

PVC Pipes in Bore Casings

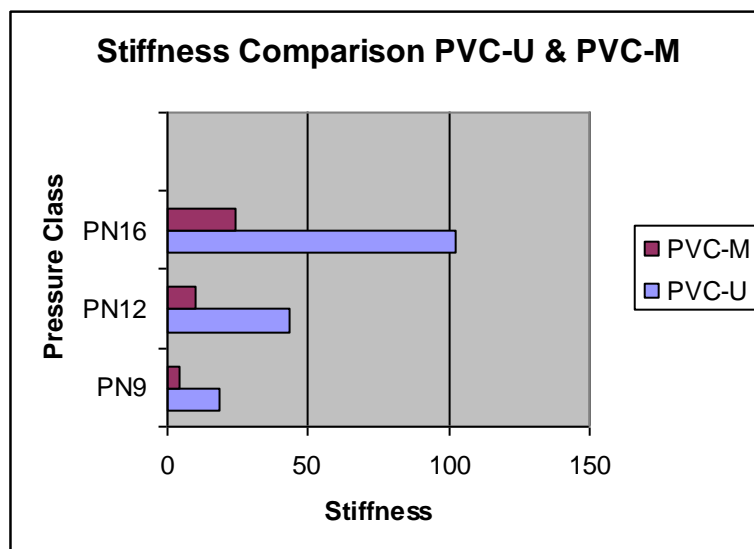
PVC pressure pipe is designed and used primarily to contain liquids under internal pressure – hence the classification system is based on pressure class designations. PVC pressure pipe is also legitimately used for other applications such as water bore casings. In this application, PVC pressure pipe is used to form the outside casing of a water bore drilled vertically down into the ground where the loads on the pipe are primarily external.

Historically, PVC-U has been successfully used as casing pipe but with the arrival of PVC-M and PVC-O there is a potential for inappropriate use of pipe even though they may be in equivalent pressure classes (i.e. all PN12). If a pipe supplier is asked for a PVC-U PN12 pipe under most circumstances a PVC-M or PVC-O PN12 pipe can be substituted not for bore casing applications. The key property of the pipe relevant to this application is stiffness and this is essentially a direct relationship to the pipe wall thickness, regardless of the PVC material type.

The reference document for water drilling contractors is the *Minimum Construction Requirements for Water Bores in Australia (MCR)* which specifies that all PVC bore casing pipe shall be PVC-U to AS1477 with the minimum casing diameter of 100mm. Hence this could be either Series 1 or Series 2 pipe. The actual size of the casing pipe is determined by the pump diameter and will be specified by the purchaser. The MCR nominates PN9 as the minimum pressure class to use for shallow low yield bores and nominates PN12 pipe in all other cases.

The MCR excludes PVC-M pipe and makes no mention of PVC-O. The removal of the exclusion covering PVC-M is the subject of discussions with the Australian Drillers Association. In some states it is understood that compliance with the MCR is mandatory.

Clearly in order to comply with the existing MCR, only PVC-U pipe should be used. However, in areas where compliance with the MCR is not mandatory it may be possible to substitute PN16 PVC-M pipe for the PN9 PVC-U casing applications but only with the full knowledge of the drilling contractor.





Because of the inability of PVC-O to be solvent cement jointed, PIPA suggests that PVC-O should not be used for bore casing applications. However, there is a case to consider PVC-M as a suitable alternative, particularly for the PVC-U PN9 option where PVC-M PN16 pipe has significantly higher stiffness as shown in the chart above.

For more information refer to PIPA's Industry Guidelines for PVC, POP104, *PVC PIPE EQUIVALENCE*. It is suggested PVC004 be referenced when considering alternatives for the PN9 and PN12 PVC-U casing options.



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