

SPUNSTRAND INC. COMMERCIAL / RESIDENTIAL LINE CARD

COMMERCIAL & RESIDENTIAL UNDERSLAB HVAC DUCTWORK

Since 1959 Spunstrand® Inc. has been manufacturing underslab HVAC ductwork in both FSK and pre-insulated designs for underground applications. Spunstrand® duct is manufactured using the filament wound method to provide the greatest strength for direct burial applications. A foil scrim kraft, or FSK, inner surface liner provides a UL class 1 rating for this product when used in underslab applications. Standard round sizes 2" diameter through 96" diameter. Rectangular duct and FRP boots are options. ICC Approval Link: http://www.icc-es.org/reports/pdf_files/ESR-1681.pdf

• **FSK NON-INSULATED SINGLE WALL FRP DUCT / FITTINGS:** Spunstrand started R&D on this product in 1959 and introduced the first composite product into the underslab market in 1961. All of these early projects had duct that outlasted the buildings, as many of these older buildings have been torn down and replaced. The current class 1 FSK duct liner has been in use since the early 70's and has carried multiple code approvals since then.

• **INSULATED "ASTM" (R-4, R-6, R-8, R-10 & R-12) FULLY INSULATED and ASTM C518 TESTED / LISTED FRP DUCT / FITTINGS:** In the 80's codes started pushing R-4 and then R-5.3. Now as the market has expanded and energy codes improved, we have expanded to offer certified and ASTM tested from R-4 up to R-12. Energy savings can be calculated for the life of the building with certified R-Values.

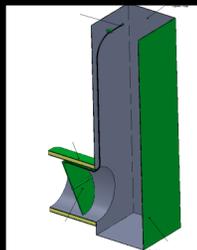
• **TDE NON-INSULATED NSF P399 TESTED / LISTED "R-10" EQUIVALENT FRP DUCT / FITTINGS:** The TDE Listed R-10 equivalent duct systems take credit for the insulation of the soil around the duct and located within the building envelope. TDE looks at duct inlet and outlet temperatures over a short distance in ambient conditions. As long the duct is above ground water or hot and cold soil conditions, this product is appropriate and less expensive than double wall insulated. Ground water and hot or cold soil conditions act as a heat sink and can affect duct performance. If heat loss or gain through the duct system is an area of concern, than a certified R-Value insulation would be the better choice.

• **REGISTER BOOTS:** The most common problem with an underslab duct system is using metal boots that did not get completely encased in concrete, especially underneath and around the bottom. The bottom of the boots corrodes and rusts out over time. Specify the register boots and plenums to be fiberglass reinforced plastic and part of your complete water-tight underslab HVAC system. Boots and plenums come in all standard side tap or bottom feed. *Options for insulation or sound linings are also available.*

• **UNDERSLAB DUCT SILENCERS:** Fibersonic Silencers, designed and licensed by David P. Wilson Co., and manufactured by Spunstrand. Tested for insertion loss, noise and pressure drop per ASTM E477 and ready for direct bury in a fiberglass water-tight underslab duct system. Deadens fan and air transmission sound at the source! These can be glassed directly into your water tight system. They can also be supplied with drain fittings and a sump box to protect against install or field challenges.

• **BUILT-IN VOLUME DAMPERS:** Dampers added to a floor grille are unsightly and will add noise and restriction to the airflow. Damper blades added into the duct taps entering the register boots are quieter and allow for better directional airflow at the floor grille. Boot dampers can be used for standard balancing practices or nominal isolation. They will never corrode, and as underslab life cycle means forever, this is critical.

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Why Spunstrand Inc. Green Duct:

ICC-ES ESR-1681

ICC APPROVAL LINK:

http://www.icc-es.org/reports/pdf_files/ESR-1681.pdf

Spunstrand Duct:

- Has a Class 1 Flame / Smoke Rating per Third Party ASTM E-84 Testing
- Utilizes Chemical Bonds to Join Like Materials (fiberglass to fiberglass) Instead of Mechanical Joints
- Carries 5 Different ICC Listed and Code Approved Insulation Values That Are Tested and Approved Based on Third Party ASTM C518 Testing: R-4, R-6, R-8, R-10 & R-12
- Is Made in the U.S.A. in North Idaho
- Utilizes a High Strength Non-Filled Resin System
- Has Superior Corrosion Resistance in Acidic / Basic Soils Compared With Filled Resin Systems

Manifolding

DEFINITION: *The partial factory assembly with the intent of minimizing field labor requirements.*

Most installing contractors prefer factory-attached fittings to duct runs where practical. This saves field labor and insures more water-tight joints. It does add to factory lead times to manifold, but is quicker than field joints in a jobsite trench condition.

Our goal is to provide our customers and installers the best chance for success.

ASTM R-Value

The Choice is Yours

TDE Rating

Underslab Duct Approval Options

Engineers, Architects and building owners have a choice to make on specifying and designing for underslab HVAC ducts. This choice is between fiberglass duct (FRP) and plastic ducts (PVC or HDPE). When it comes to the insulation performance of these products, there are currently two types of recognized approvals with code agencies like ICC. There are several manufactures of FRP underslab duct with ASTM C518 tested and listed R-value ratings from R-4 to R-12. ASTM C518 testing is the industry standard and the only R-value testing recognized by the International Engineer Conservation Code (IECC). Then there are also several manufactures that are referred in the product listings as TDE rated to an R-10 equivalent per the NSF TDE test protocol. These products are single wall un-insulated, often mistakenly called self-insulated products, which test between .80 and 1.3 in an actual ASTM C518 R-value test. The TDE test is not an R-value test, nor is it recognized as one by ICC or the IECC. The TDE test is a very "loosely" defined protocol with the air going through roughly 40 lineal feet of duct and a couple fitting in a simulated trench with no actual external mechanical/thermal load. The protocol attempts to stipulate that if the tested duct has similar entering and exiting air temps as the base line R-10 insulated duct, and should be called an R-10 equivalent.

Aside from insulation performance, it should be noted that all the FRP manufactures have a class 1 flame and smoke rating to meet the code standard for class 1 on the inside of ducts and plenums. The HDPE or PVC products have a flame spread of 200 and an unpublished smoke rating estimated at 700. Because the International Mechanical Code has listed HDPE and PVC products as acceptable for underground use, the choice is again left to the specifier or buyer to select fire retardance or not.

Lastly, the TDE products being single wall are roughly 60% of the price of the actual insulated products. The questions becomes, what is the difference in energy costs between an actual R-1 or say R-6 insulated over the 25 year life of a building? Also, what is the potential liability of using a non fire retardant material for duct and plenums, which all mechanical codes still call for?

These statements can be verified on our listings at WWW.ICC-ES.org/listing/. Then go to reports and legacy reports. In div 23 31 00 HVAC ducts and casings, you will find the listings of AQC (Blue Duct) which uses the TDE test and DOES NOT have a listed R-Value per ASTM C518. In Div 23 31 16.16 you will find the Spunstrand listing, which has both the ASTM test certified insulation and the TDE listing as well. Another resource on this topic is a white paper produced on this topic located at <http://spunstrand.com/thermal-distribution-efficiency-tde/>.