

PFAS SUBSTANCES: NOT A CONCERN FOR PVC PIPE

Per- and poly-fluoroalkyl substances (collectively known as PFAS) are a group of more than 4,700 compounds made up of fluorinated carbon chains. PFAS are used in the aerospace, automotive, construction, cosmetics, clothing, and electronics industries, and in products like firefighting foam and non-stick cookware. Some PFAS have been found to be harmful to human health.

The purpose of this document is to assure utilities and their customers that PVC pipe does not contribute to the presence of PFAS in drinking water. Since PFAS can be found in drinking water due to widespread contamination in the environment, the water regulatory community has responded to the issue. The U.S. EPA has issued national primary drinking water standards for six PFAS in potable water systems, setting limits on the amount of PFAS allowed.

PFAS – NOT FROM PVC MATERIALS OR MANUFACTURING

PVC resin is the primary ingredient in PVC pipe. Resin is combined with other ingredients (e.g. processing aids) to form PVC compound, which is heated and extruded to make PVC pipe. PVC pipe's ingredients do not contain PFAS and the manufacturing process does not create PFAS. In fact, the NSF-certified [Environmental Product Declaration for PVC Pipe](#) states that “...no known per- and polyfluoroalkyl substances (PFAS) are associated with PVC pipe production.” Also, testing by NSF has not detected PFAS in PVC pipe. All ingredients used are [publicly listed](#) and have been verified as safe for use in drinking water systems. Because PVC contains no PFAS, the [California State Water Quality Control Board](#) has identified PVC as an acceptable material for equipment that handles water samples for all stages of PFAS testing.

PFAS – NOT FROM PVC PIPELINE OPERATIONS

PVC does not react with disinfection chemicals used in public drinking water systems to form PFAS. Another concern is permeation of PFAS in the environment through PVC pipe walls and into drinking water. [Ruta et al. \(2019\)](#) evaluated the potential for 29 PFAS to penetrate PVC and high-density polyethylene (HDPE) pipe. HDPE pipe was tested in the laboratory, since it is more permeable than PVC. PFAS did not pass through the pipe into the water inside, even after six months submerged in PFAS solution. Since PVC is less permeable than HDPE pipe, the researchers concluded that PFAS would also not pass through PVC pipe. Due to its resistance to permeation, PVC pipe also protects drinking water within the pipe from being impacted by other harmful chemicals that may be present in the local environment.

PVC PIPE – A SAFE CHOICE

More than seven decades of use in the U.S. and Canada show conclusively that PVC pipe is the safest choice for long-term, reliable delivery of clean drinking water. Over 50,000 North American utilities use PVC water pipe today. In-service water pipelines total more than 1.5 million miles. Ten million quality control tests have been conducted by independent laboratories and government agencies on water carried through PVC pipe. These tests have consistently demonstrated that PVC pipe is safe.

For more information, see [The Health, Safety, and Environmental Performance of PVC Pipe](#).

References: “An overview of the uses of per- and polyfluoroalkyl substances (PFAS),” Glüge et al., *Environmental Science: Processes & Impacts*, 22(12), pp. 2345-2373, (2020); “Are PFAS an issue for permeation of plastic water pipes?” Ruta, G. et al., *Water e-journal. Online Journal of the Australian Water Association*, Vol. 4, No. 3, (2019); “Environmental Product Declaration for PVC Pipe,” NSF (2023); “Per- and Polyfluoroalkyl Substances (PFAS) Sampling Guidelines for Non-Drinking Water,” California State Water Quality Control Board (2020); “Permeation of organic contaminants through PVC pipes” Gaunt et al., (2009); “PVC Compounding & Processing,” Ranjan, S., *Polymer Academy* (2017); “The Health, Safety, and Environmental Performance of PVC Pipe,” PVC Pipe Association (2024).