

Chapter SPS 307

EXPLOSIVES AND FIREWORKS

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Note: Chapter Ind 5 as it existed on April 30, 1985 was repealed and a new chapter ILHR 7 was created effective May 1, 1985. Chapter ILHR 7 was renumbered ch. Comm 7 under s. 13.93 (2m) (b) 1., Stats., and corrections made under s. 13.93 (2m) (b) 6. and 7., Stats., Register, October, 1996, No. 490; CR 06-120: r. and recr. Comm. 7, Register February 2008 No. 626, eff. 3-1-08. Chapter Comm 7 was renumbered chapter SPS 307 under s. 13.92 (4) (b) 1., Stats., Register December 2011 No. 672.

Subchapter I — General Requirements

SPS 307.01 Purpose. (1) **EXPLOSIVES.** Pursuant to s. 101.15 (2) (e), Stats., the purpose of this chapter is to establish standards for the use of explosive materials.

(2) **FIREWORKS.** Pursuant to s. 167.10 (6m), Stats., the purpose of this chapter is to establish licensing procedures for the manufacture of fireworks.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

SPS 307.02 Scope. (1) **EXPLOSIVES.** The provisions of this chapter establish uniform limits on permissible levels of blasting resultants relating to the use of explosive materials.

Note: See ch. SPS 305 for rules pertaining to the licensing of blasters. See ch. SPS 314 for rules pertaining to general safety and fire prevention related to the storage, handling of explosive materials. See chs. SPS 361 to 366 for rules pertaining to the design and construction of buildings related to the storage of explosive materials.

(2) **FIREWORKS.** The provisions of this chapter establish licensing and inspection standards relating to the manufacture of fireworks.

Note: See s. 167.10, Stats., and ch. SPS 314 for requirements pertaining to the manufacture, sale, storage and handling of fireworks.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

SPS 307.03 Fees. Fees for safety inspections and petitions for variance shall be submitted as specified in ch. SPS 302.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08; correction made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672.

SPS 307.06 Petition for variance. The department shall consider and may grant a variance to a provision of this chapter in accordance with ch. SPS 303. The petition for variance shall include, where applicable, a position statement from the fire department having jurisdiction.

Note: Chapter SPS 303 requires the submittal of a petition for variance form (SBD-9890) and a fee, and that an equivalency is established in the petition for variance that meets the intent of the rule being petitioned. Chapter SPS 303 also requires the department to process regular petitions within 30 business days and priority petitions within 10 business days.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08; correction made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672.

SPS 307.10 Penalties. (1) **EXPLOSIVES.** Penalties for violation of any provision in this chapter relating to explosives shall be assessed in accordance with s. 101.02 (12) and (13), Stats.

Note: Section 101.02 (13) (a), Stats., indicates penalties will be assessed against any employer, employee, owner or other person who fails or refuses to perform any duty lawfully enjoined, within the time prescribed by the department, for which no penalty has been specifically provided, or who fails, neglects or refuses to comply with any lawful order made by the department, or any judgment or decree made by

any court in connection with ss. 101.01 to 101.599, Stats. For each such violation, failure or refusal, such employee, owner or other person must forfeit and pay into the state treasury a sum not less than \$10 nor more than \$100 for each violation.

Note: Section 101.02 (12), Stats., indicates that every day during which any person, persons, corporation or any officer, agent or employee thereof, fails to observe and comply with an order of the department will constitute a separate and distinct violation of such order.

(2) **FIREWORKS.** Pursuant to s. 167.10 (9) (g), Stats., a person who violates any provision of this chapter relating to fireworks may be fined not more than \$10,000 or imprisoned not more than 10 years or both.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

Subchapter II — Definitions and Standards

SPS 307.20 Definitions. In this chapter:

(1) “Airblast” means an airborne shock wave resulting from the detonation of explosives.

(2) “Barrier” means a material object that separates, keeps apart, or demarcates in a conspicuous manner such as cones, a warning sign, or tape.

(3) “Blast area” means the area of a blast within the influence of flying rock, missiles, gases, and concussion as determined by the blaster in charge.

(4) “Blast site” means the area where explosive material is handled during loading of blastholes, including 50 feet in all directions from the perimeter formed by the loaded holes. A minimum of 30 feet may replace the 50-foot requirement if the perimeter of loaded holes is marked and separated from non-blast site areas by a barrier. The 50-foot or 30-foot distance requirements, as applicable, apply in all directions along the full depth of the blasthole. In underground mines, at least 15 feet of a solid rib, pillar, or broken rock may be substituted for the 50 foot distance.

(5) “Blaster” means any individual holding a valid blaster’s license issued by the department.

(6) “Blaster in charge” means that qualified person in charge of, and responsible for, the loading and firing of a blast.

(7) “Blasting” means any method of loosening, moving or shattering masses of solid matter by use of an explosive.

(8) “Blasting operation” means any operation, enterprise or activity involving the use of blasting.

(9) “Blasting resultants” means the physical manifestations of forces released by blasting, including but not limited to projectile matter, vibration and concussion, which might cause injury, damage or unreasonable annoyance to persons or property located outside the controlled blasting site area.

(10) “Controlled blasting site area” means the area that surrounds a blast site and that meets one of the following conditions:

(a) Is owned by the operator.

(b) With respect to which, because of property ownership, an employment relationship or an agreement with the property owner, the operator can take reasonably adequate measures to exclude or to assure the safety of persons and property.

(11) "Department" means the department of safety and professional services.

(12) "Explosive" means any chemical compound, mixture or device, the primary or common purpose of which is to function by explosion unless the compound, mixture or device is otherwise classified by the department by rule.

(13) "Explosive materials" means explosives, blasting agents and detonators. The term includes, but is not limited to, dynamite and other high explosives, slurries, emulsions, water gels, blasting agents, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord and igniters.

(14) "Fireworks" has the meaning given in s. 167.10 (1) (intro.), Stats., and includes a device listed under s. 167.10 (1) (e), (f) or (i) to (n), Stats.

Note: Section 167.10 (6m) (a), Stats., states that a person must have a fireworks manufacturing license in order to manufacture fireworks or a device listed under s. 167.10 (1) (e), (f) or (i) to (n), Stats.

Note: Under s. 167.10 (1) (intro.), Stats., "fireworks" means anything manufactured, processed or packaged for exploding, emitting sparks or combustion which does not have another common use. Section 167.10 (1) (e), (f) and (i) to (n), Stats., reads as follows:

Section 167.10 (1) (e) A cap containing not more than one-quarter grain of explosive mixture, if the cap is used or possessed or sold for use in a device which prevents direct bodily contact with a cap when it is in place for explosion.

(f) A toy snake which contains no mercury.

(i) A sparkler on a wire or wood stick not exceeding 36 inches in length that is designed to produce audible or visible effects or to produce audible and visible effects.

(j) A device designed to spray out paper confetti or streamers and which contains less than one-quarter grain of explosive mixture.

(k) A fuseless device that is designed to produce audible or visible effects or audible and visible effects, and that contains less than one-quarter grain of explosive mixture.

(L) A device that is designed primarily to burn pyrotechnic smoke-producing mixtures, at a controlled rate, and that produces audible or visible effects, or audible and visible effects.

(m) A cylindrical fountain that consists of one or more tubes and that is classified by the federal department of transportation as a Division 1.4 explosive, as defined in 49 CFR 173.50.

(n) A cone fountain that is classified by the federal department of transportation as a Division 1.4 explosive, as defined in 49 CFR 173.50.

(15) "Flyrock" means rock that is propelled through the air from a blast.

(16) "Ground vibration" means a shaking of the ground caused by the elastic wave emanating from a blast.

(17) "Inhabited building" means a building regularly occupied in whole or in part as a habitation for human beings, or any church, schoolhouse, railroad station, store or other structure where people are accustomed to assemble, except any building or structure occupied in connection with the manufacture, transportation, storage or use of explosive materials.

(18) "Operator" means the person who is responsible for the operation at a mine, pit, quarry, or construction site where blasting activity occurs.

(19) "Particle velocity" means any measure of ground vibration describing the velocity at which a particle of ground vibrates when excited by a seismic wave.

(20) "Person" means any individual, corporation, company, association, firm, partnership, society or joint stock company.

(21) "Unreasonable annoyance" means an excessive, repeated noise, action or other disturbance that is not justified by reason.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08; correction in (11) made under s. 13.92 (4) (b) 6., Stats., Register December 2011 No. 672.

SPS 307.21 Adoption of standards. NFPA 495, Explosive Materials Code, 2006, subject to the modifications specified in this chapter, is hereby incorporated by reference into this chapter.

Note: A copy of NFPA 495, Explosive Materials Code is on file in the offices of the department and the legislative reference bureau. Copies of NFPA 495, Explosive Materials Code may be purchased from the National Fire Protection Association, 1 Batterymarch Park, Box 9101, Quincy, MA, 02269-9101.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

Subchapter III — Use of Blasting Materials

SPS 307.30 General. The use of explosive materials for blasting shall be executed in accordance with NFPA 495 chapter 10.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

SPS 307.31 Changes, additions or omissions to NFPA 495. (1) Changes, additions or omissions to NFPA 495 chapter 10 are specified in this subchapter and are rules of the department and are not requirements of the NFPA 495 standard.

(2) These are department rules in addition to the requirements in NFPA 495 section 10.1.3:

(a) *Blaster requirements.* When blasting operations are conducted in communities, the shots shall be designed and initiated by a properly licensed Class 5, 6 or 7 blaster.

Note: See ch. SPS 305 for blaster license requirements and classifications.

(b) *Notifications.* Any person conducting blasting operations in a community shall notify the department, the local fire department and the local law enforcement agency of the date and location of the blasting operation. Notification to the department shall be made on forms provided by the department.

Note: Copies of the notice of blasting in a community (form SBD-7336) are available at no charge from the Safety and Buildings Division, P.O. Box 7302, Madison, WI 53707, telephone (608) 261-8466, or on the Internet at <http://dsps.wi.gov/SB>.

(3) These are department rules in addition to the requirements in NFPA 495 section 10.2:

(a) Explosive materials used in underground blasting shall be fume class 1; however, fume class 2 and fume class 3 may be used if adequate ventilation has been provided as determined by the blaster in charge.

Note: Fume class 1 explosives produce less than 0.16 cubic feet of poisonous gases per 1-1/4 x 8" cartridge when detonated in the Bichel Gauge.

(b) All blast holes in open work shall be stemmed to the collar or to a point which will confine the charge.

(4) These are department rules in addition to the requirements in NFPA 495 chapter 10:

(a) *Required log.* A blasting log shall be required for each blast fired.

(b) *Filing and availability.* All blasting logs shall be kept on file by the blaster for a minimum period of 3 years, and shall be made available to the department upon request.

(c) *Information.* Each blasting log shall contain at least all of the following information:

1. Name, signature and license number of the blaster in charge of the blast.
2. Specific blast location, including address, bench and station number if applicable.
3. Type of blasting operation.
4. Date and time of the blast.
5. Weather conditions at the time of the blast.
6. Diagram of the blast layout and the delay pattern.
7. Number of holes.
8. Hole depth and diameter.
9. Spacing.
10. Burden.
11. Maximum holes per delay.
12. Maximum pounds of explosives per delay.
13. Depth of top stemming used.
14. Number, type and length of stemming used between decks.
15. Total pounds and type of explosives used.

- 16. Distance to nearest inhabited building not owned by the operator.
- 17. Type of initiation used.
- 18. Seismographic and airblast records, which shall include all of the following:
 - a. Type of instrument and last laboratory calibration date.
 - b. Exact location of instrument and the date, time, and distance from the blast.
 - c. Name of the person and firm taking the reading.
 - d. Trigger levels for ground and air vibrations.
 - e. The vibration and airblast levels recorded.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

Subchapter IV — Blasting Resultants

SPS 307.40 Regulation of blasting resultants. Pursuant to s. 101.15 (2) (e), Stats., the purpose of this subchapter is to provide for the establishment of uniform limits on permissible levels of blasting resultants to reasonably assure that blasting resultants do not cause injury, damage or unreasonable annoyance to persons or property outside any controlled blasting site area.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

SPS 307.41 Preblasting notification. (1) **PREBLASTING SURVEY.** At least 24 hours prior to initial blasting at a blast site, the blaster in charge shall make a reasonable effort to notify in writing or verbally all residents or owners of affected dwellings or other structures, as determined under sub. (2), that a blasting operation is to begin. The blaster in charge shall offer to perform a preblasting survey for the residents or owners. If a resident or owner requests a copy of the preblasting survey, the blaster in charge shall provide a copy for not more than the actual cost of the copy within 48 hours of the request.

Note: A preblasting survey provides a baseline record of the pre-existing condition of a structure against which the effects of blasting can be assessed, and it should include the interior and exterior of the buildings.

(2) **AFFECTED BUILDINGS.** Affected dwellings or other structures shall be determined based on the scaled-distance equation, $W = (D/D_s)^2$. Using a scaled-distance factor D_s of 55, affected dwellings or other structures shall be those located within the distance D of the controlled blasting site area for the weight per delay W of explosives to be used.

Note: An example calculation to determine D is as follows: For 4 pounds of explosives, $D = D_s(W)^{1/2} = 55 (4)^{1/2} = 110$ feet.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

SPS 307.42 Blasting schedules. All surface blasting shall be conducted between sunrise and sunset, unless one of the following conditions applies:

- (1) More restrictive time periods are specified by the department.
- (2) The blasting is approved by the department based on a showing by the operator that the public will not be adversely affected by noise and other impacts.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

SPS 307.43 Instrumentation. All seismographs used to determine compliance with this subchapter shall meet the following minimum specifications:

- (1) Seismic frequency range: 2 to 200 Hz (± 3 Hz).
 - (2) Acoustic frequency range: 2 to 200 Hz (± 1 Hz).
- Note:** Due to an error in CR 06-120, dB was changed to Hz in sub. (2).
- (3) Velocity range: 0.02 to 4.0 inches/second.
 - (4) Sound range: 110 to 140 dB linear.
 - (5) Transducers: Three mutually perpendicular axes.
 - (6) Recording: Provide time-history of waveform.
 - (7) Calibration: Be laboratory calibrated as often as necessary, but at least once every 12 months according to manufacturer's recommendations.

History: CR 06-120: cr. Register February 2008 No. 626, eff. 3-1-08.

SPS 307.44 Control of adverse effects. (1) **GENERAL REQUIREMENTS.** Blasting shall be conducted so as to prevent injury and unreasonable annoyance to persons and damage to public or private property outside the controlled blasting site area.

(2) **FLYROCK.** Flyrock traveling in the air or along the ground shall meet all of the following conditions:

- (a) Remain within the controlled blasting site area.
- (b) Not be cast more than one-half the distance to the nearest inhabited building within or outside of the controlled blasting site area.

(3) **AIRBLAST.** (a) An airblast may not exceed 133 peak dB at the location of any dwelling, public building or place of employment outside the controlled blasting site area.

(b) The blaster shall conduct monitoring of every blast to determine compliance with the airblast limit. The measuring system used shall have a lower-end flat frequency response of not more than 2 Hz and an upper-end flat frequency response of at least 200 Hz.

(4) **GROUND VIBRATION.** (a) 1. The maximum ground vibration at the location of any dwelling, public building or place of employment outside the controlled blasting site area shall be established in accordance with the blasting-level chart of par. (b).

2. All structures in the vicinity of the controlled blasting site area, not listed in subd. 1., such as water towers, pipelines and other utilities, tunnels, dams, impoundments and underground mines, shall be protected from damage by establishment by the blaster of a maximum allowable limit on the ground vibration. The blaster shall establish the limit after consulting with the owner of the structure.

(b) The blaster shall use the ground vibration limits specified in Figure 7.44 to determine the maximum allowable ground vibration. Ground vibration shall be measured as the particle velocity. Particle velocity shall be recorded in 3 mutually perpendicular directions.

(c) The blaster shall make and keep a seismograph record including both particle velocity and vibration frequency levels for each blast. The method of analysis shall be subject to discretionary review by the department.

(d) For quarry operations, the blaster shall report any ground vibration levels to the department that are above 0.75 inch per second with frequencies less than 40 Hz.

Note: Local municipalities may have more restrictive regulations than the department.

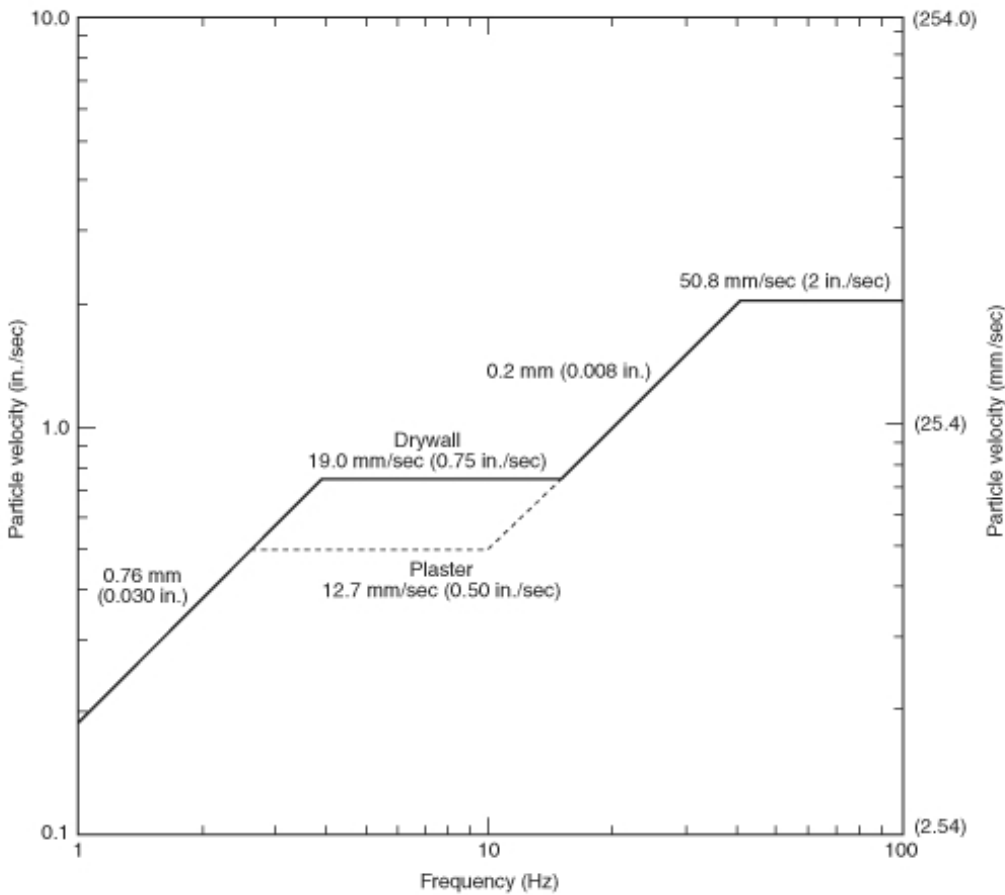


Figure 7.44 – Blasting Level Chart

History: CR 06–120: cr. Register February 2008 No. 626, eff. 3–1–08.

Subchapter V — Fireworks

SPS 307.50 Licensing of fireworks manufacturers.

(1) LICENSE REQUIRED. No person may manufacture fireworks unless that person holds a license issued by the department in accordance with ch. SPS 305.

(2) POSTING. A fireworks manufacturer license shall be posted at each plant where fireworks are to be manufactured.

History: CR 06–120: cr. Register February 2008 No. 626, eff. 3–1–08; correction in (1) made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672.

SPS 307.51 Inspections. (1) GENERAL. The authorized inspectors of the department may enter and inspect at reasonable

times the premises on which each person licensed under this chapter manufactures fireworks.

(2) INITIAL INSPECTIONS. Upon receipt of an application for a fireworks manufacturing license, the department or the department’s designated deputy shall inspect the premises for which the application is made.

(3) PERIODIC INSPECTIONS. The department or the department’s designated deputy shall inspect a fireworks manufacturing plant at least once a year.

(4) FEDERAL INSPECTION ACCEPTANCE. Where an inspection of a fireworks manufacturing plant has been conducted by the federal bureau of alcohol, tobacco, firearms and explosives, the department may accept a federal inspection report in lieu of the department inspection.

History: CR 06–120: cr. Register February 2008 No. 626, eff. 3–1–08.