**Section 1817.67 Use of Explosives: Control of Adverse Effects**

a) Blasting shall be conducted to prevent injury to persons, damage to public or private property outside the permit area, adverse impacts on any underground mine, and change in the course, channel or availability of ground or surface waters outside the permit area.

b) Air blast limits

1) Air blast shall be controlled so that it does not exceed the values specified below at any dwelling, public building, school, church, or commercial or institutional structure, unless such structure is owned by the person who conducts the surface mining activities and is not leased to any other person. If a building owned by the person conducting surface mining activities is leased to another person, the lessee may sign a waiver relieving the operator from meeting the air blast limitations of this subsection. The waiver shall be submitted to the Department before beginning blasting.

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| --- | --- |
| Lower frequency limit of  measuring system, Hz +3dB | Maximum  level in dB |

|  |  |
| --- | --- |
| 0.1 Hz or lower – flat response\* | 134 peak |
| 2.0 Hz or lower – flat response | 133 peak |
| 6.0 Hz or lower – flat response | 129 peak |
| \*Only when approved by the Department | |

2) The measuring systems used shall have a flat frequency response of at least 200 Hz at the upper end.

3) The person who conducts blasting may satisfy the provisions of subsection (b) by meeting any of the three specifications in the chart in subsection (b)(1).

4) If necessary to prevent damages specified in subsection (a), the Department shall specify lower maximum allowable air blast levels than those of subsection (b)(1) for use in the vicinity of a specific blasting operation.

c) Air blast monitoring

1) When the cube root scaled distance, as defined in subsection (c)(2), to the nearest dwelling, public building, school, church, or commercial or institutional structure has a value less than 350 and when the burden to hole depth ratio is greater than 1.0, or the top stemming height is less than 70% of the burden dimension, the air blast produced by the blast shall be measured, recorded, analyzed, and reported pursuant to subsection (g) and Section 1817.68(b).

2) Cube root scaled distance equals the distance, in feet, from the blast to a specified location divided by the cube root of the maximum weight of explosives, in pounds, to be detonated in any eight millisecond period.

3) To ensure compliance with the limits contained in this Section, the Department may require an air blast measurement of any or all blasts, and may specify the location of such measurements.

d) Flyrock, including blasted material traveling in the air, or along the ground, shall not be cast beyond the permit boundaries or beyond the area of regulated access required under Section 1817.66(c), or more than one-half the distance to the nearest dwelling or other occupied structure.

e) Ground vibration limits

1) In all blasting operations, except as otherwise authorized in this Section, the maximum peak particle velocity shall not exceed one inch per second at the location of any dwelling, public building, school, church, or commercial or institutional building. At distances greater than 5,000 feet from the blast to any structures described in this subsection, the maximum allowable peak particle velocity shall not exceed 0.75 inch per second at the locations of the structures described in this subsection. At distances less than 300 feet from the blast to any structures described in this subsection, the maximum allowable peak particle velocity shall not exceed 1.25 inch per second at the locations of the structures described in this subsection. These limits shall apply separately to each component of motion as defined in subsection (g). The Department shall reduce peak particle velocity limits if determined necessary to provide damage protection if so recommended in any pre-blast survey or condition survey report provided pursuant to Section 1817.62.

2) Blasting shall be conducted to prevent adverse impacts on any underground mine and changes in the course, channel, or availability of ground or surface water outside the permit area. Ground vibration limits, including the maximum peak particle velocity limitation of subsection (e)(1), shall not apply at the following locations:

A) At structures owned by the person conducting the mining activity, and not leased to another party;

B) At structures owned by the person conducting the mining activity, and leased to another party, if a written waiver by the lessee is submitted to the Department prior to blasting.

f) Ground vibration monitoring

1) When the scaled distance, as defined below, has a value of less than 65 at the nearest dwelling, public building, school, church, or commercial or institutional structure, a seismograph recording shall be made at or near the closest structure requiring protection.

2) Scaled Distance = The distance, in feet, from the blast to a specified location divided by the square root of the maximum weight of explosives, in pounds, to be detonated in any eight millisecond period.

3) To ensure compliance with the limits contained in this Section, the Department may require a seismograph recording of any or all blasts and may specify the location at which such recordings are made.

g) As used herein, seismograph recording or record or air blast recording or record shall mean a visually inspectable cartesian representation of the time history of the particle velocity levels or air blast levels versus time. Time is represented on the "X" axis. The particle velocity is shown by three traces representing mutually perpendicular components of motion. The components are oriented vertically, transversely, and longitudinally to the horizontal direction from the recording location to the location of the blast. The air blast time history is represented by a single trace. The record or recording includes either an analog representation of, or a written description of the vertical scale for the particle velocity traces and the air blast trace. The units for the particle velocity traces and scale are in inches per second. The units for the air blast trace and scale are millibars, pounds per square inch, or decibels. The recording also includes an analog or descriptive time scale. The time units are in seconds.

(Source: Amended at 22 Ill. Reg. 20197, effective November 5, 1998)