

suction pumps.

- *The secondary containment is smooth bore PVC reinforced with a PVC spiral member. There are no corrugations to trap product or hinder insertion of the primary pipe.*
- *The replaceable type piping comes with a 30 year warranty and \$2 million pollution liability insurance coverage, provided the piping is properly installed and monitored. The non-replaceable piping has a one year warranty and no accompanying insurance.*
- *The UL 971 listing for the primary pipe is pending, with acceptance expected by March 1, 1995.*

Containment Technologies - (Perma-Flexx)

- ★ The manufacturer prefers to call this product a pipe rather than a hose. This product can be used for vent and vapor recovery piping because of its ability to lay flat and maintain its slope underground.
- ★ All diameters of pipe can be used for pressurized or suction pumping systems.
- ★ All diameters of primary piping can be used in secondarily contained or single-wall (direct bury) applications.
- ★ The secondary piping is installed after the primary piping is already in place. The primary pipe cannot be removed or replaced without excavation.
- ★ Although only relatively recently introduced in North America, this piping technology has been in use in Europe since 1981. Millions of feet of this product have been installed worldwide.
- ★ The 10 year materials warranty applies when the piping is used with tank and dispenser sumps manufactured by Containment Technologies.
- ★ Perma-Flexx primary piping is UL listed, and both the primary and secondary piping is listed with ULC, including MTBE blends.

Environ Products - (GeoFlex-S and GeoFlex-D)

- ★ Earlier models of piping from this manufacturer include Flex I (single walled, direct bury), Flex II (double walled), and Geoflex I (doubled-walled, for petroleum fuels only). Environ currently manufactures GeoFlex-S (Single Wall) and GeoFlex-D (Double Wall) piping, as well as GeoVent-S (Single Wall) vent piping.
- ★ Environ offers piping in 0.75", 1.5", and 2" sizes for both pressure and suction systems. All Environ GeoFlex and GeoVent piping is UL listed for petroleum, alcohols, and petroleum-alcohol mixtures. 1.5" and 2" GeoFlex-D have listings for both the primary and secondary pipes. 3" GeoFlex is currently undergoing UL testing.
- ★ 2" GeoVent-S piping has been tested by UL under vacuum conditions without failure.
- ★ Environ also offers GeoDuct flexible ducting. This large diameter corrugated pipe permits removal of either GeoFlex-S or GeoFlex-D without excavation.
- ★ Environ offers the LDS Leak Detection System, which is a full secondary containment leak detection system. The interstitial space of the GeoFlex-D piping and containment sumps can be monitored using this leak detection system. The LDS Leak Detection System is UL 913 and 1238 listed for use in Class I--Division I--Group D hazardous locations. Third-party confirmation that the LDS system meets EPA regulatory guidelines for automatic line leak detectors is expected by April 1, 1997.
- ★ Environ is testing with Underwriters Laboratories for "Coax" double wall fittings for use with GeoFlex-D piping. These fittings provide full secondary containment and monitoring of the fittings and riser pipe. Listing is expected in the Spring of 1997.
- ★ Installation of the GeoFlex piping system and an Environ manufactured or approved leak detection system qualifies the installation for a 30 year warranty.

Table 3: Construction and Compatibility of Flexible Piping Systems

Company	Product	Primary Pipe Construction (Inside to Outside)	Primary Pipe Compatibility	Secondary Pipe Construction (Inside to Outside)	Secondary Pipe Compatibility
Advanced Polymer Technology	Poly-Tech	- Nylon 12 liner - proprietary permeation barrier - Nylon 6 braid - polyethylene cover	petroleum, alcohols, MTBE	- polyethylene - permeation barrier - polyethylene	petroleum, alcohols, MTBE
Ameron	Dualoy 3000/FLX II Dualoy 3000/FLX III	- fluoroplastic liner - nylon/nylon braid - fluoroplastic liner - nylon/nylon braid	petroleum, alcohols, MTBE petroleum, alcohols, MTBE	FLX II: - resin rich liner - epoxy resin - glass fiber - epoxy resin FLX III: -polyethylene	petroleum, alcohols petroleum, alcohols
Buffalo ¹	Bufflex II	- Nylon 11 or Kynar - polyester yarn braiding - polyurethane - double helix spring steel wire - polyurethane	petroleum, alcohols	- polyvinylchloride (PVC)	petroleum, alcohols
Containment Technologies	Perma-Flexx	- nylon (Dupont Sclar) - polyethylene	petroleum, alcohols, MTBE	- polyethylene	petroleum, alcohols, MTBE
Environ	Geoflex-S & -D	- proprietary permeation barrier - flexible structural filler layer - braided fiber reinforcement - thermoplastic	petroleum, alcohols, MTBE	- polyethylene - proprietary tie layer - nylon	petroleum, alcohols, MTBE

¹ Information not updated from the 1995 survey.