

Use of Chlorine Dioxide & HDPE Pipe for Potable Water Systems

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The current generation of PE4710 piping systems have improved performance over earlier generations of HDPE materials. In addition to these performance improvements, the HDPE industry has developed design criteria for disinfectants commonly used in potable water systems. These improvements have led to HDPE piping systems with 100+ year design life, making HDPE the fastest growing and preferred potable water piping material.

In the United States and Canada, the two disinfectants most commonly used in potable water piping systems are chlorine and chloramines. These disinfectants have proven to be the most cost effective and efficient methods for keeping our water safe. HDPE piping system design and operating guidelines have been established for systems using these secondary disinfectants. Systems following these recommendations are projected to provide low cost, reduced maintenance, leak-free piping systems with 100+ year design life.

Recently, an article was published that raised concerns about using HDPE in potable water piping systems disinfected with chlorine dioxide.

The article cited issues with Hamilton, Ohio's use of HDPE pipe in its water system, which is disinfected using chlorine dioxide as a secondary disinfectant within their distribution system. Chlorine dioxide is significantly different chemically from chlorine and chloramines and known to be significantly more aggressive.

Chlorine dioxide is used in fewer than 1% of the potable water distribution piping systems in the U.S. Currently, insufficient North American industry data is publicly available to predict the

specific impact that chlorine dioxide may have on HDPE pipe. Therefore, utilities using chlorine dioxide as a secondary disinfectant should contact their pipe supplier for guidance.

For the 99% of applications using chlorine or chloramine, [research](#) and AWWA standards [C111](#) and [C303](#) have documented the degradation of gaskets that are used in bell and spigot connections. In the vast majority of these utilities, operators utilizing chlorine and chloramines find that fused HDPE is the best solution for their piping systems. HDPE piping systems provide lower installation costs, reduced maintenance costs and will provide their communities with 100+ year design life.

Benefits of HDPE Piping materials:

With its 100+ year design life, lowest lifecycle cost, superior resistance to seismic and earth movements, excellent corrosion resistance, exceptional surge capacity and fatigue resistance, HDPE is the material of choice for a leak-free system (i.e., eliminating non-revenue water loss). HDPE pipe can be installed using trenchless applications, thereby reducing the installation costs and minimizing site disruptions. Additional information on HDPE pipe can be found at the PPI website:

https://plasticpipe.org/municipal_pipe/mid-water-disinfection.html

https://plasticpipe.org/municipal_pipe/mid-potable-water.html