheel diameter. (3) A masonry saw using a reinforced resinold and steel centered wheel may use 4 inch diameter flanges for wheels thru 20 inch diameter. (4) Concrete saws using a steel centered wheel 20 inch and larger may use flanges 1/6 the wheel diameter.	**No comparable OSHA provision**
R 408.10142. Flange construction. **Rule 142.** (1) Whenever a wheel is mounted between flanges, the flange shall be designed to transmit the driving torque from the spindle to the abrasive wheel. (2) A flange shall be made of steel, cast iron, or materials of equal strength and rigidity so that when tightened, the radial width of the bearing surface of contact on the abrasive wheel is maintained (See figure 11.) (3) Two flanges between which an abrasive wheel is mounted, except when a special adaptor is used on a depressed center wheel, shall have the same	**No comparable OSHA provision**

dimensions and bearing surface.	
R 408.10143. Maintenance for flanges. **Rule 143**. (1) A flange with a worn, warped, sprung or damaged bearing surface shall be repaired or replaced. (2) When resurfacing a straight relieved flange, a recess of not less than 1/16 inch shall be maintained on the side next to the wheel for a distance prescribed in table 11. (3) When resurfacing a straight flange of the adaptor or sleeve type, the undercut shown in figures 14 and 15 shall be maintained to insure that there will be no bearing on the sides of the abrasive wheel within 1/8 inch of the arbor hole.	**No comparable OSHA provision**
R 408.10153. Multiple wheel mounting. **Rule 153.** When mounting more than 1 abrasive wheel between a pair of flanges, the wheels shall be cemented together, separated by spacers having low compressibility such as soft copper or brass or especially manufactured for mounting without cementing or use of the prescribed spacers. The spacers shall be equal in diameter to the flanges and have equal bearing surfaces.	**1910.215 Abrasive wheel machinery** (d)(6) Multiple wheel mounting. When more than one wheel is mounted between a single set of flanges, wheels may be cemented together or separated by specially designed spacers. Spacers shall be equal in diameter to the mounting flanges and have equal bearing surfaces. When mounting wheels which have not been cemented together, or ones which do not utilize separating spacers, care must be exercised to use wheels specially manufactured for that purpose.
R 408.10154. Mounting nuts. **Rule 154**. (1) A single spindle nut shall be tightened only enough to drive the abrasive wheel and prevent slippage. (2) A multiple screw flange shall be tightened uniformly to distribute pressure over the flange surface and prevent springing of the flange.	**No comparable OSHA provision**
R 408.10155. Mounting of abrasive disc wheels. **Rule 155**. (1) An inserted nut wheel shall be mounted with a steel machine face plate of the same diameter as the wheel. The thickness of the machine face plate shall be as prescribed in table 19. (2) A screw hole in the machine face plate shall be located to match the threaded hole in the inserted nut and large enough so the screw will not bind. Each screw hole in the plate shall be countersunk to a uniform depth to accommodate the screw head. A screw shall engage the threads of the inserted nuts, but not touch the bottom of the hole. (3) A machine face plate shall be flat, concentric and mounted at a 90 degree angle to the machine spindle. (4) A plate mounted wheel having a mounting plate thinner than prescribed in table 19 shall have an additional machine face plate installed to provide the additional strength needed. The added machine face plate shall have the same diameter as the wheel (See figure 22 and table 20).	**No comparable OSHA provision**
R 408.10156. Mounting depressed center wheels. **Rule 156.** (1) A depressed center wheel, except as prescribed in rule 157, shall be mounted with specially designed adaptors. (2) The back flange shall extend beyond the central hub or raised portion and contact the wheel to counteract the side pressure on the wheel in use. (3) The adaptor nut which is less than the minimum 1/3	**No comparable OSHA provision**

diameter of the wheel shall fit into the depressed side to prevent interference in side grinding and drive the wheel by its clamping force against the depressed portion of the back flange. (4) Adaptors affixed by the depressed center wheel manufacturer shall not be reused.	
R 408.10157. Mounting depressed center cutting-off wheels. **Rule 157**. A depressed center cutting-off wheel more than 16 inches in diameter shall be mounted with flat unrelieved flanges having matching bearing surfaces not less than 1/4 the wheel diameter.	**No comparable OSHA provision**
R 408.10158. Mounting cylinder wheels. **Rule 158**. (1) A cylinder wheel shall be cemented or chucked onto a machine face plate which shall be flat, concentric and mounted at 90 degrees to the machine spindle. (2) A cylinder wheel shall be used only on a machine equipped a band-type guard as prescribed in rule 129.	**No comparable OSHA provision**
R 408.10159. Mounting segments. **Rule 159**. (1) Segments shall be chucked in a holding mechanism as prescribed by the manufacturer of the chucking device. (2) The segments shall be used only on a machine equipped with a band-type guard as prescribed in rule 129.	**No comparable OSHA provision**
SPEED PROVISIONS	
R 408.10173. Training, maintenance, and procedures to prevent wheel overspeed. **Rule 173**. An employer shall establish appropriate training maintenance, and procedures to assure that wheel overspeed will not occur on an abrasive wheel.	**No comparable OSHA provision**
R 408.10174. Grinding machine spindle speeds. **Rule 174**. (1) The spindle speed shall be permanently marked on a grinding machine and maintained in a legible manner. (2) The spindle speed shall not exceed the rated speed of the grinding wheel. (3) The wheel spindle speed on a single-speed grinding machine shall be checked with a tachometer when a change is made which could affect the spindle speed. (4) The wheel spindle speed on an air-driven grinder shall be checked with a tachometer as follows: (a) After maintenance or repair. (b) When in use, with such checks being performed as often as necessary to assure that wheel overspeed will not occur. (5) The wheel spindle speed of a vari-speed grinding machine shall be checked with a tachometer as follows: (a) When in use, with such checks being performed as often as necessary to assure that wheel overspeed shall not occur. (b) After any change that could affect the spindle speed. (c) When a new wheel is mounted.	**No comparable OSHA provision**
R 408.10175. Wheel speeds.	**No comparable OSHA provision**

Rule 175. (1) An abrasive wheel or its package shall show the maximum operating speed as revolutions per minute. The use of a package for this marking shall be limited to those shapes which make marking unfeasible. (2) Except as provided for in R 408.10177, an abrasive wheel shall be run at a speed which is not more than that prescribed in table 21 of R 408.10199, but not more than the rated speed on the wheel. The revolutions per minute may be increased as the wheel diameter decreases if the original surface feet per minute speed is not exceeded. Wheel speed shall be computed from the free-running speed of the machine spindle. (3) An employer shall purchase and use only an abrasive wheel which has been speed tested, as prescribed in table 22 of R 408.10199, by the manufacturer, with the following exceptions: (a) A wheel that is less than 6 inches in diameter. (b) A diamond or cubic boron nitrate wheel that is bonded by metal or organic substances. (c) A segmental disc wheel and disc wheel. (d) A ball grinding wheel. (e) A regulating wheel for centerless grinders. (f) A mounted wheel. (g) A segment. (4) The operating speed and overhand of a mounted wheel shall be not more than that prescribed in tables 23 to 31 of R 408.10199 (See figure 23).	
SPECIAL SPEEDS	
R 408.10177. Special speeds. **Rule 177**. (1) Wheels that are used on special applications at speeds higher than those listed in table 21 of R 408.10199 shall be marked for high-speed application and the specific conditions of use. The marked maximum speed of the wheel shall not be exceeded. (2) The machine and its components, such as the spindle, bearings, guards, flanges, and rated horsepower shall be such that the entire unit will operate safely at the special speed. (3) An employer shall assure that a machine is operated with safety guards as prescribed in this part and that a machine and guards are maintained in good condition for continued safety.	**No comparable OSHA provision**
OPERATING PROVISIONS	
R 408.10181. Operating provisions. **Rule 181**. (1) A grinding machine with a vari-speed control shall have the speed adjustment supervised by an authorized and trained employee. (2) Before mounting a wheel on a vari-speed grinder, an employee shall adjust the speed of a machine to not more than the rated speed of the wheel.	**No comparable OSHA provision**
R 408.10182. Training. **Rule 182**. An employee shall be instructed in the care, use and protection of an abrasive wheel and equipment before assignment.	**No comparable OSHA provision**
R 408.10183. Wheel breakage.	**No comparable OSHA provision**

Rule 183. (1) A cracked or broken wheel shall not be used. (2) Wheel breakage shall be investigated by the employer to determine and correct the cause.	
R 408.10184. Starting new wheels. **Rule 184**. After mounting an abrasive wheel, it shall be run with the guard in place or in an enclosure at operating speed for not less than 1 minute before applying work. During this time an employee shall not stand in front of or in line with the wheel.	**No comparable OSHA provision**
R 408.10185. Truing and dressing wheels. **Rule 185**. An out-of-truth abrasive wheel shall be trued by a trained employee. A wheel which cannot be trued shall not be used.	**No comparable OSHA provision**
R 408.10186. Side, form, shoulder, and contour grinding. **Rule 186**. Side grinding shall only be performed on an abrasive wheel that is designed for that purpose. A wheel designed for grinding on the periphery shall not be used for side grinding. This does not preclude wheel use for applications such as shoulder, form, and contour grinding. Where it is recognized that a limited amount of grinding with the side of the wheel is performed with a wheel that is designed for periphery grinding.	**No comparable OSHA provision**
R 408.10187. Maintenance. **Rule 187**. (1) An employer shall maintain grinding equipment in a condition which will not create a hazard for the employee. (2) An employer shall instruct the employee to report defective equipment to the employee's supervisor.	**No comparable OSHA provision**