

M E M O R A N D U M

DATE: August 23, 2021

TO: Licensed Well Contractors, Limited Well and Boring Contractors,
Elevator Boring Contractors, Environmental Well Contractors, and Explorers

FROM: Corrie Floyd, P.G.
Operations Unit Supervisor
Well Management Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975

PHONE: 651-201-4586

SUBJECT: Schedule 40 PVC Well Casing in Minnesota

Minnesota Department of Health (MDH) has reviewed Schedule 40 polyvinyl chloride (PVC) well casing requirements in response to a supply shortage of standard dimension ratio (SDR) PVC well casing.

Determination

MDH has determined that Schedule 40 PVC well casing in nominal pipe diameters of 4 inches or less is in compliance with Minnesota Rules, part 4725.2550, subpart 1 provided it:

1. Meets ASTM Standard F480-02.

Note: Flush threaded polyvinyl chloride casing is limited to monitoring wells or environmental bore holes (environmental wells).

2. Withstands internal pressure of 200 pounds per square inch (psi).

Note: In nominal pipe diameters of 4 inches or less Schedule 40 PVC well casing with cell classification of 12454 (material codes 1120 and 1220) has an internal pressure rating higher than 200 psi.

In order to meet the two requirements above, the Schedule 40 PVC well casing must be stamped as meeting ASTM Standard F480 and composed of PVC with cell classification of 12454 (material codes 1120 and 1220).

(Over)

Requirements

All requirements of Minnesota Rules, chapter 4725 remain in effect, including requirements for plastic casing joints, fittings, and couplings. MDH's determination is a confirmation that certain Schedule 40 PVC well casing meets the requirements of Minnesota Rules, chapter 4725. This is not a temporary approval and does not require a variance.

Similar to SDR PVC well casing, licensed contractors using Schedule 40 PVC well casing products must verify material, marking, and pressure ratings meet specifications in the following manner:

- The pipe must be clearly marked "ASTM F480," "SCH 40" (or similar), and with the words "WELL CASING."
- The PVC cell classification and material codes are not required to be marked on the pipe, but the cell classification must be 12454 and the material code must be 1120 or 1220.
- The pressure rating is not required to be marked on the pipe, but it must be 200 psi or greater.
- The nominal pipe diameter must be 4 inches or less. At nominal pipe diameters of 5 inches and greater, the Schedule 40 PVC well casing is thinner than SDR 21 PVC well casing and will not meet the 200-psi internal pressure rating requirement.

Recommendations

Contact the manufacturer for specific product information. Licensed contractors planning to use Schedule 40 PVC well casing must ensure the casing meets the requirements of Minnesota Rules, part 4725.2550, subpart 1. Schedule 40 PVC casing does not have a uniform pressure rating for all pipe sizes and PVC material like SDR PVC casing does. At nominal pipe diameters of 5 inches or larger, Schedule 40 PVC has a thinner minimum wall thickness than SDR 21 pipe.

For all Schedule 40 PVC well casing and SDR PVC well casing, consider the collapse pressure forces on the casing along with the resistance to hydraulic collapse pressure (also called critical collapse pressure) rating of the casing, which depends on the physical properties of the casing material and the wall thickness. The weight of the formation or grout slurry outside of the well casing, the depth of the water column inside the well casing, and heat generated by hydration of cement or submersible pump motors all affect the potential for collapse of a PVC well casing. Steps can be taken during well construction and development to control collapsing pressures.

If you have questions about a particular product or well casing requirements, please contact Jennifer Weier, Metro Regional Supervisor, at jennifer.weier@state.mn.us or 651-398-0375.

CF:JW:kad

cc: Delegated Well Programs
Well Management Section Staff