

Now engineers and contractors can use fused PVC for their plastic piping needs with the introduction of Underground Solutions' patent-pending process.

Fusible C900/C905 PVC Introduced

Engineers, contractors and owners looking for plastic piping solutions have long been presented with two main options for piping projects: high-density polyethylene (HDPE), which offers fusibility, and polyvinyl chloride (PVC), which offers superior material properties.

Now, they no longer need to make that choice because Underground Solutions Inc., Sarver, Pa., has introduced Fusible C900 and Fusible C905 PVC pipe for trenchless and direct bury applications.

These new pipe products combine the mechanical properties of PVC with industry-preferred fusion joining. Until now, it was commonly believed that heat-fusing PVC pipe was not feasible. Underground Solutions Inc. has developed a patent-pending formulation that now makes Fusible C900 and Fusible C905 a reality.

Underground Solutions has been fusing PVC as part of its Duraliner water renewal process since 1995 and has

recently commercialized it for use in trenchless and direct-bury applications.

"We're excited about the possibilities that Fusible PVC pipe brings to our company," said Dave Arthurs, operations manager for HMS Construction Inc., San Marcos, Calif. "This gives us one more type of pipe we can offer clients. It's good for us because we encounter a lot of engineers and agencies that prefer PVC to HDPE."

Fused HDPE has been the choice for direct bury and trenchless applications such as horizontal directional drilling and pipe bursting for decades. The ability to fuse HDPE provided an ease of insertion unequaled by PVC's mechanical connection methods. Moreover, fused pipe joints made a more reliable connection than mechanical, gasketed alternatives. Joints are the most common point of leakage in piping systems.

"With the fused joints, there is no leakage," said Mark Smith, president of Underground Solutions. "Also, because the majority of municipal water lines are being replaced with PVC, the Fusible PVC allows for ease of maintenance and compatibility with the existing system."

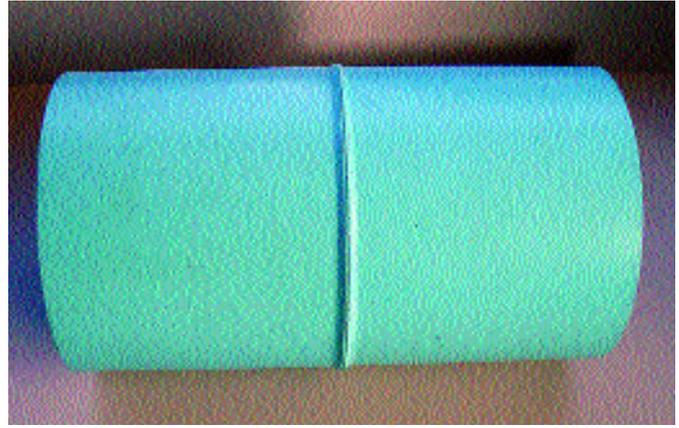
This compatibility means that crews can use existing equipment and taps, etc., for repairing and maintaining pipelines. "They already have the experience and the equipment to make the repairs," Arthurs said.

The development and availability of Fusible C900 and C905 PVC, with standard PVC outside diameters, will enable general water contractors, drillers and sliplining

specialists to install NSF-61 certified systems that are compatible with standard AWWA fittings and connections. With a design life of 100-plus years, these new products are available in sizes, ranging from 2 to 48 in., that maintain the PVC pipe pressure classifications.

The standard tensile strength value for Fusible C900/C905 at 73 F is 7,000 psi. Limited, preliminary third-party testing performed by Hauser Laboratories in Boulder, Colo., has returned Fusible C900/C905 fused joint tensile strength values that approach PVC performance specifications. Total fusion times comparable to HDPE are achieved with the patent-pending Fusible C900/ C905 PVC butt fusion methodology developed with standard fusion equipment and modified temperatures and pressures.

The ability to butt fuse Fusible C900/C905 PVC is a significant advancement in water infrastructure technology because of PVC's superior material properties compared



The finished product: fused PVC.

to HDPE. The Fusible C900/C905 hydrostatic design basis of 4,000 psi exceeds that of 1,600 psi for HDPE. For the same outside diameter as HDPE pipe, PVC pipe will have a larger available flow with the same coefficient of friction.

PVC's coefficient of linear expansion is less than that of HDPE. For 100 ft of pipe under identical conditions, PVC pipe expands and contracts about 0.36 in., and HDPE pipe expands and contracts about 1.44 in. for every 10 F temperature change.

Fusible C900/C905 have favorable compressive and flexural strength characteristics compared to HDPE, making it exceptionally resistant to common vertical forces such as deflection and compression. Incorporation of such a strong material makes for robust underground piping design.

With its new patent-pending formulation and heat fusion process, Underground Solutions is poised to provide the water infrastructure industry a consistently sturdy, gasketless joint PVC pipe material that maintains all the performance ratings of C900/C905 water pipe.

Underground Solutions will be presenting the new Fusible C900/C905 technology at upcoming trade shows in the United States. This new technology is being considered on trenchless projects throughout the United States.



structural (strŭk'chər-əl) adj.

1. provides 150 psi (minimum) operating pressure without relying on the host pipe
2. 100 year (minimum) design life
3. capable of withstanding a complete and catastrophic failure of the host pipe
4. **DURALINER™** - the only stand alone, fully structural water line rehabilitation system in the world



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