

4725.2250 GENERAL CASING REQUIREMENTS.

Subpart 1. **Casing types.** Permanent casing installed in a well or boring must be:

- A. steel casing as specified in part 4725.2350;
- B. stainless steel casing as specified in part 4725.6650 when used for a monitoring well, environmental bore hole, or remedial well;
- C. flush threaded polyvinyl chloride casing as specified in part 4725.6650 when used for a monitoring well or environmental bore hole; or
- D. plastic casing as specified in part 4725.2550.

Subp. 2. **Watertight casing required.** All casing couplings and casing joints must be watertight throughout their lengths. Casing must not have holes, cracks, or separations.

Subp. 2a. **Casing joints.** All casing joints must be watertight, with threaded, welded, or solvent welded joints, and comply with the standards in part 4725.2350, 4725.2550, or 4725.6650.

A. Threaded joints must have recessed couplings, reamed and drifted couplings, or other couplings that match the design, taper, and thread type of the casing. Thread must not be exposed on the pipe when the casing is joined.

B. Welded casing, except where an approved welding coupling is used, must have beveled joints. The weld must extend the full circumference of the casing and must completely fill the bevel.

C. Welding couplings must be made of material equivalent to the casing. The upper and lower welds must extend the full circumference of the casing, and completely fill the gap between the coupling and casing. Welding the casing to the inside of the coupling is prohibited.

Subp. 3. **New casing required.** Casing used in the permanent construction of a well or boring must be new casing produced to the specifications of this part. Casing salvaged from the same type of well or boring within 120 days of installation is acceptable for reuse if it meets the specifications for new casing. A potable water well must be constructed with new casing or casing salvaged from a potable water well.

Subp. 4. **Casing markings required.** Steel and plastic permanent casing except flush-threaded PVC and stainless steel casing must be marked by the manufacturer in accordance with casing specifications in parts 4725.2350 to 4725.2550. Markings must be rolled, stamped, or stenciled by the manufacturer.

Subp. 5. **Casing testing.** Casing rejected by the manufacturer must not be used. The commissioner may require that casing be submitted to an independent testing agency to evaluate if it meets or exceeds specifications when the casing:

- A. lacks markings or has illegible or altered markings;
- B. contains pits, cracks, patches, partial welds, bends, or other manufacturing defects; or
- C. lacks mill certification papers from the original manufacturer.

Subp. 6. **Casing rejection.** The commissioner shall reject casing for use in a well or boring if:

- A. the casing is not submitted for evaluation and verification when required by the commissioner;
- B. the casing fails to meet the specifications in part 4725.2350, 4725.2550, or 4725.6650; or
- C. the lot of casing contains defective lengths, including casing with girth-welded joints, or welded patches, or the lot has more than five percent of the casings with lengths less than five feet.

Subp. 7. **Temporary casing.** Casing installed temporarily during drilling is not required to meet the specifications for casing in part 4725.2350, 4725.2550, 4725.6650, or this part except subparts 2, 7, and 16, but must be of sufficient strength to withstand the structural load imposed by conditions both inside and outside the well or boring, and free of oil or other contaminants. The casing must be removed on completion of the well or boring.

Subp. 8. **Inner and outer casing.** The inside diameter of an outer casing must be at least 3.0 inches larger than the outside diameter of the inner casing, couplings, or bell-end, whichever is larger, except that the inside diameter of an outer casing must be at least 3.5 inches larger than the outside diameter of the inner casing, couplings, or bell end, whichever is larger, for inner casings deeper than 100 feet and larger than 12 inches inside diameter. The annular space between an inner casing and an outer casing must be grouted for its entire length by pumping neat-cement grout or cement-sand grout through a tremie pipe or through the casing as specified in part 4725.3050. The inner casing must extend above the established ground surface at least 12 inches.

Subp. 9. **Outer casing in unconsolidated materials.** A permanent outer steel casing installed in unconsolidated materials is not required to meet the requirements of this part except subparts 2, 9, and 17, or the material specifications for casing in part 4725.2350 if the casing is of sufficient strength to withstand the structural load imposed by conditions both inside and outside the well or boring, the casing is free of oil or other contaminants, an inner

casing meeting the requirements of this chapter is installed, and the annular space between the casings is filled with neat-cement grout, or cement-sand grout. The outer casing must be installed in accordance with part 4725.3050, subpart 3 or 5.

Subp. 10. **Casing inside diameter.** The inside diameter of a permanent casing must not be less than two inches for a well or boring greater than 50 feet in depth.

Subp. 11. **Casing height.** A casing or casing extension must extend vertically at least 12 inches above the established ground surface, the floor of a building (well house) as specified in part 4725.2175, or a concrete slab, except that the casing for a hand pump may terminate a minimum of six inches above a concrete slab in accordance with part 4725.3250, item A, if the concrete slab is at least six inches above the established ground surface. The established ground surface, slab, or floor immediately adjacent to the casing must be graded to divert water away from the casing. Termination of the top of the casing below the established ground surface, such as in a well pit, is prohibited except that an outer casing may terminate immediately below a pitless adapter installed on an inner casing.

Subp. 12. **Casing offsets.** Casing offsets are prohibited.

Subp. 13. **Multiple casings.** Except for inner and outer casings installed in accordance with subpart 8, multiple casings must not be installed in a single bore hole.

Subp. 14. **Casing reduction and enlargement.** A casing must maintain the same inside diameter throughout the length of the casing, except that a larger diameter pitless unit may be installed.

Subp. 15. **Casing drive shoes.** A drive shoe must be installed on driven casing except for a drive-point casing, temporary casing, or outer casing that has a neat-cement or cement-sand grouted inner casing. The drive shoe must:

- A. be made of steel or iron, with a hardened, beveled cutting edge;
- B. have a wall thickness equal to or larger than the casing thickness; and
- C. be threaded or welded to the bottom of the casing.

Subp. 16. **Temporary cap or cover required.** Until a well or boring is completed and a permanent cap or cover installed, the installer must temporarily cap or cover the bore hole, casing, and annular space of a well or boring when not actively working on the well or boring, in accordance with subpart 17, or install a weatherproof, tamper-proof cover. An overlapping steel plate is permitted. Tape, pails, loose plastic, or similar covers are not permitted.

Subp. 17. **Permanent cap or cover required.** A permanent watertight and vermin-proof cap or cover must be installed on the inner casing of a well or boring. The cap

or cover must be constructed of metal or plastic materials having a thickness comparable to the casing requirements specified in subpart 1. The cap or cover must consist of:

- A. an overlapping cover or cap;
- B. a threaded plug, cover, or plate;
- C. a welded or solvent welded overlapping plate or cover;
- D. an extension of the casing at least one inch into the base of a power pump; or
- E. a sanitary seal or plug with a one-piece top plate, compression gasket, and noncorrodible draw bolt(s). If the well or boring is in a building that meets the requirements in part 4725.2175, a two-piece top plate, compression gasket, and noncorrodible draw bolts may be used.

Statutory Authority: *MS s 103I.101; 103I.111; 103I.205; 103I.221; 103I.301; 103I.401; 103I.451; 103I.501; 103I.525; 103I.531; 103I.535; 103I.541; 103I.621; 144.05; 144.12; 144.383; 157.04; 157.08; 157.09; 157.13*

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