

DECISION MAKING FACTS THAT YOU NEED TO KNOW ABOUT THE MATERIAL PROPERTIES OF TRENCH DRAINS



Pro-Plus Channel w/Slope
U.S. Patent No. 7,736,092

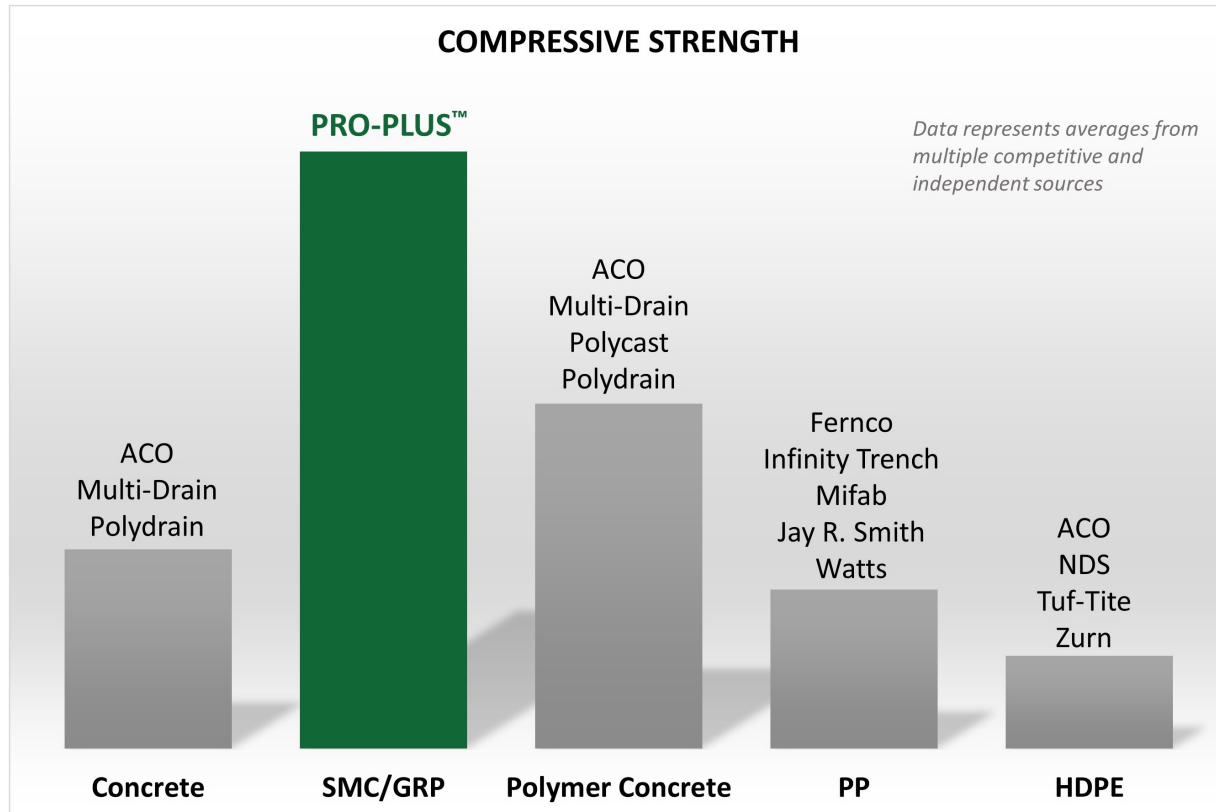
The A to Z of Material Differences in the Trench Drain Industry.

For many years polymer concrete has been the choice when specifying trench drain on a project if the main criterion was strength. One of the various plastics available was the choice if product weight or handling ability was the driving force. Today we are able to offer you Josam's PRO-PLUS™ trench drain system manufactured from sheet molded compound glass fiber reinforced polyester (SMC/GRP). This material makes it unnecessary to have to choose between strength and light weight.

The PRO-PLUS™ Trench Drain is 70% less in weight and exceeds relative properties of polymer concrete. In the following charts we will compare trench drain products by referring the following characteristics:

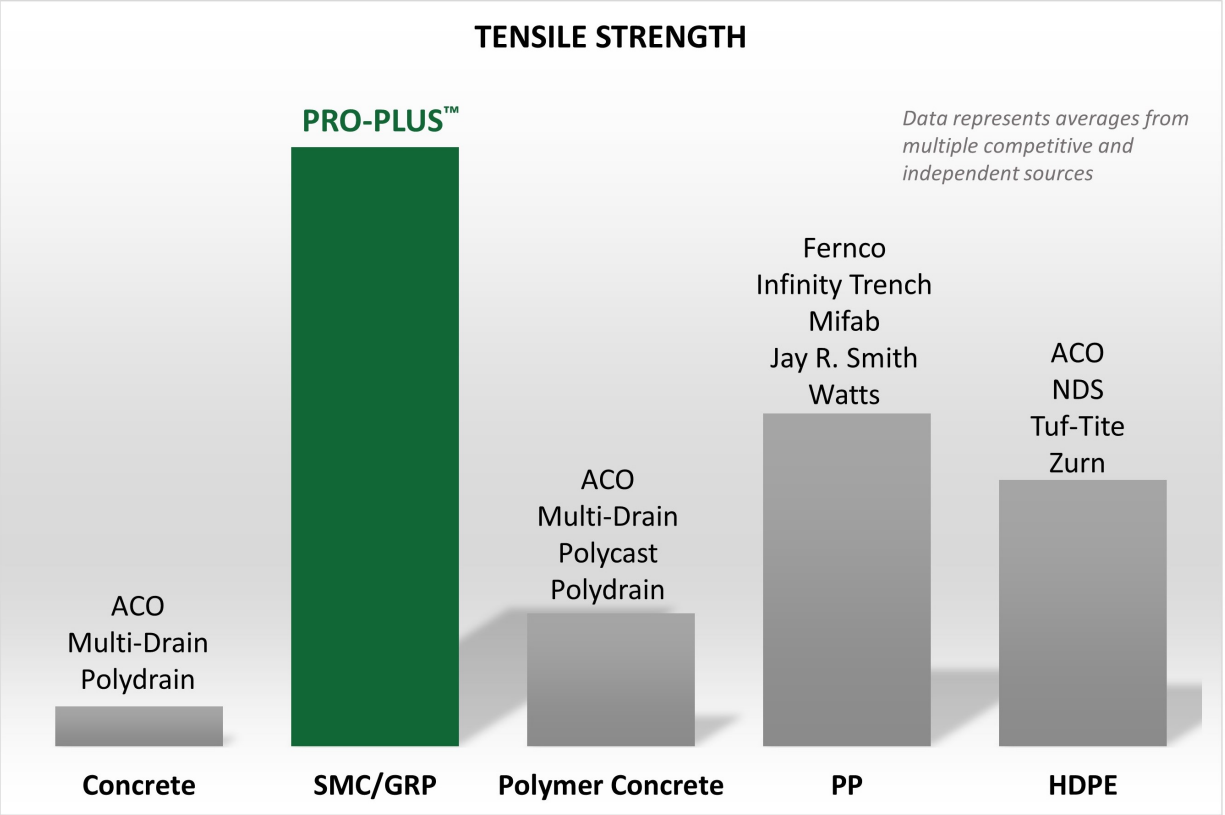
- Compressive Strength – The ability to resist linear (vertical) loads.
- Tensile Strength – The ability to resist vertical separation forces.
- Flexural Strength – The ability to resist bending stresses.
- Coefficient of Thermal Expansion – The rate at which the material expands and contracts due to temperature changes.

The following graphs show the relative strengths and weaknesses of various materials used in trench drains.



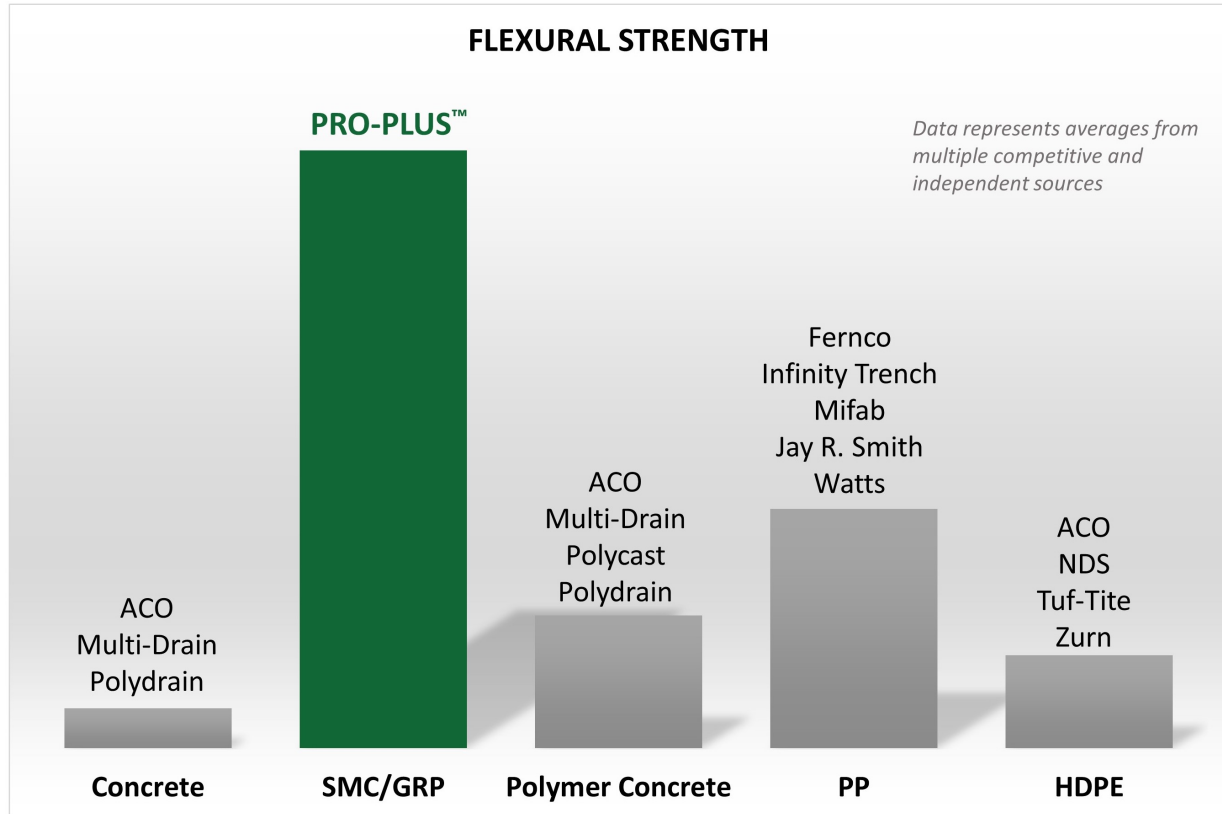
TENSILE STRENGTH

Data represents averages from multiple competitive and independent sources



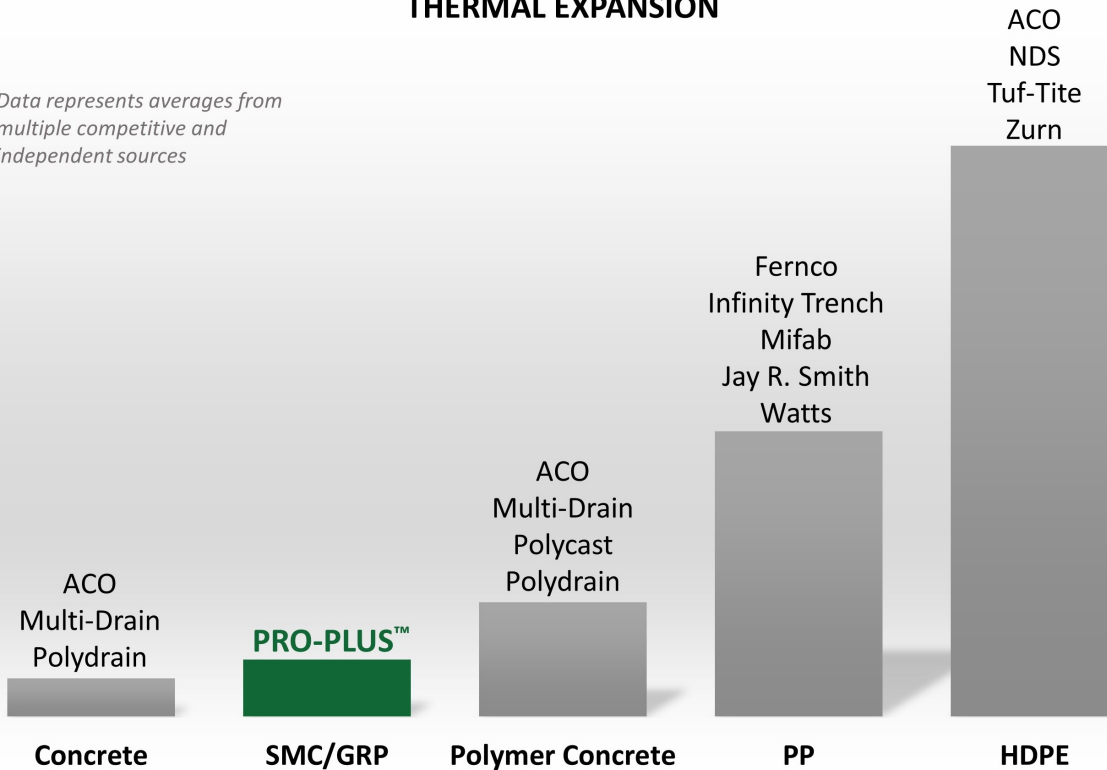
FLEXURAL STRENGTH

*Data represents averages from
multiple competitive and
independent sources*



THERMAL EXPANSION

*Data represents averages from
multiple competitive and
independent sources*





ACO DRAIN www.ACOUSA.com

ACO offer trench drain systems in Polymer Concrete, High Density Polyethylene, and Fiberglass, which requires a steel frame for support. In addition to “Fast Form” which is a cardboard trench forming system using poured concrete. ACO trench drains are also distributed by Jay R. Smith.

Polymer Concrete

1. **Compressive strength** of polymer concrete is **35% less** than glass fiber reinforced polyester manufactured from sheet molding compound.
2. **Tensile strength** of polymer concrete is **78% less** than SMC/GRP.
3. **Flexural strength** of polymer concrete is **80% less** than SMC/GRP.
4. **Thermal Expansion** of polymer concrete is **1.7 times greater** than SMC/GRP.

High Density Polyethylene

1. **Compressive strength** of HDPE is **86% less** than glass fiber reinforced polyester manufactured from sheet molding compound.
2. **Tensile strength** of HDPE is **60% less** than SMC/GRP.
3. **Flexural strength** of HDPE is **86% less** than SMC/GRP.
4. **Thermal Expansion** of HDPE is **10 times greater** than SMC/GRP.



ACO DRAIN continued

Note: As a result of the material deficiencies of HDPE, ACO recommends trench drains made of HDPE only be used for residential applications.

The relative low cost of HDPE makes it a most attractive polymer; however, it is highly flammable and has poor UV resistance and is susceptible to stress cracking.

Fernco offer their non-sloped Storm Drain series that is produced from 100% recycled polypropylene.

Polypropylene

1. **Compressive strength** of polypropylene is **71% less** than glass fiber reinforced polyester manufactured from sheet molding compound
2. **Tensile strength** of polypropylene is **53% less** than SMC/GRP
3. **Flexural strength** of polypropylene is **69% less** than SMC/GRP.
4. **Thermal Expansion** of polypropylene is **4.4 times greater** than SMC/GRP

Polypropylene is a member of the Polyolefin family of polymers. The other two members of the family are polyethylene and like HDPE polypropylene is highly flammable and has poor UV resistance.



Infinity Trench offers their non-sloped trench drain that is produced from 100% polypropylene with UV inhibitors.

Polypropylene

1. **Compressive strength** of polypropylene is **71% less** than glass fiber reinforced polyester manufactured from sheet molding compound
2. **Tensile strength** of polypropylene is **53% less** than SMC/GRP
3. **Flexural strength** of polypropylene is **69% less** than SMC/GRP.
4. **Thermal Expansion** of polypropylene is **4.4 times greater** than SMC/GRP

Polypropylene is a member of the Polyolefin family of polymers. The other two members of the family are polyethylene and like HDPE polypropylene is highly flammable and has poor UV resistance. Infinity Trench attempt to remedy the latter problem by adding UV inhibitors.

Mifab offer their Proformer trench drain series that is produced from polypropylene.

Polypropylene

1. **Compressive strength** of polypropylene is **71% less** than glass fiber reinforced polyester manufactured from sheet molding compound
2. **Tensile strength** of polypropylene is **53% less** than SMC/GRP
3. **Flexural strength** of polypropylene is **69% less** than SMC/GRP.
4. **Thermal Expansion** of polypropylene is **4.4 times greater** than SMC/GRP

Polypropylene is a member of the Polyolefin family of polymers. The other two members of the family are polyethylene and like HDPE polypropylene is highly flammable and has poor UV resistance.



Multi-Drain www.multidrainsystems.com

Multi-Drain offer Alfa Channel, which is a Polymer Concrete trench drain system and EconoDrain, which is non-sloped foam trench forming system using poured concrete.

Polymer Concrete

1. **Compressive strength** of polymer concrete is **35% less** than glass fiber reinforced polyester manufactured from sheet molding compound.
2. **Tensile strength** of polymer concrete is **78% less** than SMC/GRP.
3. **Flexural strength** of polymer concrete is **80% less** than SMC/GRP.
4. **Thermal Expansion** of polymer concrete is **1.7 times greater** than SMC/GRP



NDS www.ndspro.com

NDS offer their Dura-Slope trench drain series that is produced from polyethylene.

High Density Polyethylene

1. **Compressive strength** of HDPE is **86% less** than glass fiber reinforced polyester manufactured from sheet molding compound.
2. **Tensile strength** of HDPE is **60% less** than SMC/GRP.
3. **Flexural strength** of HDPE is **86% less** than SMC/GRP.
4. **Thermal Expansion** of HDPE is **10 times greater** than SMC/GRP

Note: As a result of the material deficiencies of HDPE, ACO recommends trench drains made of this material only be used for residential applications.

The relative low cost of HDPE makes it a most attractive polymer; however, it is highly flammable and has poor UV resistance and is susceptible to stress cracking.

P Polycast www.polycastdrain.com

Polycast produces trench drains made from polymer concrete. The line is owned by Hubbell, but additional marketing of the product is undertaken by Watts and McNichols Frame and Grate.

Polymer Concrete

1. **Compressive strength** of polymer concrete is **35% less** than glass fiber reinforced polyester manufactured from sheet molding compound.
2. **Tensile strength** of polymer concrete is **78% less** than SMC/GRP.
3. **Flexural strength** of polymer concrete is **80% less** than SMC/GRP.
4. **Thermal Expansion** of polymer concrete is **1.7 times greater** than SMC/GRP.



Polydrain produces a Polymer Concrete trench drain system and Trench Former, which is a foam trench forming system using poured concrete. Polydrain is owned by ABT Inc.

Polymer Concrete

1. **Compressive strength** of polymer concrete is **35% less** than glass fiber reinforced polyester manufactured from sheet molding compound.
2. **Tensile strength** of polymer concrete is **78% less** than SMC/GRP.
3. **Flexural strength** of polymer concrete is **80% less** than SMC/GRP.
4. **Thermal Expansion** of polymer concrete is **1.7 times greater** than SMC/GRP.

Jay R. Smith offers their Enviro-Flo trench drain series that is produced from 100% polypropylene.

Polypropylene

1. **Compressive strength** of polypropylene is **71% less** than glass fiber reinforced polyester manufactured from sheet molding compound
2. **Tensile strength** of polypropylene is **53% less** than SMC/GRP
3. **Flexural strength** of polypropylene is **69% less** than SMC/GRP.
4. **Thermal Expansion** of polypropylene is **4.4 times greater** than SMC/GRP.

Polypropylene is a member of the Polyolefin family of polymers. The other two members of the family are polyethylene and like HDPE polypropylene is highly flammable and has poor UV resistance.



Tuf-Tite offers their TR1 non-sloped trench drain series that is produced from high density polyethylene.

High Density Polyethylene

1. **Compressive strength** of HDPE is **86% less** than glass fiber reinforced polyester manufactured from sheet molding compound.
2. **Tensile strength** of HDPE is **60% less** than SMC/GRP.
3. **Flexural strength** of HDPE is **86% less** than SMC/GRP.
4. **Thermal Expansion** of HDPE is **10 times greater** than SMC/GRP.

Note: As a result of the material deficiencies of HDPE, ACO recommends trench drains made of this material only be used for residential applications.

The relative low cost of HDPE makes it a most attractive polymer; however, it is highly flammable and has poor UV resistance and is susceptible to stress cracking.



Watts offers their Dead-Level trench drain that is produced from talc-filled polypropylene.

Polypropylene

1. **Compressive strength** of polypropylene is **71% less** than glass fiber reinforced polyester manufactured from sheet molding compound
2. **Tensile strength** of polypropylene is **53% less** than SMC/GRP
3. **Flexural strength** of polypropylene is **69% less** than SMC/GRP.
4. **Thermal Expansion** of polypropylene is **4.4 times greater** than SMC/GRP.

Polypropylene is a member of the Polyolefin family of polymers. The other two members of the family are polyethylene and like HDPE polypropylene is highly flammable and has poor UV resistance. Watts attempt to remedy the latter problem by adding talc to act as a UV stabilizer.



ZURN offer trench drain systems in High Density Polyethylene, and Fiberglass, which requires a steel frame for support.

High Density Polyethylene

1. **Compressive strength** of HDPE is **86% less** than glass fiber reinforced polyester manufactured from sheet molding compound.
2. **Tensile strength** of HDPE is **60% less** than SMC/GRP.
3. **Flexural strength** of HDPE is **86% less** than SMC/GRP.
4. **Thermal Expansion** of HDPE is **10 times greater** than SMC/GRP.

Note: As a result of the material deficiencies of HDPE, ACO recommends trench drains made of this material only be used for residential applications.

The relative low cost of HDPE makes it a most attractive polymer; however, it is highly flammable and has poor UV resistance and is susceptible to stress cracking.

Josam Company is responsible for collecting the information for this publication. The data used for the graphs and comparative statistics are averages of data provided from multiple competitive and other independent sources.

Statements made concerning the performance of certain materials in the field are comments collected from competitors commenting on their websites about the appropriate use of certain materials or from various producers or researchers of the material concerned.



Installation images of Josam's PRO-PLUS™ Trench Drain System

PRO-PLUS™ Trench Drain

- Unmatched in compressive, tensile, flexural strength
- Stronger and lighter than concrete
- Shatterproof
- Less thermal expansion than polypropylene or high density polyethylene

Extremely Strong & Lightweight!

- ✓ EASY TO HANDLE
- ✓ EASY TO INSTALL
- ✓ LABOR SAVING

JOSAM

The Revolutionary Trench Drain System

www.josam.com | 800.36.JOSAM

PRO-PLUS™ Channel w/Slope
U.S. Patent No. 7,736,092