

# Technical Data Sheet

## CGH BELGIUM RTP (LIGHT)(PLUS) PIPE

### Surface Lines

#### Definition:

Surface lines are defined as piping and tubing that is buried in the ground, laid on the surface or pulled through existing pipelines for rehabilitation. CGH Belgium must be informed of the application because there are slight differences in design based upon the application. (For example: long pipeline rehabilitations may require a different longitudinal braid configuration to compensate for the pull force requirements versus a pipe that is buried or laid on the ground)

CGH Belgium designs pipes for a wide variety of applications. As a result, selecting a pipe size and specification does not necessarily fulfil the requirements for the application. Below is a step by step process to determine the proper pipe or tube for the applications.

When evaluating a new pipeline or an pull through rehabilitation, the following information is essential to the analysis:

- Flow Rate
- Components of the Flow Stream (i.e. Oil, Water, Brine, Gas, CO<sub>2</sub>, H<sub>2</sub>S, Condensate and in what Concentrations
- Operating Temperature
- Inlet and Exit Pressure Requirements
- Application (i.e. Gathering Line, Injection Line, Water Flood, Water Transfer Line, Gas Lift, etc.

#### Pipe Size and Pressure Rating:

Pipe size and pressure rating are a function of the operating pressure desired and the required flow rates through the lines. CGH Belgium can provide pressure drop curves based upon the pressure and production requirements for the line. The output is the pressure drop for a variety of pipe sizes which the operator can then select the optimal size for the applications. In addition the customer should evaluate the pressure rating based upon the desired end of line pressure and take into account the potential for pressure spikes above the line pressure (f.ex. cyclic pressure spikes from positive displacement style pumps = piston pumps or eventually potential changes in application for the line).

The standard sizes, min. bend radii and physical dimensions we can offer are listed below.

Pipe Size	OD (in)	ID (in)	Weight (kg/m)	Spool Size (OD ft)	Length/Spool (in m)	Min. Bend Radius (in m)
1"	1.00	0.63	0,30	96"	3.658	0,51
1.25"	1.25	0.88	0,42	96"	3.353	0,64
1.5"	1.50	1.08	0,59	122"	2.927	0,76
1.75"	1.75	1.33	0,65	122"	1.982	0,89
2.375"	2.38	1.88	1,19	144"	1.890	1,19
3"	3.00	2.52	1,53	144"	1.646	1,55
3.5"	3.50	2.95	1,96	144"	1.189	1,78
4"	4.00	3.45	2,78	144"	884	2,03
4.5"	4.50	3.83	3,15	144"	640	2,29
6"	6.00	5.05	6,72	174"	305	3,05

The maximum pressure rating is a function of pipe size and temperature. CGH Belgium can deliver any design pipe configurations according to the below listed maximums.

Pipe Size	Maximum Pressure Rating		
	140F (60°C) PSI/BAR	180F (85°C) PSI/BAR	212F (100°C) PSI/BAR
1"	3,000/ 207	3,000/ 207	3,000/ 207
1.25"	3,000/ 207	3,000/ 207	3,000/ 207
1.5"	3,000/ 207	3,000/ 207	3,000/ 207
1.75"	3,000/ 207	3,000/ 207	3,000/ 207
2.375"	3,000/ 207	3,000/ 207	3,000/ 207
3"	2,500/ 172	2,500/ 172	2,500/ 172
3.5"	2,400/ 166	2,200/ 152	2,000/ 138
4"	1,600/ 110	1,600/ 110	1,600/ 110
4.5"	1,440/ 99	1,440/ 99	1,440/ 99
6"	1,440/ 99	1,350/ 93	1,100/ 76

Liner Selection:

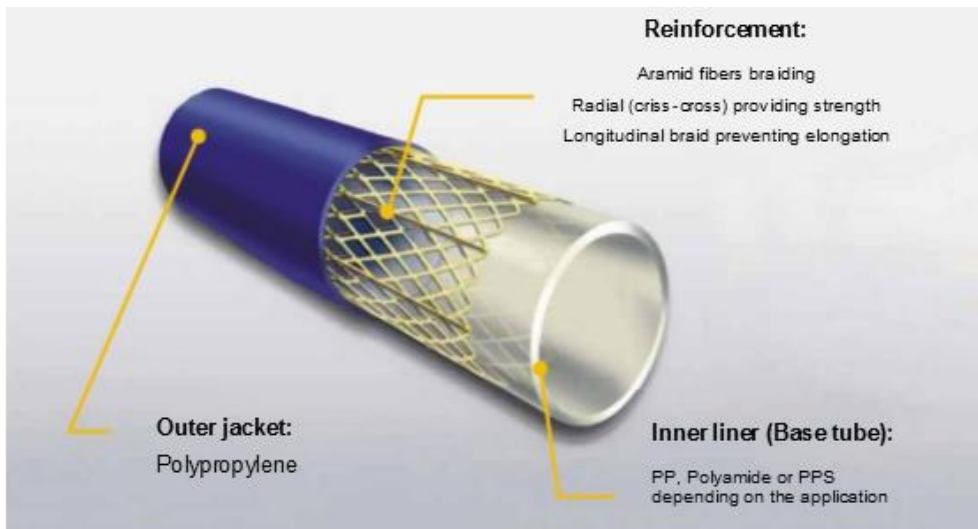
We offer 3 different pipe configurations:

- 1) **CGH RTP LIGHT PIPE** (=Polypropylene Lined RTP Pipe)
- 2) **CGH RTP PIPE** (= Polyamide Lined RTP Pipe = Nylon Lined RTP Pipe)
- 3) **CGH RTP PLUS PIPE** (= Polyphenylene Sulfide Lined = Fortron Lined RTP Pipe)

As a rule of thumb, a distinction between the liners is made as follows:

<b>Polypropylene</b> <b>"CGH RTP LIGHT"</b>	Flow back water and Fresh water for fracking. <b>Hydrocarbons below 1%</b> of the fluid volume up to max. <b>50°C</b>
<b>Nylon</b> <b>"CGH RTP"</b>	Flow back water and fresh water Hydrocarbons (including aromatics) and CO2 up to max <b>60°C</b>
<b>Fortron</b> <b>"CGH RTP PLUS"</b>	Flow back water and fresh water Hydrocarbons (including aromatics), CO2, H2S Flow anything up to max <b>105°C</b> .

As there are many variables, including temperature, pressure and concentrations of compounds in the flow stream, it is mandatory to send a detailed fluid analysis to CGH Belgium to determine the appropriate liner.



### Coupling Styles:

CGH Belgium can deliver threaded, weld style, flanged and spliced couplings to mate with its reinforced thermoplastic pipe (RTP). The most popular metal allows used are zinc chromate plated carbon steel and duplex 2205 stainless steel but CGH Belgium can provide couplings in more stringent corrosion resistant alloys such as Alloy 825 and Alloy 625 if required.

Below is a chart with mating sizes for each coupling size.

Pipe Size (in)	Splice Coupling Mates With Pipe Size	Flange RF or RTJ Stub Style	Threaded NPT Size (in)	Weld Style Sch 40 Pipe Size (in)
1	Yes	NA	0.5"	NA
1.25	Yes	NA	0.75"	NA
1.5	Yes	NA	1.0"	NA
1.75	Yes	1.5"	1.25"	1.0"
2.375	Yes	2.0"	2.0"	2.0"
3	Yes	2.5"	2.5"	2.5"
3.5	Yes	3.0"	3.0"	3.0"
4	Yes	3.5"	3.5"	3.5"
4.5	Yes	4.0"	4.0"	4.0"
6	Yes	6.0"	6.0"	6.0"