PETROFLEX

HIGH DENSITY POLYETHYLENE PETRODUCT™

— PRODUCT CATALOG —

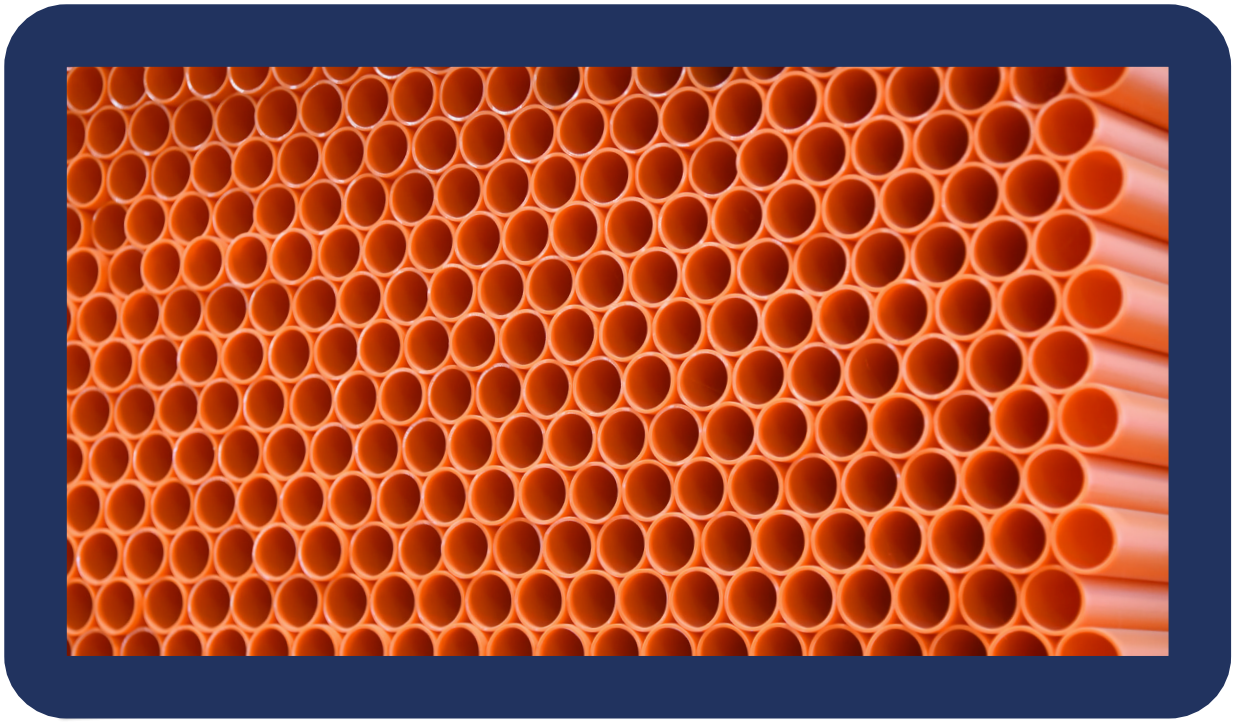
PROUDLY MADE IN THE USA

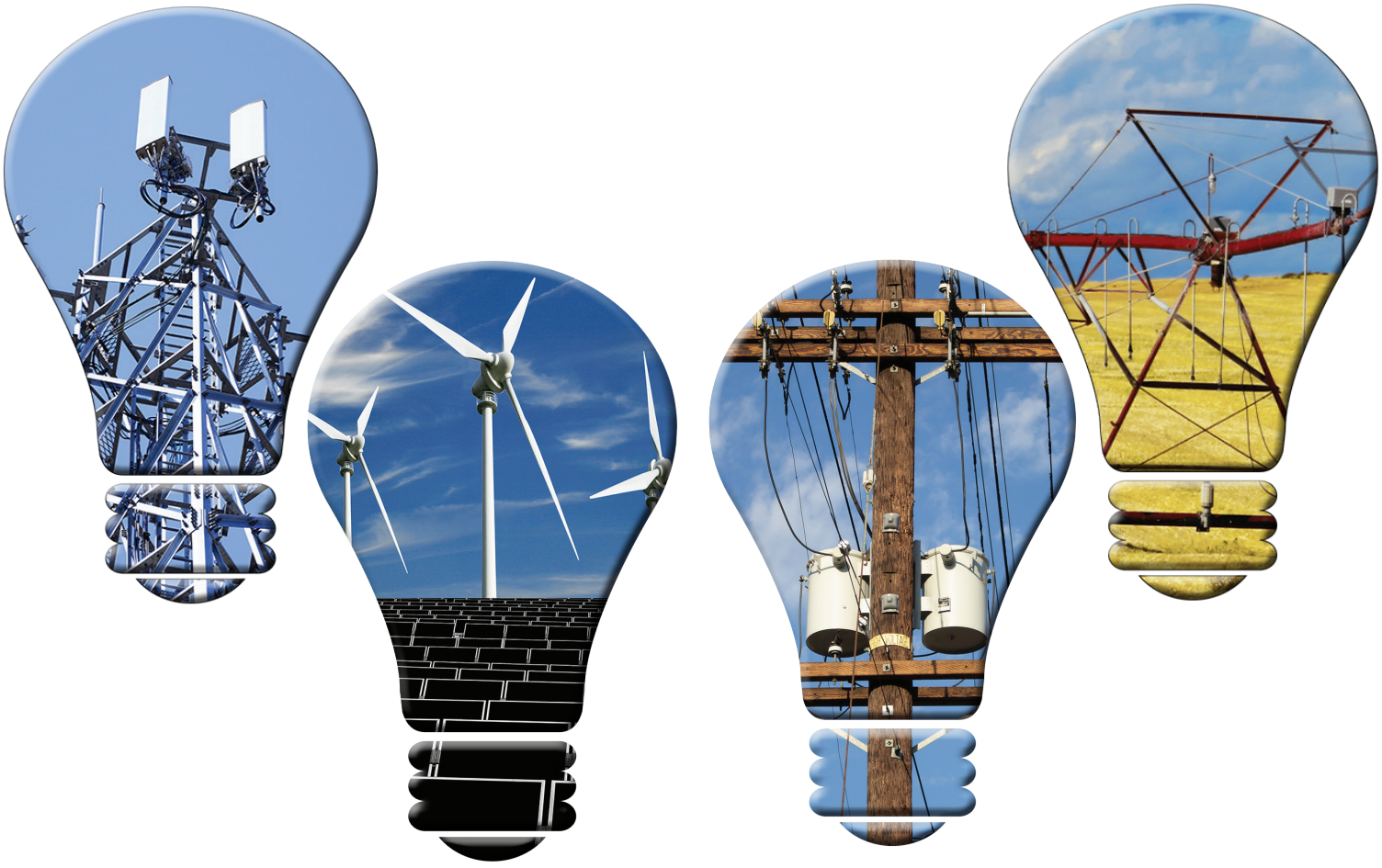
WE RECYCLE 100% OF OUR SCRAP

WWW.PETROFLEXNA.COM

CONTENT

Since 1983



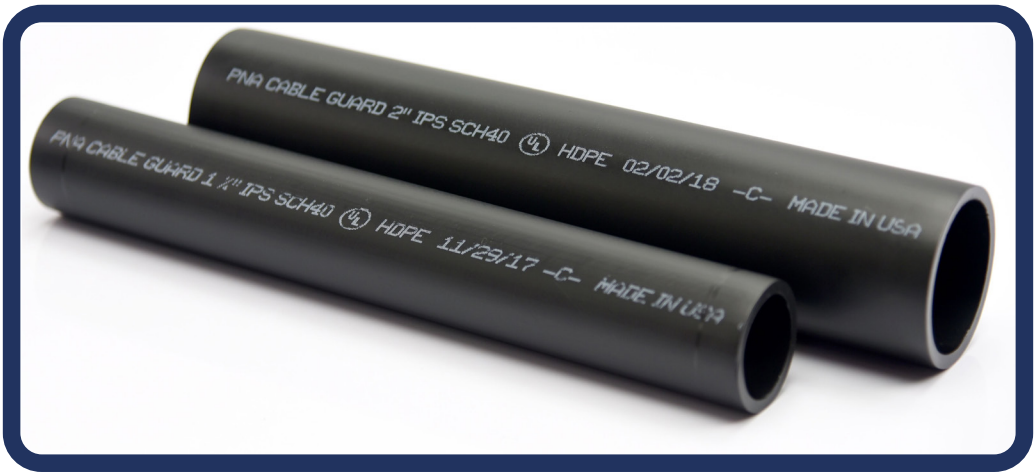


Superior Products for the Telecommunications, Electrical Utility and Data Voice Industries.

PETROFLEX

About ...

High Density Polyethylene Duct from Petroflex has been tested and proven under the most severe conditions. From extreme temperatures to abrasive and high tension applications in underground installations, HDPE from Petroflex provides quality and versatility in a wide range of uses. As a smooth and flexible duct for cable, HDPE is unequaled for ease of installation and continuous strength. Manufactured to ASTM D2239, ASTM D2447, ASTM D3035, ASTM D3485, ASTM F2160 and NEMA TC7 Specifications. Selected sizes available with UL mark.

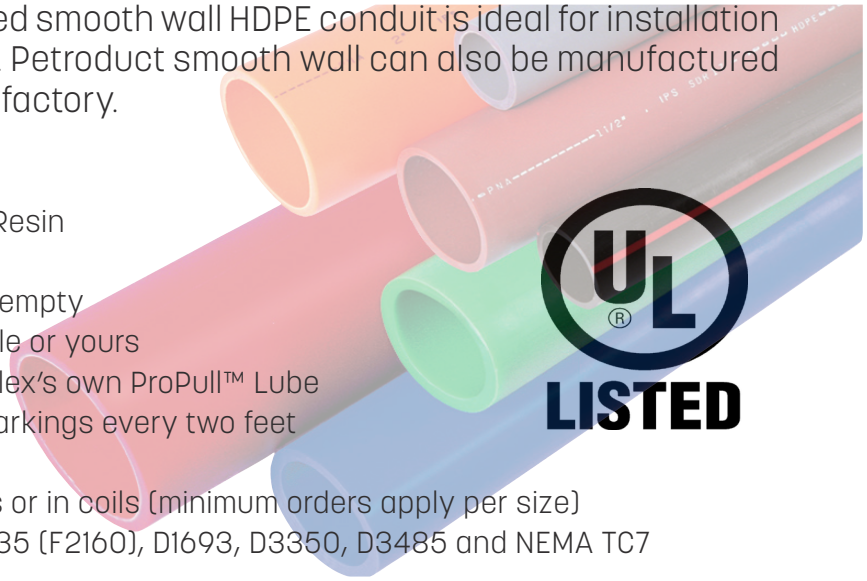


Headquartered in Gainesville, Texas, the Petroflex family was founded by Pete and Susie Shauf in 1983. The company is a leading extruder of HDPE (high-density polyethylene) duct and accessories. Petroflex manufactures high quality products for the irrigation, electric utility, oil & gas, telecommunications, data/voice, renewable energy (wind & solar), and cable television markets. The product line includes cable-in-conduit, straight duct, corrugated duct, duct with striping, duct over rope and tape, take apart metal reels, lubricants, couplings & fittings, and cable markers. Our duct is manufactured in sizes ranging from 13mm to 6". Petroflex 's products are sold throughout the United States directly to a network of wholesale distributors. The manufacturing facilities operate 24 hours a day, seven days a week.

MEMBER IN GOOD STANDING
MANA
Manufacturers & Agents
PROFESSIONAL PARTNERS IN PROFITS

UL LISTED CONDUIT

Petroflex Petroduct™ UL listed smooth wall HDPE conduit is ideal for installation of cable in any application. Petroduct smooth wall can also be manufactured with cable installed at the factory.



Features:

- Made from Prime HDPE Pipe Grade Resin
- Smooth inner wall
- Available with pre-installed tape or empty
- Available pre-installed with our cable or yours
- Available pre-lubricated with Petroflex's own ProPull™ Lube
- Sequential footage and UL listed markings every two feet
- Custom print lines available
- Packaged on lightweight steel reels or in coils (minimum orders apply per size)
- Manufactured to ASTM D2447, D3035 (F2160), D1693, D3350, D3485 and NEMA TC7 Specifications
- Listed to UL 651B, UL 1990 Compliant with the latest NEC Article 353
- 2, 3, or 4 colors available paralleled onto one reel as a special order (see reel chart)
- Conforms to NEMA TC-7 Smoothwall Coilable PE Electrical Plastic Conduit

*R prefix to any part # indicates cut-to-length & does not change fit, form or function (i.e. RP150SCH40UL, RP125SCH80UL)

*CS or PS prefix to any part # indicates pre-installed cable in conduit & does not change fit, form or function (i.e. CSP200SCH40UL, PSP150SCH80UL)

Smoothwall UL Listed Specifications

Size	Product Part#	Nominal O.D.	Min. I.D.	Mean Wall	Weight LBS/Ft
1.00″	P100EPEC-B	1.315	1.080	0.107	0.1672
	P100SCH40UL	1.315	1.009	0.143	0.2168
	P100SCH80UL	1.315	0.917	0.189	0.2754
1.25″	P125EPEC-B	1.660	1.374	0.133	0.2628
	P125SCH40UL	1.660	1.340	0.150	0.2931
	P125SCH80UL	1.660	1.232	0.201	0.3827
1.50″	P150EPEC-A	1.900	1.630	0.125	0.2871
	P150EPEC-B	1.900	1.579	0.141	0.3417
	P150SCH40UL	1.900	1.570	0.145	0.3500
	P150SCH80UL	1.900	1.452	0.200	0.4630
2.00″	P200EPEC-B	2.375	1.981	0.186	0.5268
	P200SCH40UL	2.375	2.027	0.164	0.4692
	P200SCH80UL	2.375	1.887	0.231	0.6408
2.50″	P250EPEC-B	2.875	2.397	0.226	0.7746
	P250SCH40UL	2.875	2.421	0.215	0.7400
	P250SCH80UL	2.875	2.257	0.293	0.9774
3.00″	P300EPEC-B	3.500	2.919	0.274	1.1437
	P300SCH40UL	3.500	3.016	0.229	0.9692
	P300SCH80UL	3.500	2.828	0.318	1.3092
4.00″	P400EPEC-B	4.500	3.753	0.353	1.8941
	P400SCH40UL	4.500	3.970	0.252	1.3851
	P400SCH80UL	4.500	3.746	0.357	1.9137

All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

SMOOTHWALL PETRODUCT™

Petroflex Petroduct™ smoothwall HDPE conduit is ideal for installation of cable or fiber in any underground application. Petroduct smoothwall is manufacted with a smooth inner wall and is available in may different sizes and color variations from Prime HDPE Pipe Grade Resin with a smooth inner wall. Manufactured to ASTM D2447, D3035 (F2160), D1693. D3350, D2239 (ID controlled pipe only) and NEMA TC7 Specifications.

Features:

- Available with pre-installed tape or empty
- Available pre-lubricated with Petroflex's own ProPull™ Lube
- Sequential footage markings every two feet
- RUS listed
- Standard colors(striping & co-extruded are available)

Standard Specifications for NEMA TC7

Size	Product Part#	Nominal O.D.	Min. I.D.	Weight LBS/Ft.	Mean Wall
0.75″	P075NTC7	1.050	0.910	0.0820	0.070
1.00″	P100NTC7	1.315	1.145	0.1280	0.085
1.25″	P125NTC7	1.660	1.440	0.2140	0.110
1.50″	P150NTC7	1.900	1.650	0.2820	0.125
2.00″	P200NTC7	2.375	2.045	0.4452	0.155
2.50″	P250NTC7	2.875	2.445	0.7440	0.213
3.00″	P300NTC7	3.500	3.042	0.9700	0.226

COMPARISON OF SCH WALLS TO SDR WALLS

PIPE SIZE	SCH MIN WALL	EQUAL SDR RATING
2″ SCH40	.154″	15.4
2″ SCH80	.218″	10.9
2-1/2″ SCH40	.203″	14.2
2-1/2″ SCH80	.276″	10.4
3″ SCH40	.216″	16.2
3″ SCH80	.300″	11.7
4″ SCH40	.237″	19.0
4″ SCH80	.337″	13.4

When equaling the two, the figures clearly show that there is no consistency between SCH wall thickness and SDR rating.

STANDARD DIMENSION RATIO (SDR)

SDR RATINGS ARE DIRECTLY PROPORTIONAL TO THE O.D. OF THE PIPE AS FOLLOWS:

$$SDR = \frac{O.D.}{MIN.\ WALL} \qquad OR\ MIN.\ WALL = \frac{O.D.}{SDR}$$

MIN WALL = (+0.26" TOLERANCE)

THEREFORE: WALL THICKNESS WILL RANGE FROM .213" TO .239".

WE HAVE CLASSIFIED HDPE PIPE AS FOLLOWS:
SDR 15.5= LIGHT DUTY
SDR 13.5= REGULAR DUTY
SDR 11.0= HEAVY DUTY

NOTE: All pipe diameters with the same SDR in the same burial conditions have the same critical collapse, buckling and/or load bearing endurances. (Please reference Petroflex Technical Data.)

All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

SMOOTHWALL

Standard Specifications for 1/2" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P050	13.5	0.840	0.676	0.062	0.082	0.0715	0.072
P050	11	0.840	0.647	0.076	0.096	0.0839	0.086
P050	SCH40	0.840	0.582	0.109	0.129	0.1110	0.119
P050	SCH80	0.840	0.506	0.147	0.167	0.1387	0.157

Standard Specifications for 3/4" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P075	13.5	1.050	0.854	0.078	0.098	0.1095	0.088
P075	11	1.050	0.820	0.095	0.115	0.1284	0.105
P075	SCH40	1.050	0.784	0.113	0.133	0.1475	0.123
P075	SCH80	1.050	0.702	0.154	0.174	0.1880	0.164

Standard Specifications for 1" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P100	17	1.315	1.120	0.077	0.097	0.1382	0.087
P100	15.5	1.315	1.105	0.085	0.105	0.1499	0.095
P100	13.5	1.315	1.080	0.097	0.117	0.1672	0.107
P100	11	1.315	1.036	0.120	0.140	0.1993	0.130
P100	9	1.315	0.983	0.146	0.166	0.2339	0.156
P100	7	1.315	0.889	0.188	0.211	0.2890	0.200
P100	SCH40	1.315	1.009	0.133	0.153	0.2168	0.143
P100	SCH80	1.315	0.917	0.179	0.199	0.2754	0.189

Standard Specifications for 1 1/4" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P125	13.5	1.660	1.374	0.123	0.123	0.1672	0.107
P125	11.5	1.660	1.332	0.144	0.144	0.1993	0.130
P125	11	1.660	1.318	0.151	0.151	0.3123	0.161
P125	9	1.660	1.248	0.184	0.184	0.2339	0.156
P125	7	1.660	1.130	0.237	0.237	0.2890	0.200
P125	SCH40	1.660	1.340	0.140	0.140	0.2168	0.143
P125	SCH80	1.660	1.232	0.191	0.191	0.2754	0.189

All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

Specifications

PETRODUCT™

Standard Specifications for 1 1/2" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P150	15.5	1.900	1.615	0.123	0.143	0.3041	0.133
P150	13.5	1.900	1.579	0.141	0.161	0.3417	0.151
P150	11.5	1.900	1.530	0.165	0.185	0.3906	0.175
P150	11	1.900	1.515	0.173	0.194	0.4065	0.183
P150	9	1.900	1.428	0.211	0.236	0.4857	0.224
P150	SCH40	1.900	1.570	0.145	0.165	0.3500	0.155
P150	SCH80	1.900	1.452	0.200	0.224	0.4630	0.212

Standard Specifications for 2" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P200	17	2.375	2.056	0.140	0.160	0.4318	0.150
P200	15.5	2.375	2.029	0.153	0.173	0.4665	0.163
P200	13.5	2.375	1.981	0.176	0.197	0.5268	0.186
P200	11	2.375	1.891	0.216	0.242	0.6358	0.229
P200	9	2.375	1.781	0.264	0.296	0.7590	0.280
P200	7	2.375	1.614	0.339	0.380	0.9386	0.360
P200	SCH40	2.375	2.027	0.154	0.174	0.4692	0.164
P200	SCH80	2.375	1.887	0.218	0.244	0.6408	0.231

Standard Specifications for 2 1/2" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P250	13.5	2.875	2.397	0.213	0.239	0.7746	0.226
P250	11	2.875	2.288	0.261	0.293	0.9311	0.277
P250	SCH40	2.875	2.421	0.203	0.227	0.7400	0.215
P250	SCH80	2.875	2.257	0.276	0.309	0.9774	0.293

Standard Specifications for 3" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P300	13.5	3.500	2.919	0.259	0.290	1.1437	0.274
P300	11	3.500	2.788	0.318	0.356	1.3792	0.337
P300	9	3.500	2.628	0.389	0.436	1.6461	0.412
P300	7	3.500	2.380	0.500	0.560	2.0367	0.530
P300	SCH40	3.500	3.016	0.216	0.242	0.9692	0.229
P300	SCH80	3.500	2.828	0.300	0.336	1.3092	0.318

All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

SMOOTHWALL PETRODUCT™

Standard Specifications for 4" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P400	21	4.500	4.019	0.214	0.240	1.2550	0.227
P400	17	4.500	3.907	0.265	0.297	1.5339	0.281
P400	15.5	4.500	3.849	0.290	0.325	1.6706	0.308
P400	13.5	4.500	3.753	0.333	0.373	1.8941	0.353
P400	11	4.500	3.584	0.409	0.458	2.2832	0.434
P400	9	4.500	3.380	0.500	0.560	2.7224	0.530
P400	7	4.500	3.146	0.643	0.720	3.3650	0.681
P400	SCH40	4.500	3.970	0.237	0.265	1.3851	0.252
P400	SCH60	4.500	3.856	0.287	0.322	1.6504	0.304
P400	SCH80	4.500	3.746	0.337	0.377	1.9137	0.357

Product Part#	SIDR Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P400	11.5	4.727	3.991	0.347	0.389	2.0758	0.368

Standard Specifications for 5" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P500	13.5	5.563	4.639	0.412	0.461	2.8983	0.437
P500	11	5.563	4.430	0.506	0.567	3.4863	0.536
P500	9	5.563	4.179	0.618	0.692	4.1594	0.655
P500	SCH40	5.563	4.985	0.258	0.289	1.8750	0.274
P500	SCH80	5.563	4.723	0.375	0.420	2.6598	0.398

Standard Specifications for 6" Petroduct — MEAN DENSITY 0.950

Product Part#	SDR/SCH Rating	Nominal O.D.	Min. I.D.	Min Wall	Max Wall	Weight LBS/Ft.	Mean Wall
P600	21	6.625	5.918	0.315	0.356	2.7186	0.334
P600	17	6.625	5.752	0.390	0.437	3.3195	0.413
P600	15.5	6.625	5.668	0.427	0.478	3.6175	0.453
P600	13.5	6.625	5.526	0.491	0.550	4.1075	0.520
P600	11	6.625	5.276	0.602	0.674	4.9422	0.638
P600	9	6.625	4.977	0.736	0.824	5.8988	0.780
P600	7	6.625	4.504	0.946	1.060	7.2959	1.003
P600	SCH40	6.625	5.997	0.280	0.314	2.4317	0.297
P600	SCH80	6.625	5.657	0.432	0.484	3.6545	0.458

All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

PETRORIB™

For Specialized installation of underground cable, including fiber and optics, PetroRib™ conduit provides superior friction reduction and flexibility. Manufactured from quality High Density Polyethylene resin, PetroRib™ offers maximum strength and adaptability on long pulls with numerous turns and elevation changes. PetroRib™ also affords superior pulling ease and lubrication effectiveness when installed with ProPull™ Lube.

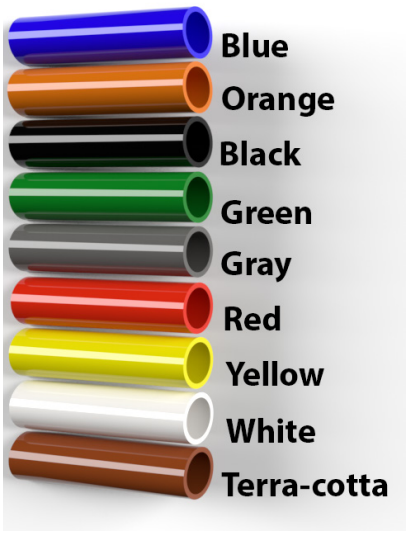
Features:

- Made with Prime HDPE Pipe Grade Resin
- Ribbed inner wall
- Available with pre-installed tape or as empty duct
- Available pre-lubricated with Petroflex's own ProPull™ Lube
- Sequential footage markings every two feet
- Packaged on lightweight steel reels or in coils
- Manufactured to ASTM D2447, D3035, D3485, D2239, F2160 and NEMA TC7 Specifications
- Standard Colors (Striping is available)

*R prefix to any part # indicates cut-to-length & does not change fit, form or function (i.e. RPR100SDR13.5, RPR150SDR13.5)

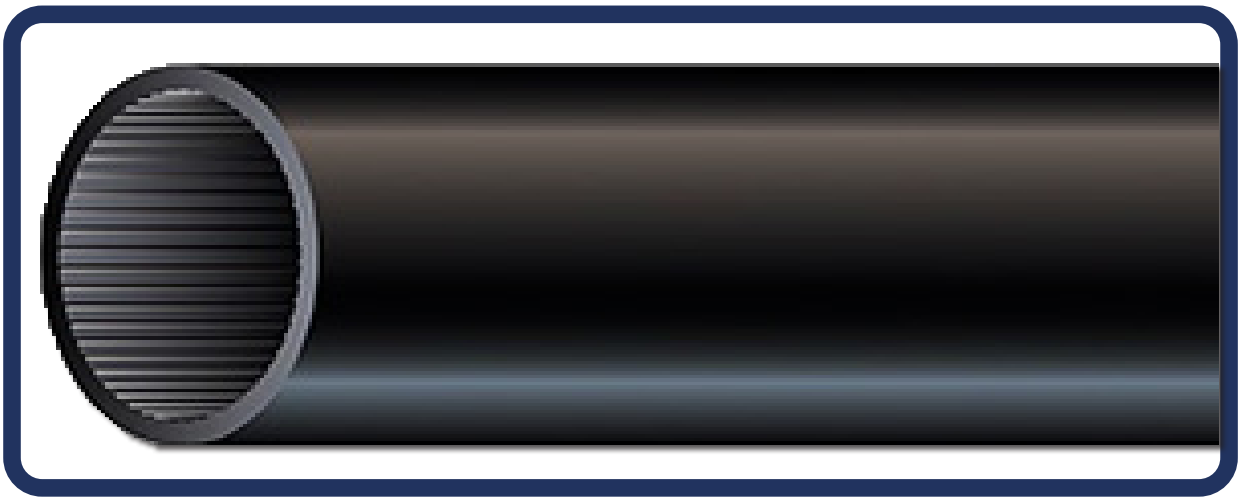
All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

PETRORIB™



Standard Specifications for PETRORIB™

Size	Product Part#	Nominal O.D.	Min. I.D.	Weight LBS/Ft.	Mean Wall
1.00″	PR100SDR13.5	1.315	1.101	0.1727	0.107
	PR100SDR11	1.315	1.055	0.2048	0.130
	PR100SCH40	1.315	0.979	0.2223	0.143
1.25″	PR125SDR13.5	1.660	1.340	0.2708	0.135
	PR125SDR11	1.660	1.258	0.3203	0.161
	PR125SCH40	1.660	1.310	0.3098	0.150
1.50″	PR150SDR13.5	1.900	1.518	0.4217	0.151
	PR150SDR11	1.900	1.444	0.4145	0.183
	PR150SCH40	1.900	1.520	0.3800	0.155
2.00″	PR200SDR13.5	2.375	1.921	0.5368	0.186
	PR200SDR11	2.375	1.831	0.6458	0.229
	PR200SCH40	2.375	1.967	0.4792	0.164



All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

CORRUGATED PETRODUCT™

For specialized installation of cable, PetroDuct™ Corrugated Duct provides superior friction reduction and flexibility. Manufactured from quality High Density Polyethylene, PetroDuct™ Corrugated Duct offers maximum flexibility in tight turns combined with light weight and superior economy. PetroDuct™ Corrugated affords maximum pulling ease and lubrication effectiveness when installed with ProPull™ Lube.

Features:

- Corrugated Wall
- Packaged on light weight steel reels or coils. Coils may be shrink wrapped and palletized.
- Pre-installed with 1100# PullTape™
- Available in standard colors: Black (UV), Blue, Orange or Green. Custom colors available on request (lead times and minimum order quantities will apply)

*R prefix to any part # indicates cut-to-length & does not change fit, form or function (i.e. RPC100, RPC125, RPC150, RPC200)

Standard Specifications for Corrugated Petroduct™

Product Part#	Nominal O.D.	Min. I.D.	Weight LBS/Ft.	Mean Wall
PC100	1.31	1.00	0.0765	0.040
PC125	1.54	1.25	0.1030	0.040
PC150	1.90	1.57	0.1251	0.040
PC200	2.37	2.04	0.1754	0.040

All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

SPLIT CORRUGATED PETRODUCT™

For specialized installation of cable, Split corrugated PetroDuct™ provides an ideal solution for keeping your cable organized and professional allowing easy installation over existing cables. Manufactured from quality High Density Polyethylene, Split Corrugated PetroDuct™ protects your cabling from abrasion, punctures, and vibration.

Features:

- Corrugated Wall
- Packaged on light weight steel reels or coils. Coils may be shrink wrapped and palletized.
- Available in standard colors: Black (UV), Blue, Orange, or Green. Additional colors available upon request (lead times and minimum order quantities will apply).
- Made from Prime HDPE Pipe Grade Resins

Standard Specifications for Split Corrugated Petroduct™

Product Part#	Nominal O.D.	Min. I.D.	Weight LBS/Ft.	Mean Wall
PC100SPLIT	1.31	1.00	0.0765	0.040
PC125SPLIT	1.54	1.25	0.1030	0.040
PC150SPLIT	1.90	1.57	0.1251	0.040
PC200SPLIT	2.37	2.04	0.1754	0.040

PETROFLEX

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SPLIT CORRUGATED PETRODUCT™

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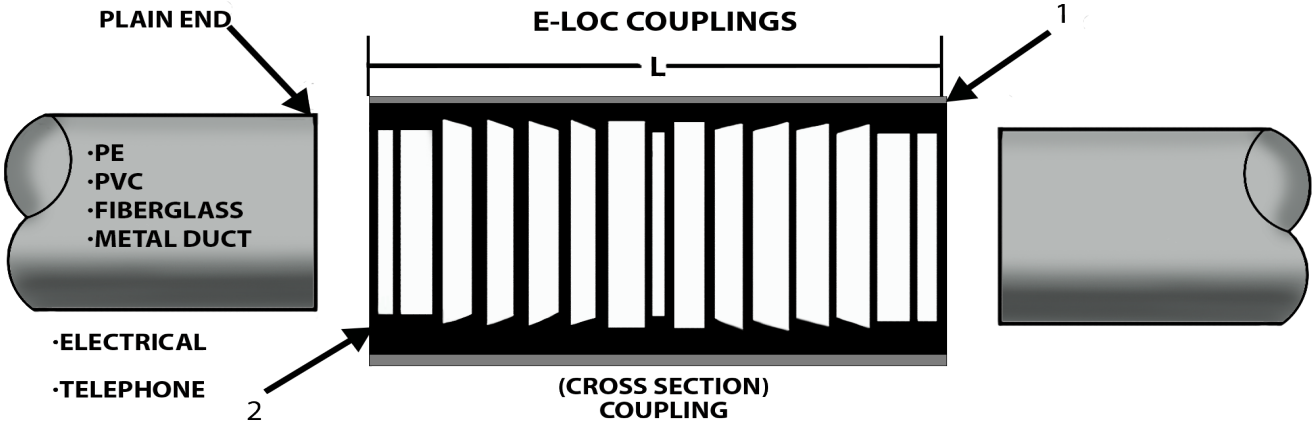
All Petroduct ™ is available pre-lubed, with pulling rope pre-installed; and in other sizes and lengths as special order. Joints available in all sizes.

E-LOC® COUPLINGS

E-Loc® Couplings feature a strong PVC outer shell with a flexible polyurethane elastomer inner sleeve for smooth wall and corrugated joint applications of the same or dissimilar duct material. E-Loc® Couplings provide a watertight and airtight connection that will not separate under normal installation. Available in 3/4″ to 6″ in standard Iron Pipe Sizes (IPS) plus 1″ and 1-1/4″ corrugated.



1. PVC BODY **2. POLYURETHANE ELASTOMER SLEEVE**

JOINTING SYSTEM FOR:

- **Ducts with Standard Outside Diameters**
- **Jointing Duct of Dissimilar Materials**
- **Elimination of Solvent Welded Joints**
- **Pressure Tight Seal to Eliminate Infiltration**

U.S. Patent No. 5180197

DOUBLE E-LOC® COUPLINGS

The Double E-Loc® Coupling was developed for joining both smooth and ribbed HDPE duct, specifically for pneumatic methods of cable placement. These duct systems require both air and water-tight integrity. The joints are usually located in vaults, manhole or hand holes, where they are unrestrained. The standard E-Loc® coupling is pressure tight to internal pressures above 200 psi when restrained or buried, but the Double E-Loc® can maintain these pressures unrestrained. The Double E-Loc® coupling is also reusable.

LEFT/RIGHT THREADED

Machine from tool grade aluminum, left/right threaded couplings are also available. (Easily installed with a pipe wrench - no special tools required.) Available in 3/4″, 1″, 1-1/8″, 1-1/4″, 1-1/2″, and 2″ IPS. Just insert duct in each end of coupling and rotate coupling in the direction of the arrow. Ducts will be drawn into the coupling from both ends at the same time.

TERMINAL ADAPTERS

Electrical Terminal Adapters join fiber optic innerduct to assorted cabinets. Featuring a weather resistant seal that protects the innerduct and cable from kinks and cabinet termination against environmental intrusions. Hand installation; no tools required.

PART #	SIZE
COUP-ETA-084	0.50″
COUP-ETA-105	0.75″
COUP-ETA-131	1.00″
COUP-ETA-166	1.25″
COUP-ETA-190	1.50″
COUP-ETA-237	2.00″

TYPICAL PROPERTIES

PROPERTY	TEST METHOD	UNITS	VALUE
VICAT SOFTENING TEMP.	ASTM S 1525	°F	255°
HEAT DISTORTION TEMP.	ASTM D 648	°F	172°
THERMAL EXPANSION	ASTM D 696	IN/IN/°F	1 X 10-^{4}
THERMAL CONDUCTIVITY	ASTM C 177	BTU, IN/FT^{2}/HRS/°C	4.7
VOLUME RESISTIVITY	DIN 53482	Ω/CM	>10^{16}
SURFACE RESISTANCE	DIN 53482	Ω	>10^{13}
DIELECTRIC STRENGTH	DIN 53481	KV/CM	700-850

PROPERTY	ASTM (CONDITION)	UNITS	VALUE
DENSITY (BLACK)	D 1505	G/CM^{3}	0.955
MELTING POINT	DSC	°F	261
MELT INDEX I2.16	D 1238 (E)	GM/10 MIN.	.11
TENSILE YIELD STRENGTH	D 638	PSI	3300
ELONGATION AT BREAK	D 638 SPECIMEN I	%	800
TENS. MODULUS OF ELAST.	D 638	PSI	113.000
FLEXURAL MODULUS	D 790	PSI	136.000
VICAT SOFTENING TEMP.	D 1525	°F	255
BRITTLENESS TEMP.	D 746	°F	<--103
HEAT DISTORTION TEMP.	D 648	°F	172
THERMAL EXPANSION	D 696	IN/IN/°F	1 X 10^{-4}
ROCKWELL HARDNESS L	D 785	____	49
SHORE HARDNESS	D2240	____	68

THE DATA LISTED WAS DETERMINED ON PRESS MOLDED TEST SPECIMENS, AND MAY THEREFORE DEVIATE FROM SPECIMENS TAKEN FROM PIPES.

CLASSIFICATION TYPE/CLASS/CAT.GRADE	D 1248	III/C/5/P34
CELL CLASSIFICATION	D 3350	335440
PPI RECOMMENDED DESIGNATION		PE 34

DESIGNATED TESTS ARE MADE IN ACCORDANCE WITH CURRENT ISSUES OF ASTM STANDARD TESTING METHODS. COPIES OF THESE METHODS ARE AVAILABLE FROM THE AMERICAN SOCIETY FOR TESTING MATERIALS, 1916 RACE STREET, PHILADELPHIA, PA 19103, ON REQUEST.

Tests on Resins and Finished Duct

Since specifications vary from customer to customer, we perform in-house lab tests on resins and finished products which include, but are not limited to the following:

ASTM D3035: Polyethylene Plastic Pipe Based on Controlled Outside Diameter.

ASTM D2447: Polyethylene Plastic Pipe, Schedules 40

ASTM D2239: Polyethylene Plastic Pipe Based on Controlled Inside Diameter.

ASTM D1248: Polyethylene Plastics Molding and Extrusion Materials. (Type III, Class A, B, or C, Category 5, Grade P34).

ASTM D1693: Environmental Stress-Cracking of Ethylene Plastics. (Cond. B, F20/96 HRS.)

ASTM D1238: Flow Rates of Thermoplastics by Extrusion Plastometer.

ASTM D1505: Density of Plastics by the Density Gradient Technique.

ASTM D638: Tensile Properties of Plastics.

ASTM D3350: Polyethylene Plastic Pipe and Fittings Materials. (Cell # 335440).

NEMA TC 7: Smooth-Wall Coilable Polyethylene Electrical Plastic Duct. NOTE: This also covers other ASTM tests i.e.: Tensile, Impact etc.

ASTM D2412: Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

ASTM D2444: Determination of the Impact resistance of Thermoplastic Pipe and Fittings by Means of a Tup.

ASTM D3485: Smooth-Wall Coilable Polyethylene Conduit for Pre-assembled Wire and Cable.

ASTM F2160: Standard Specifications for Solid Wall High Density Polyethylene (HDPE) Conduit Based on Controlled Outside Diameter (OD).

Design Considerations: Please refer to our brochure. This shows different design parameters for polyethylene pipe (i.e.,Wall Crushings, Wall Buckling, etc.) as per the various SDR (wall thickness) ratings.

SPECIAL OPTIONS

STRIPED DUCT

Three longitudinal stripes can be extruded on any standard size of smooth duct of any color. Stripes are approximately 1/8-inch in width (varying slightly according to the duct size). There is no additional charge for Striped Duct.

CABLE IN CONDUIT

Petroflex pre-installs cable in conduit utilizing the same stringent quality control as pre-roped and pre-taped duct. (Request P.N.A.'s technical instruction guide for C.I.C. installation.)

SEQUENTIALLY- MARKED DUCT

Duct can be ordered with numbering - every two feet - printed on the duct.

GENERAL SPECIFICATIONS FOR COILABLE HDPE DUCT

Description
The duct shall be manufactured from virgin high density polyethylene. The addition of clean rework material is permissible if generated in the manufacturer's own plant. The ducts are supplied with either smooth, ribbed or corrugated walls and come in a multitude of colors. The duct shall be capable of being coiled (reeled) in continuous lengths, transported, stored outdoors and subsequently uncoiled for installation - without affecting its properties or performance.

Environmental Performance
The duct shall perform in underground and above-ground temperature range of minus 30° to 130°F without degradation of material properties. The duct specified for aerial installation shall be ultraviolet light-resistant. It shall be possible to bend the duct to a minimum (supported) radius of 10 diameters.

Workmanship
The duct shall be free of visible cracks, holes or other physical defects that would degrade its performance. It shall be as uniform as practicable in respect to overall dimensions, color, density, thickness, etc.

Color
The duct for exposed areas (black) shall have a minimum of carbon black. All other colors shall have a UV light stabilizer which will protect the duct for a minimum of 12 months in direct sunlight.

Markings
The duct shall have a durable identification showing the name or trademark of the manufacturer, duct size (i.e.,2" IPS SCH-80), date and reference code. Duct for electrical cable should have "CAUTION - HIGH-VOLTAGE" printed at regular intervals. Other special markings can be agreed upon between the buyer and seller.

Capping
The open ends of each length of reeled duct shall be sealed by plastic caps to prevent the entrance of dirt and/or moisture.

Pull Rope & Lubricant
The duct should be equipped with a factory installed rope or tape and pre-lubed to aid in the installation of cable. The rope can be provided with varying strengths as needed for a particular installation. Check with a manufacturer for specifications.

Couplings
Couplings should be available to quickly connect the duct and should be air and watertight (i.e., Duct-Lok type couplings in either plastic or aluminum, depending on type of installation).

Packaging
The duct should be provided on lightweight metal reels in maximum lengths possible with no joints or splices. This will keep coupling requirements to a minimum. Special reel sizes and/ or dimensions should be available for special installations.

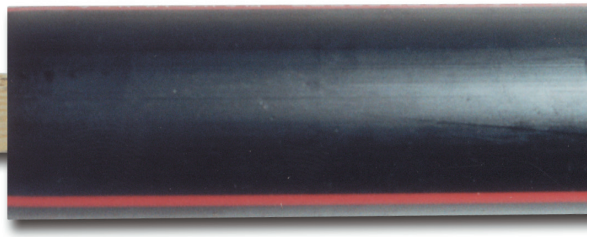
Corrosion
The duct shall be resistant to most harsh chemicals and/or protected against degradation due to oxidation or general corrosion.

Installation
The duct shall be capable of being direct buried by plowing or trenching with no special consideration to using selective backfill. The duct shall also be capable of being encased in concrete.

NOTE: HDPE conduit is manufactured by Petroflex to the dimension and requirements of ASTM F2160. Ovality (out-of-roundness) and curvature are inherent characteristics of coiled, continuous length HDPE conduit. While these conditions are normal and expected and are not a concern in most applications, some installations or applications may require "re-rounding" of the conduit. When this is necessary, ovality should be corrected in the field by processing the conduit through re-rounding and straightening equipment during installation.

PULLTAPE™

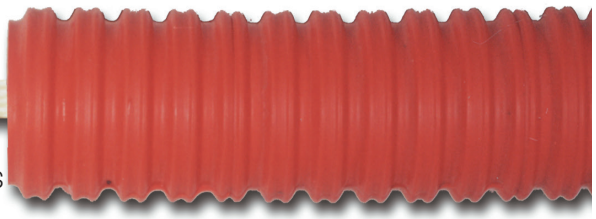
ARAMID FIBER PULLTAPE™



Produced using high tenacity, high strength Aramid yarns, these tapes offer the highest tensile strength per width along with low elongation. This product is also available with a silicone lubricant, which is compatible with the lubricant used in the manufacture of innerduct, and greatly reduces the possibility of burn-through. The tapes are also available with sequential footage markings for accurate measurements.

PART NO	CONSTRUCTION	TENSILE/LBS./KG
WA900	WOVEN	900/408
WA1250	WOVEN	1250/567
WA1500	WOVEN	1500/680
WA1800	WOVEN	1800/816
WA2000	WOVEN	2000/907
WA2500	WOVEN	2500/1134

BLENDED FIBER PULLTAPE™



Developed primarily to give the same pulling properties as with the 100% Aramid construction, but at a lower cost. Aramid fibers are mechanically blended with high tenacity polyester fibers. These tapes are available with a silicone lubricant, which is compatible with the lubricant used in the manufacture of innerduct and greatly reduces the possibility of burn-through. The tapes are also available with printed sequential footage markings for accurate measurements.

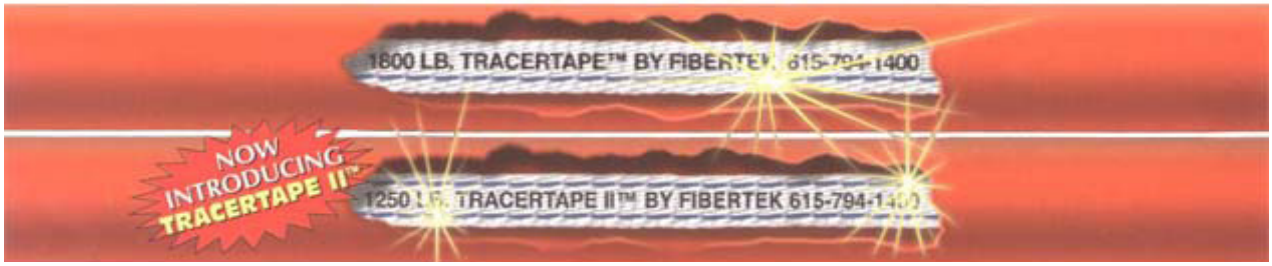
PART NO	CONSTRUCTION	TENSILE/LBS./KG
WB1250	WOVEN	1250/567
WB1500	WOVEN	1500/680
WB1800	WOVEN	1800/816
WB2000	WOVEN	2000/907
WB2500	WOVEN	2500/1134

POLYESTER FIBER PULLTAPE™

Produced using high tensile, high tenacity, low shrink polyester fibers. This is the most competitively priced high tensile strength pull tape. This product is available with a silicone lubricant, which is compatible with the lubricant used in the manufacture of innerduct, and greatly reduces the possibility of burn-through. The tapes are also available with printed sequential footage markings for accurate measurements.

PART NO	CONSTRUCTION	TENSILE/LBS./KG
WP1100	WOVEN	1100/49
WP1250	WOVEN	1250/567
WP1800	WOVEN	1800/816
WP2500	WOVEN	2500/1134
WP6000	WOVEN	6000/2722

TRACERTAPE™



TRACERTAPE™ incorporates a solid corrosion resistant copper conductor into our industry leading PULLTAPE™ products. The result is a multi-functional product used for locating, pulling and measuring your duct and fiber. Simply direct a radio signal on to the TRACERTAPE™ and follow conventional locating procedures.

TRACERTAPE™ is available in aramid, polyester or blended constructions of PULLTAPE™ with tensile strengths up to 6000 lbs. Since our PULLTAPE™ products have the lowest shrink factors in the industry, TRACERTAPE™ is extrusion friendly and can be pre-inserted by the duct manufacturer or blown into the duct at the job site. All TRACERTAPES™ are furnished with printed sequential footage markings for accurate measurements and factory pre-lubricated for easy pulling with no duct burn-through as with rope products.

Conductor Size Data

AWG	22 SOLID BARE COPPER
DIAMETER	.0253 NOMINAL
MAX VOLTAGE	300 V
TENSILE STRENGTH	34,000 LB/IN
RESISTIVITY*	16.2 OHMS /mft

*RESISTANCE VALUES BASED ON COPPER OF 100% CONDUCTIVITY @ 20 DEGREES C.

Insulation Data

TYPE	HIGH DENSITY POLYETHYLENE (HDPE)
COLOR	ORANGE
THICKNESS	.010" NOMINAL
DIELECTRIC CONSTANT	2.34 @ 1 MHZ

PART_NO	Description
ROP-WP1250TT1	1250# POLYESTER PULL TAPE W/SINGLE TRACER WIRE
ROP-WP1250TT2	1250# POLYESTER PULL TAPE W/DOUBLE TRACER WIRE
ROP-WP1800TT1	1800# POLYESTER PULL TAPE W/SINGLE TRACER WIRE
ROP-WP1800TT2	1800# POLYESTER PULL TAPE W/DOUBLE TRACER WIRE

PROPULL™ LUBE

ProPull™ Lube, manufactured exclusively by Petroflex makes every long pull a smooth one. This cable lubricant provides complete non-separating disbursement in all types of duct; smooth, corrugated or ribbed. ProPull™ Lube is completely effective from 20°F to 250°F, will not harm duct or cable insulation and is environmentally safe.

ProPull™ Lube will not evaporate, crystallize or deteriorate, and can be safely and effectively applied to cable being installed in a variety of duct materials, including fiberglass, PVC and steel.

ProPull™ Lube can be applied during extrusion, pre-lubing the duct with 360° full coverage.

ProPull™ Lube is also available in bulk sizes for field applications: 5 gallon pails, 1 gallon and 1/2 gallon containers.

ProPull™ Lube incorporates a long chain polymer gel, specifically developed for installation of cable in HDPE duct.

EASY TO USE
ProPull™ Lube is easily applied directly to the cable. However, on very long or difficult pulls, the use of a sponge spreader or lubricant applicator is desirable.

LUBRICATES PLASTICS
The surfactant used in ProPull™ Lube causes the lube to completely coat and cling to HDPE cable jackets and duct. This characteristic, in conjunction with the viscosity of the polymer gel, helps carry the lube completely through the duct.

NON - DRYING
ProPull™ Lube will not dry out on long pulls or under excessive heat conditions. The solids content of ProPull™ Lube is less than 0.6%.0ther gel cable lubes can be as much as 5.0% solids. ProPull™ Lube contains virtually no solids and maintains stability to over 250°F.

WILL NOT HARM CABLES
ProPull™ Lube does not contain any silicone since there is evidence that silicone contributes to stress cracking of HDPE. Long period contact with highly plasticized materials such as polyvinyl chloride (PVC) should be avoided since silicone fluids leach out the plasticizer, causing shrinkage and hardening of the plastic. ProPull™ Lube contains only cosmetic grade chemicals which have no effect on HDPE or other common cable sheath materials.

NON - TOXIC
ProPull™ Lube is non-toxic and non-hazardous to the environment. Its PH has been adjusted to neutral. The only danger is from lube spilled on non-absorbent surfaces. All spills should be covered or cleaned immediately. As with any industrial chemical, prolonged or repeated contact with eyes and skin should be avoided to prevent irritation. Eyes and skin should be flushed with water immediately after contact.

QUANTITY

The recommended quantities of lubricant are calculated based on size and length of duct. Since the final coefficient of friction is dependent on the type of duct, rope, cable and lubricant, the quantities recommended are for an average pull. Use the following formula or refer to the table below:

Q= .001 X L X D

WHERE:
Q= QUANTITY IN GALLONS
L= LENGTH OF PULL IN FEET
D= INSIDE DIAMETER OF DUCT

QUANTITY OF PROPULL™ IN GALLONS

DUCT SIZE	500'	1,000'	2,000'	3,000'	4,000'	5,000'
1	.50	1.00	2.00	3.00	4.00	5.00
1-1/4"	.60	1.25	2.50	3.75	5.00	6.25
1-1/2"	.75	1.50	3.00	4.50	6.00	7.50
2"	1.00	2.00	4.00	6.00	8.00	10.00
2-1/2"	1.25	2.50	5.00	7.50	10.00	12.50
3"	1.50	3.00	6.00	9.00	12.00	15.00
4"	2.00	4.00	8.00	12.00	16.00	20.00
5"	2.50	5.00	10.00	15.00	20.00	25.00
6"	3.00	6.00	12.00	18.00	24.00	30.00

TEST: COEFFICIENT OF FRICTION

The coefficient of friction (COF) is dependent on the type of duct, rope, cable, cable jacket and type and quantity of lubricant. With a given COF, the layout of the duct becomes the biggest factor in pulling tension. Assuming a sample length of 200 feet, if the duct arcs only one foot every 30 feet, this represents 19° bend every 30 feet, or over 126° for 200 feet. A calculation error now becomes apparent, emphasizing the complexity in determining the contributing factors in even short pulling distances. ProPull™ Lube was tested during a power cable installation in a residential area. Severe conditions encountered in the 36-inch-deep, 8-inch-wide trench included rocky soil, numerous driveway bores, a major road traffic load crossing and an approximate 25-foot incline with several duct routings. Other challenging aspects were multiple side-of-trench variations. The power pole to transformer cable pull was 353 feet and exceeded 940° duct variations. Using 2-inch ID pre-lubed PetroDuct™ and ProPull™ Pulling Rope pre-installed at the factory, the alum-2AWG STR cable was pulled without any external assistance at the rate of 50 feet per minute. Three gallons of ProPull™Lube were used on the cable as it was pulled. In summary, cable type, duct type and total degrees of bend in the duct layout.

MSDS Available on request.

NOTE: On very straight runs, half of the above recommended quantities may be sufficient. On very difficult pulls, twice the recommended amount may be required.

TAKE APART REEL

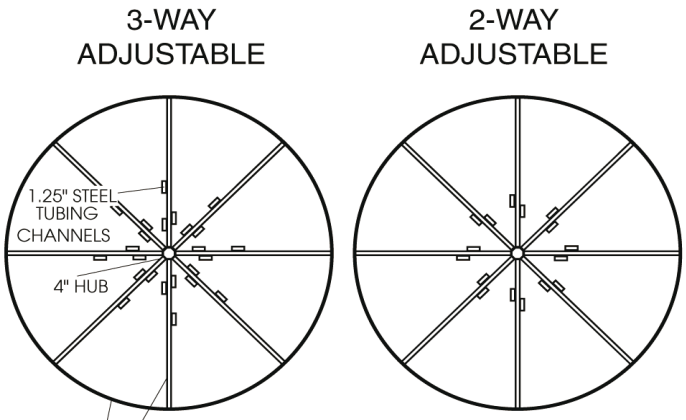
Introducing a new and innovative product; TAKE-APART reels. Made from high strength, lightweight steel that is very favorable over the heavier reels on the market today. These new TAKE-APART reels are as strong as the solid welded reels, and actually weigh less. The only difference is that a TAKE-APART reel can be taken apart for easy storage and shipping.

- NO NUTS, BOLTS, PINS, SCREWS OR CLAMPS!
- DISASSEMBLES IN LESS THAN 15 SECONDS WITH 2 PEOPLE!

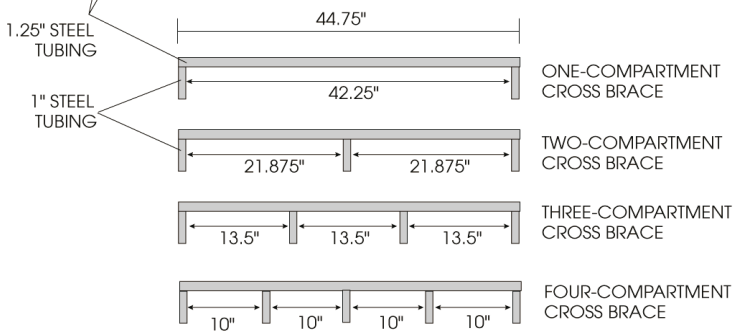
The Ultimate in Flexibility for storage of continuous length conduit!

- Available in 5′, 6′, 7′, 8′3″ and 8′6″ reel diameters (with 24″ drum)
- Reel drum size is adjustable to 24″, 28″ and 48″or 34″ and 38″.
- One to four compartments can be constructed using appropriate cross-braces.

REEL ENDS

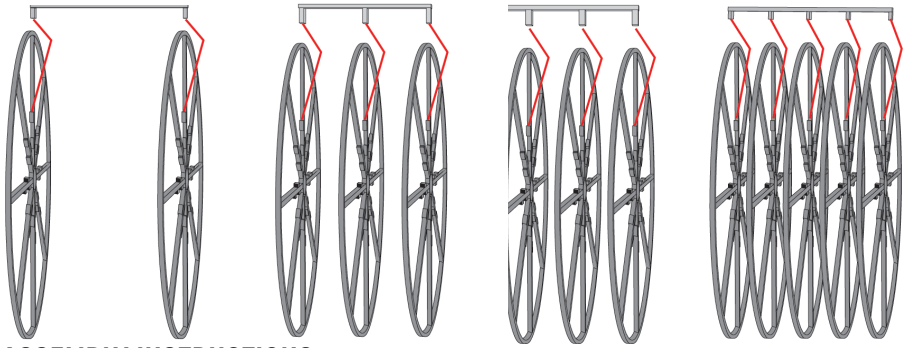


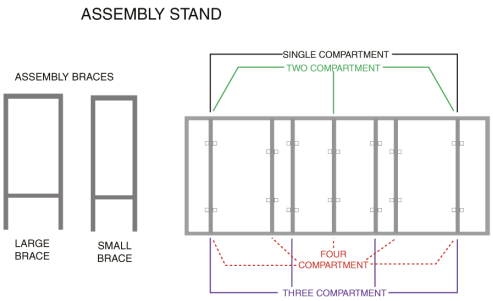
CROSS BRACES



Reel Diameter	Available Drum Sizes							
	1 Compartment		2 Compartment		3 Compartment		4 Compartment	
5′	24″/28″		24″/28″		24″/28″		24″/28″	
6′	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″
7′	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″
8′3″	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″	24″/28″/48″	34″/38″

REEL ASSEMBLY





ASSEMBLY INSTRUCTIONS

Take-Apart Reels consist of six cross-braces for the drum and at least 2 reel ends. Using the assembly stand, reels are constructed using appropriate number of reel ends and corresponding cross-braces.

Step 1: Configure the assembly stand-

- For single-compartment reel, place two large assembly braces (A) in corresponding channels on assembly stand at points C and I.
- For two compartment reel, place two large assembly braces (A) in corresponding channels on assembly stand at points C, and I, and two small assembly braces (B) in corresponding channels at point F.
- For three compartment reel, place two large assembly braces (A) in corresponding channels on assembly stand at points C, E, G and I.
- For four compartment reel, place two large assembly braces (A) at points C and I, and two small assembly braces (B) at points D, F, and H. **(See figure 1)**

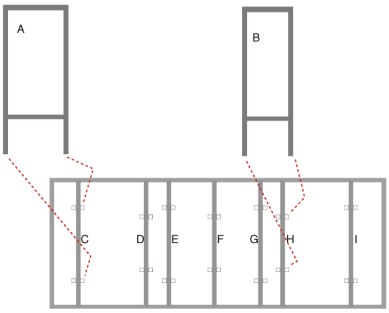


Figure 1 : Assembly Stand configuration.

Step 2: **Load Reel Ends-**

Roll reel ends onto assembly stand between each pair of assembly braces from step 1. Rotate reel ends to line up spokes for insertion of cross-braces. **(See figure 2)**

Figure 2: Loading reel ends onto assembly stand.

Step 3: **Insert Cross-braces-**

With spokes aligned on all reel ends, insert appropriate cross-brace into corresponding channel (depending upon the drum size of the finished reel.) Inset each brace firmly into the top of each channel making sure each brace is firmly seated. **(See Figure 3.)** Important! - Cross-braces must be inserted into corresponding channels on every spoke to ensure proper drum consistency.

Step 4: Completing construction-

Reel assemblies may be banded around the drum for increased stability before reeling conduit. Roll entire assembly off of assembly stand.

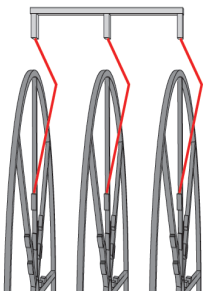


Figure 3: Inserting cross-braces.

Take-Apart Adjustable Storage Racks

Take-Apart Reel Racks are sturdy and durable and hold up to 24 reel ends. Adjustable design allows racks to hold 5′ through 8′3″ reel end sizes. Adjustable storage racks are a safe and convenient solution for storage of unused reel ends.

For more information on Take-Apart Reels, call (800) 433-5711

ACCESSORIES

PROPULL™ PLUGS

ProPull™ plugs fit duct from 3/4" though 3" and feature a glass filled polypropylene stud with type 66 nylon washers and wing nuts, a polyurethane elastomer sealing gasket and full 1/2″ rope eye. Completely pressure tight and reusable, plugs are also available in wing nut stop and pipe stop models.

*Nominal Size	Duct I.D. (in.)	Part No.	PCS/CTN	WT/CTN
1″	1.000	RP 1000	50	4#
1-1/8″	1.125	RP 1125	50	5#
1-1/4″	1.250	RP 1250	50	5#
1-3/8″	1.375	RP 1375	50	6#
1-1/2″	1.460	RP 1460	50	6#

***Nominal size for reference only. Please supply pipe size when ordering (i.e. 1-1/4″ SDR13.5)**

PROPULL™ ENDCAPS

PROPULL™ specialized end caps are offered in a variety of configurations including triplex, multi-step and flat end. All are manufactured from a high grade of silicone rubber to provide excellent high and low temperature characteristics including maximum elasticity over a wide range of temperatures. Reusable caps are also highly chemical resistant.

TRIPLEX END CAPS

Nominal Size*	Conductor Configuration
1-1/2"	2/C # 10
	1/C #10
	3/C #10
2"	2/C # 4/0
	1/C # 2/0
	3/C # 4/0
2-1/2"	2/C #350
	1/C #4/0

*Nominal size for reference only. Please supply pipe size when ordering (i.e. 1-1/4″ SDR13.5)

ACCESSORIES

MULTISTEP CAPS

Tolerance DIM	+.005
Material	Silicone
Durometer	60
Color	Black

Fits cable sizes from 1.125 O.D. TO .25 O.D.

Multi-Step Cap available in 2″ and 2-1/2″ IPS O.D.

MISSILE LINE CARRIER

Available in 1" through 8" sizes. High grade durable polyurethane construction offers the highest friction resistant material in a plyable form.

We also carry a full line of

- End Caps
- Multistep Caps
- Duct Plugs
- Transition & Termination Fittings
- Repair & Compression Couplings

Our No Bull Pledge

Our Sales and Technical Staff pledges to respond promptly and courteously to your needs, and to provide timely, accurate order information. Members of our Engineering, Quality and Manufacturing Departments pledge to guarantee our products' performance. If a product fails to perform as you expect, you may return it within one year of purchase for replacement or full credit. Each employee in our Transportation Department pledges to ship your products on time, and in "Picture Perfect" condition.

CABLEGUARD

BECAUSE THE HARDEST DAY IN A CABLE'S LIFE IS THE DAY IT'S INSTALLED.

- Lowest Cost underground cable installation method
- Installs quickly off a reel, much like cable
- Gopher Resistant
- Can be plowed or directionally bored
- Very long cable & conduit life
- Chemical & water resistant
- Can be installed at very low temperatures
- Low coefficient of friction
- Crush & crack resistant
- Very high stress crack resistance

CABLEGUARD

is an assembly of electrical or communication cables within a continuous flexible high density polyethylene duct. The cables are inserted into the duct during the manufacturing process permitting lengths up to 10,000′ per reel. Almost any size or type of cable can be furnished in ducts ranging from 1/2″ to 3″.

CABLEGUARD

provides an effective, low-cost method of protecting cables installed underground. The cable is protected from damage during installation, backfill, the effects of soil chemicals, and rodents. There are no joints or couplings to leak or fail, and when future system improvements are required, the cables can be removed and replaced without re digging an expensive trench.

CABLEGUARD

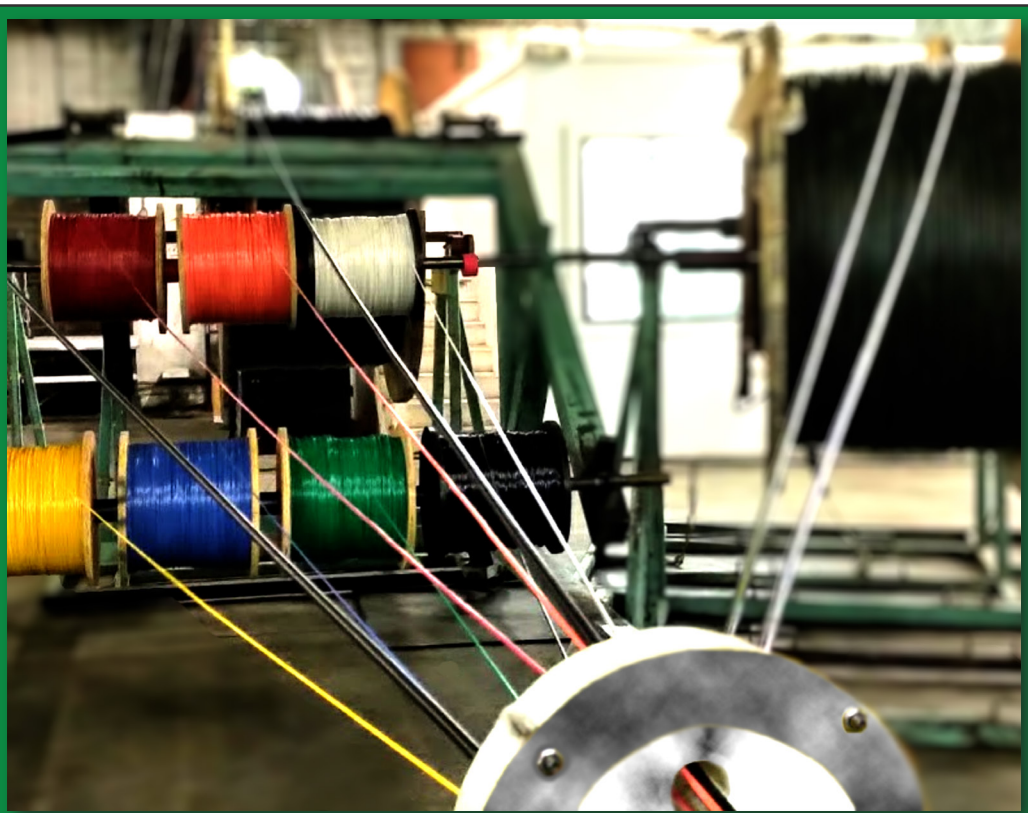
is used extensively for:

- Service of oil field equipment
- Feeders for irrigation services and center pivot machines
- Underground utility distribution services, both low and medium voltage
- Highway lighting
- Telcom and coax systems to the home
- Wind-power systems and networks
- Commercial and industrial services and lighting

CABLEGUARD

Polyethylene Copolymer

TC-25 Polyethylene Resin is a prime and natural high density polyethylene copolymer used in the manufacturing of CableGuard, and meets or exceeds material requirements outlined in NEC Code - Article 353, ASTM F2160, ASTM D3485, and NEMA TC-7. This compound balances ESCR, stiffness, and molecular weight to provide required toughness and crush strength. Only virgin prime resin is used in all CableGuard ducts.



THE CABLEGUARD
Family of Products

Coax CABLEGUARD

Electrical CABLEGUARD

Fiber Optic CABLEGUARD

CableGuard PNA

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