



# THERMOFLEX®

## Spoolable Re-enforced Thermoplastic Pipes for Gas and Oil flow lines

### Applications

- Gas & Oil flow lines
- Brine disposal lines
- CO<sub>2</sub> / Water injection lines
- Pull through rehabilitation of existing steel or GRP lines

### Advantages

- Corrosion resistant
- No welding required
- Aramid fibres for strength
- Efficient coupling method
- Liners inert to H<sub>2</sub>S and CO<sub>2</sub>
- Inexpensive installation tools
- Rapid, easy, low-cost installation
- High performance 100°C – 100bar
- Lower pressure drop vs. steel pipe



PolyFlow Inc. engineers, manufactures and markets Reinforced Thermoplastic Pipes (RTP) for the oil and gas exploration and production industry. They have developed a unique process to bond different polymers together and reinforce them with Aramid fibres to create pipe and tubing with high pressure capabilities, significant reductions in pressure drop versus steel, corrosion resistant to the fluids and gases associated with the oil and gas market, and continuous spooled light weight lengths to dramatically reduce installation costs.



**POLYFLOW**

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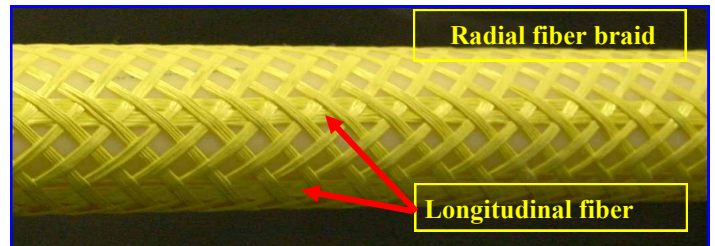


# THERMOFLEX®

## The Braid Determines The Strength !

### Thermoflex® pipes are composed of :

- Smooth inner polymer liner compatible to the transported medium (gas & liquids)
- Longitudinal and radial Aramid braid reinforcement to provide the strength.
- Abrasion resistant polymer jacket to protect the braid



Metal termination couplings, hydraulically swaged on site, are locking the braid in place. By utilizing the proper polymer for the conveyed fluid, the pipe will achieve optimal performance at a cost effective price. Adjusting the cross and longitudinal braid configuration and density allows for various pressure ratings of the pipe. The outer jacket must be compatible with the environment yet tough enough to protect the braid. Thermoflex® pipes are produced with O.D. ranging from 1" to 6" and are supplied coiled on disposable reels. Coils lengths varies between 275m and 3.600m depending of the pipe's diameter and pressure rating.



### Couplings

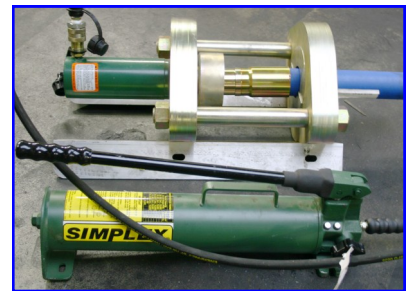
Metal couplings are swaged on site using a hydraulic swaging machine.

The coupling material depends of the application. We provide:

- Zinc-Chromate plated Carbon steel
- Duplex Stainless steel.

Once swaged, the coupling's ferule is crimped to the pipe's O.D. The couplings are supplied with NPT threaded ends, bevelled ends for weld connections or stub flanges for flange connections. Jointless union fittings and a splice coupling machine are required when connection two pipe sections. All couplings can be PPS coated if required.

Depending on the pipe's diameter and the rated pressure, couplings with 6 anchoring points will be used.



### Installation

Installation can be performed by the customer's local contractor. However, during a first installation, on site training by a PolyFlow representative will be required. This training can be performed during installation or upfront. The installation itself is straightforward but certain guidelines have to be followed precisely according to our installation guide.





# THERMOFLEX®

## Continuous Lengths Different Sizes

Tubing size	O.D. inch	I.D. inch	Weight lbs/ft (*)	Weight kg/m (*)	Rated Pressure psi	Rated Pressure bar	Max Length ft (**)	Max Length m (**)
1"	1"	0.63"	0.23	0,32	275	19,00	12000	3659
	1"	0.88"	0.23	0,32	500	34,47	12000	3659
	1"	0.88"	0.23	0,32	750	51,73	10000	3049
	1"	0.88"	0.23	0,32	1000	68,95	6000	1829
	1"	0.88"	0.23	0,32	1500	103,42	4000	1220
1 1/4"	1.25"	0.88"	0.30	0,43	275	19,00	12000	3659
	1.25"	0.88"	0.30	0,43	500	34,47	12000	3659
	1.25"	0.88"	0.30	0,43	750	51,73	10000	3049
	1.25"	0.88"	0.30	0,43	1000	68,95	6000	1829
	1.25"	0.88"	0.30	0,43	1500	103,42	4000	1220
1 1/2"	1.50"	1.08"	0,37	0,55	275	19,00	12800	3901
	1.50"	1.08"	0,38	0,56	500	34,47	10000	3048
	1.50"	1.08"	0,40	0,59	750	51,73	5000	1524
	1.50"	1.08"	0,40	0,59	1000	68,95	5000	1524
	1.50"	1.08"	0,40	0,59	1500	103,42	3500	1066
1 3/4"	1.75"	1.33"	0,46	0,68	275	19,00	9600	2926
	1.75"	1.33"	0,46	0,68	500	34,47	9000	2743
	1.75"	1.33"	0,48	0,71	750	51,73	5000	1524
	1.75"	1.33"	0,48	0,71	1000	68,95	5000	1524
	1.75"	1.33"	0,50	0,74	1500	103,42	3500	1066
2 3/8"	2.375"	1.88"	0,73	1,08	275	19,00	5000	1524
	2.375"	1.88"	0,74	1,09	500	34,47	4200	1280
	2.375"	1.88"	0,77	1,14	750	51,73	2000	609
	2.375"	1.88"	0,77	1,14	1000	68,95	2000	609
	2.375"	1.88"	0,80	1,18	1500	103,42	1400	426
3"	3.05"	2.52"	1,08	1,59	275	19,00	2750	762
	3.05"	2.52"	1,10	1,63	500	34,47	2000	609
	3.05"	2.52"	1,13	1,67	750	51,73	1600	487
	3.05"	2.52"	1,13	1,67	1000	68,95	1600	487
	3.05"	2.52"	1,17	1,73	1500	103,42	1200	365
3 1/2"	3.5"	2.95"	1,22	1,80	275	19,00	1800	548
	3.5"	2.95"	1,24	1,83	500	34,47	1800	548
	3.5"	2.95"	1,31	1,94	750	51,73	1400	426
	3.5"	2.95"	1,31	1,94	1000	68,95	1400	426
	3.5"	2.95"	1,31	1,94	1500 (***)	68,95	1400	426
4"	4.0"	3.45"	1,55	2,29	275	19,00	1050	320
	4.0"	3.45"	1,57	2,32	500	34,47	1050	320
	4.0"	3.45"	1,66	2,46	750	51,73	800	243
	4.0"	3.45"	1,66	2,46	1000	68,95	800	243
4 1/2"	4.5"	3.95"	1,59	2,35	275	19,00	900	275
	4.5"	3.95"	1,61	2,38	500	34,47	900	275
	4.5"	3.95"	1,61	2,38	750	51,73	900	275
6"	6.0"	5.08"	3,78	5,62	275	19,00	900	275
	6.0"	5.08"	3,78	5,62	500	34,47	900	275
	6.0"	5.08"	3,78	5,62	750 (***)	51,73	900	275

(\*) These are approximate weights based on polymer type, for the exact data please consult our pipe specification sheets  
 (\*\*) Approximate spool lengths  
 (\*\*\*) Max. Temperature 90°F - 32°C



# THERMOFLEX®

## Characteristics Standards

### Thermoflex® characteristics :

- **Rated Pressure:**  
Up to 1.500psi – 100bar  
Depending of pipe's diameter
- **Long term braid design safety factor : 2,2**
- **Operating Temperature:**  
150°F / 65°C with Fortron or Nylon liner and Polypropylene jacket  
180°F / 82°C with Fortron or Nylon liner and Nylon jacket
- **Max. pull force: 10.000lbs – 4.500kg**
- **Pipe O.D. : 1" to 6"**
- **Coil lengths:**  
Between 275m and 3.600m (depending of tube diameter)  
Supplied on disposable 8ft , 10ft or 14ft diameter reels
- **Chemical compatibility:**  
Nylon liner for sweet applications: oil & gas, CO<sub>2</sub> brine, condensates, aromatics  
Fortron liner for sour applications : H<sub>2</sub>S  
A Fortron liner is required to avoid scale and paraffin adhesion
- **Coupling material:**  
Zinc Chromate plated Carbon Steel 1026  
Duplex Stainless Steel 2205

### Design and Production Standards

- **API 15S : Qualification of Spoolable Re-enforced Plastic Line Pipe**
- **Testing reference standards : ASTM 1598-86 , ASTM 2105-01, ASTM 1599-88, ASTM D3350, ASTM D2296, ASTM D2513, ASTM D2122**
- **TUV and Bureau Veritas test reports are available**

### Evaluating a Project

TCI provides a design service to model flow line applications and to determine pressure drops for given lengths, elevation changes, flow rates etc. A questionnaire has to be filled out and sent to TCI for analysis. Graphs of pressure drop versus flow rate are generated according to the information received. In this way our client is able to determine the correct pipe diameter that matches entirely his requirements .

