DOUBLE-PIPE

Application Specific
Fully Engineered
Double Containment
Piping Systems
DOUBLE-PIPE™

DOUBLE-PIPE Type FS & Type FS/EP

Application:
- Fuel Systems
- Emergency Power Generation
- Industrial Drains

System Features:
- Carrier:
  - Carbon Steel
- Containment:
  - FRP - PermAlert FGC
- Options:
  - Insulation
  - Heat Tracing
  - Multiple Carrier Pipe (Type FS/EP)
  - PAL-AT Cable Leak Detection/Location
  - Stainless Steel Containment Pipe
  - Fiberglass Carrier Pipe
  - HDPE Containment Pipe
  - Polypropylene Containment Pipe

Because of the non corrosive nature of most fuels, fuel systems are among the least demanding secondary containment systems in terms of material selection. Therefore, PermAlert's DOUBLE-PIPE Type FS system utilizes carbon steel carrier pipe for maximum carrier pipe integrity inside an FRP containment. The DOUBLE-PIPE Type FS/EP (Emergency Power) piping system is constructed with both a supply and return line in a single containment for emergency power generating systems.

All DOUBLE-PIPE FS systems feature PermAlert's FGC corrosion resistant FRP casing, with a resin rich liner, that eliminates the need for cathodic protection. Each DOUBLE-PIPE Type FS is completely analyzed for stress from thermal expansion and heat loss (for heat traced systems) to assure that the system is not only environmentally safe but energy efficient.

DOUBLE-PIPE Type IW

Application:
- Low Level Radiation Waste Lines
- Elevated Temperature and/or Pressure Chemical Services
- Process Sewers
- JP-4 Fuel Systems

System Features:
- Carrier:
  - Stainless Steel or other alloy
- Containment:
  - Stainless Steel or other alloy
- Options:
  - Heat Tracing
  - PAL-AT Leak Detection/Location System
  - Insulation
  - Multiple Carrier Pipe
  - HDPE Containment Pipe
  - Polypropylene Containment Pipe

This all stainless steel piping system should be used where the fluid is corrosive and temperature limits do not allow the use of thermoplastic or carbon steel material. DOUBLE-PIPE IW can be, and often is, manufactured with multiple carrier pipes inside a single containment to reduce cost by minimizing the cost of containment.

All of PermAlert's piping systems are designed in accordance with ANSI B31.1 and, if specified, B31.3. Our manufacturing and quality assurance programs insure compliance to the required specifications and can even be tailored to meet unique customer requested inspection programs. Beyond our own quality assurance programs, PermAlert maintains both ASME PP and U stamps for specialized applications.
DOUBLE-PIPE™

DOUBLE-PIPE Type HT

Application:
High Temperature Process Sewers
Petroleum Refinery "NESHAP" Compliance

System Features:
Carrier:
Carbon Steel
Containment:
Below ground - Carbon Steel with Urethane Coating
Aboveground - Galvanized Carbon Steel
Options:
Heat Tracing
PAL-AT Leak Detection/Location
Insulation
Multiple Carrier Pipe
Cathodic Protection

The DOUBLE-PIPE HT system is designed for high temperature containment applications where carbon steel pipe is the appropriate carrier and containment selection. PermAlert's experienced engineering staff reviews each DOUBLE-PIPE HT system to assure that internal supports, loops, low point sumps and anchors are all properly designed and located. In addition, where specific heat loss requirements exist, PermAlert performs a heat loss analysis.

The carbon steel containment is supplied coated with urethane for underground service. The state-of-the-art urethane coating is applied by PermAlert in our automated coating plant to assure the highest quality coating. Each containment section is shot blasted and coated with a minimum of 30 mils of urethane. This inert coating is not subject to microbial attack as is asphalt, and does not chip, flake, or peel like epoxy.

DOUBLE-PIPE Type HS

Application:
Halogen Service (wet)
Strong Acid Services
Elevated Temperature Chemical Service

System Features:
Carrier:
PVDF
Containment:
FRP with Resin Rich Liner - PermAlert FGC
Options:
PVDF Containment
Polypropylene Containment
PAL-AT Leak Detection/Location

DOUBLE-PIPE HS is PermAlert's most unique piping system. This special containment system is a composite system that employs both thermoplastic and thermostet materials. The PVDF carrier pipe was selected for its ability to withstand halogens and strong acids at continuous operating temperatures up to 280°F. The FRP containment has been selected as a cost effective alternative to a PVDF containment. PVDF containment can be supplied if required.

The PVDF carrier is joined using quick reliable thermal fusion. Each DOUBLE-PIPE HS system is designed to accommodate the differences in thermal expansion which occur due to differences in the coefficients of thermal expansion and temperature differential of the PVDF carrier and FRP (or PVDF) containment.