DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

OCCUPATIONAL HEALTH STANDARDS

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 14 and 24 of 1974 PA 154, MCL 408.1014 and 408.1024, and Executive Reorganization Order Nos. 1996-1, 1996-2, 2003-1, 2008-4, and 2011-4, MCL 330.3101, 445.2001, 445.2011, 445.2025 and 445.2030.)

PART 523 ABRASIVE BLASTING

R 325.50251 Scope.

Rule 1. These rules apply to all operations where an abrasive is forcibly applied to a surface by pneumatic or hydraulic pressure, or by centrifugal force. These rules do not apply to steam blasting or steam cleaning, or hydraulic-cleaning methods where work is done without the aid of abrasives.

History: 2001 AACS; 2016 AACS.

R 325.50252 Adoption of standards.

Rule 2. (1) The following standards are adopted by reference in these rules and are available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or via the internet at website: http://global.ihs.com; at a cost as of the time of adoption of these rules, as stated in this subrule:

(a) American National Standards Institute Standard ANSI Z9.3 “Spray Finishing Operations: Safety Code for Design, Construction , and Ventilation,” 1985 edition. Cost: $25.00.

(b) ANSI Z33.1 “Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying,” 1961 edition. Cost: $25.00.

(c) National Fire Protection Association NFPA 68 “Standard on Explosion Protection by Deflagration Venting,” 1954 edition. Cost: $38.00.

(2) The standards adopted in these rules are available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143.

(3) Copies of the standards adopted in these rules may be obtained from the publisher or may be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in this rule, plus $20.00 for shipping and handling.

(4) The following Michigan occupational safety and health standards (MIOSHA) are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge

from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at website: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, at the time of adoption of these rules, is 4 cents per page.

(a) General Industry Safety Standard Part 39 “Design Safety Standards for Electrical Systems,” R 408.13901 to R 408.13905.

(b) Occupational Health Standard Part 301 “Air Contaminants for General Industry,” R 325.51101 to R 325.51108.

(c) Occupational Health Standard Part 451 “Respiratory Protection,” R 325.60051 to R 325.60052.

(5) Appendix A is informational only and is not intended to create any additional obligations or requirements not otherwise imposed or to detract from any established obligations or requirements.

History: 2001 AACS; 2016 AACS.

R 325.50253 Definitions.

Rule 3. (1) "Abrasive" means a solid substance used in an abrasive-blasting operation.

(2) "Abrasive-blasting respirator" means a respirator constructed so that it covers the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive.

(3) "Blast-cleaning barrel" means a complete enclosure that rotates on an axis, or that has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts to the action of an automatic blast spray.

(4) "Blast-cleaning room" means a complete enclosure in which blasting operations are performed and where the operator works inside of the room to operate the blasting nozzle and direct the flow of the abrasive material.

(5) "Blasting cabinet" means an enclosure where the operator stands outside and operates the blasting nozzle through an opening or openings in the enclosure.

(6) "Clean air" means air that will not cause harm or discomfort to an individual if it is inhaled for extended periods of time.

(7) "Dust collectors" means a device or combination of devices for separating dust from the air handled by an exhaust ventilation system.

(8) "Exhaust ventilation system" means a system for removing contaminated air from a space that is comprised of 2 or more of the following elements:

(a) An enclosure or hood.

(b) Duct work.

(c) Dust-collecting equipment.

(d) Exhauster.

(e) Discharge stack.

(9) "Particulate-filter respirator" means an air-purifying respirator, commonly referred to as a dust or a fume respirator, that removes most of the dust or fume from the air passing through the device.

(10) "Respirable dust" means airborne dust in sizes capable of passing throughout the upper respiratory system to reach the lower lung passages.

(11) "Rotary blast-cleaning table" means an enclosure where the pieces to be cleaned are positioned on a rotating table and are passed automatically through a series of blast sprays.

(12) "Abrasive blasting" means the forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.

History: 2001 AACS; 2016 AACS.

R 325.50254 Dust hazards from abrasive blasting.

Rule 4. (1) Abrasives and the surface coatings on the materials blasted are shattered and pulverized during blasting operations and the dust formed will contain particles of respirable size. An employer shall consider the composition and toxicity of the dust from these sources in making an evaluation of the potential health hazards.

(2) An employer shall ensure that the concentration of respirable dust or fume in the breathing zone of the abrasive-blasting operator or any other worker is kept below the exposure levels specified in Occupational Health Standard Part 301 “Air Contaminants for General Industry,” as referenced in R 325.50252.

(3) An employer shall ensure that only organic abrasives that are combustible are used in automatic systems. If flammable or explosive dust mixtures may be present, then the construction of the equipment, including the exhaust system and all electric wiring, shall conform to the requirements of ANSI Z33.1 “Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying,” 1961 edition, as adopted in R 325.50252; and General Industry Safety Standard Part 39 “Design Safety Standards for Electrical Systems,” as referenced in R 325.50252.

(4) An employer shall ensure that the blast nozzle is bonded and grounded to prevent the buildup of static charges. If flammable or explosive dust mixtures are present, then the abrasive blasting enclosure, the ducts, and the dust collector shall be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide for pressure relief in case of explosion, following the principles set forth in the NFPA 68 “Standard on Explosion Protection by Deflagration Venting,” 1954 edition, as adopted in R 325.50252.

(5) With respect to operational procedures and general safety, dust shall not be permitted to accumulate on the floor or on ledges outside of an abrasive-blasting enclosure, and dust spills shall be cleaned up promptly. Aisles and walkways shall be kept clear of steel shot or similar abrasive that may create a slipping hazard.

History: 2001 AACS; 2016 AACS.

R 325.50255 Blast-cleaning enclosures.

Rule 5. (1) An employer shall ensure that blast-cleaning enclosures are exhaust ventilated so that a continuous inward flow of air will be maintained at all openings in the enclosure during the blasting operation.

(2) An employer shall ensure that all air inlets and access openings are baffled or arranged so that, by combining inward air flow and baffling, the escape of abrasive or dust particles into an adjacent work area will be minimized and visible spurts of dust will not be observed.

(3) The rate of exhaust shall be sufficient to provide prompt clearance of dust-laden air within the enclosure after the cessation of blasting.

(4) Before the enclosure is opened, the blast shall be turned off and the system shall be run for a sufficient period of time to remove the dusty air within the enclosure.

(5) Where hard deep-cutting abrasives are used, an employer shall ensure that safety glass protected by screening is used in observation windows.

(6) Slit abrasive-resistant baffles shall be installed in multiple sets of all small access openings where dust might escape and shall be inspected regularly and replaced when needed.

(7) Doors on blast-cleaning enclosures shall be flanged and tight when closed.

(8) An employer shall ensure that doors on blast-cleaning rooms are operable from both inside and outside, except that where there is a small operator access door, the large work access door may be closed or opened from the outside only.

History: 2001 AACS; 2016 AACS.

R 325.50256 Exhaust ventilation systems.

Rule 6. (1) An employer shall ensure that the construction, installation, inspection, and maintenance of exhaust systems conform to the principles and requirements set forth in ANSI Z9.3 "Spray Finishing Operations: Safety Code for Design, Construction, and Ventilation," 1985 edition, and ANSI Z33.1 "Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying," 1961 edition, as adopted in R 325.50252.

(2) If dust leaks are noted, then repairs shall be made as soon as possible.

(3) The static pressure drop at the exhaust ducts leading from the equipment shall be checked when the installation is completed and periodically thereafter to assure continued satisfactory operation. If an appreciable change in the pressure drop indicates a partial blockage, then the system shall be cleaned and returned to normal operating condition.

(4) In installations where the abrasive is recirculated, the exhaust ventilation system for the blasting enclosure shall not be relied upon for the removal of fines from the spent abrasive instead of an abrasive separator. An abrasive separator shall be provided for this purpose.

(5) The air exhausted from blast-cleaning equipment shall be discharged through dust-collecting equipment. Dust collectors shall be set up so that the accumulated dust can be emptied and removed without contaminating other working areas.

History: 2001 AACS; 2016 AACS.

R 325.50257 Respiratory protection.

Rule 7. (1) An employer shall implement a respiratory protection program in accordance with Occupational Health Standard Part 451 "Respiratory Protection," as referenced in R 325.50252, when respirators are required by this rule.

(2) Abrasive-blasting respirators shall be worn by all abrasive-blasting operators in all of the following situations:

(a) When working inside blast-cleaning rooms.

(b) When using silica sand in manual blasting operations where the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure.

(c) Where concentrations of toxic dust dispersed by the abrasive blasting may exceed the exposure limits set in Occupational Health Standard Part 301 "Air Contaminants for General Industry," as referenced in R 325.50252, and the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure.

(3) Employers may use properly fitted particulate-filter respirators, commonly referred to as dust-filter respirators, for short, intermittent, or occasional dust exposures such as cleanup, dumping of dust collectors, or unloading shipments of sand at a receiving point when it is not feasible to control the dust by enclosure, exhaust ventilation, or other means. The respirator used shall be for protection against the specific type of dust encountered.

(4) Dust-filter respirators may be used to protect the operator of outside abrasive blasting operations where nonsilica abrasives are used on materials that have low toxicities.

(5) Dust-filter respirators shall not be used for continuous protection if silica sand is used as the blasting abrasive or if toxic materials are blasted.

History: 2001 AACS; 2016 AACS.

R 325.50258 Air supply and air compressors.

Rule 8. An employer shall ensure that air for abrasive-blasting respirators is free of harmful quantities of dusts, mists, or noxious gases, and meets the requirements for supplied-air quality and use specified in Occupational Health Standard Part 451 "Respiratory Protection," as referenced in R 325.50252.

APPENDIX A
APPLICABLE MIOSHA STANDARDS

The following table provides links to several MIOSHA standards (not all-inclusive) that may contain requirements that apply to abrasive blasting operations. For example, the removal of lead paint by abrasive blasting will likely require employers to follow provisions of the MIOSHA lead standards. MIOSHA standards listed in this appendix provide employers and workers with information that may be useful for safely conducting abrasive blasting.

GENERAL INDUSTRY	CONSTRUCTION INDUSTRY
OH Part 520 Ventilation Control for General Industry	OH Part 620 Ventilation Control for Construction
OH Part 301 Air Contaminants for General Industry	OH Part 601 Air Contaminants for Construction
OH Part 310 Lead	OH Part 603 Lead Exposure in Construction
OH Part 308 Inorganic Arsenic	OH Part 308 Inorganic Arsenic
OH Part 309 Cadmium	OH Part 309 Cadmium

GENERAL INDUSTRY	CONSTRUCTION INDUSTRY
OH Part 315 Chromium (VI) in General Industry	OH Part 604 Chromium (VI) in Construction
OH Part 451 Respiratory Protection	OH Part 451 Respiratory Protection
OH Part 308 Inorganic Arsenic	OH Part 308 Inorganic Arsenic
OH Part 430 Hazard Communication	OH Part 430 Hazard Communication
OH Part 433 Personal Protective Equipment	CS Part 6 Personal Protective Equipment
OH Part 474 Sanitation	CS Part 1 General Rules

History: 2001 AACS; 2016 AACS.