



**Taylor-Wharton**  
Equipping The Hydrogen Infrastructure

# Vacuum Jacketed Piping Systems

**Materials of Construction:** We only use certified materials that allow total traceability. We use materials to ASTM A312 in either 304 or 316. Our standard products use nominal bore pipe to this specification.

**Design code:** We design our piping systems to ASME B31.3. These standards are recognized in most countries we supply into.

**Design pressures:** Depending on line size, design pressures can be up to 31 barg with bayonet connection and standard design pressure being 10 barg.

**Welders:** All of our welders are qualified to ASME IX. No unqualified persons are involved in our VJ pipe manufacture.

**Insulation:** Our super insulated vacuum lines use Multi-layer super insulation with a approx 45 reflective insulated foil layers.

**Vacuum:** We pull a vacuum of less than 1 microns whilst warm and we guarantee a vacuum level of less than 10 microns for the warranty period. We can incorporate a vacuum sensor to each individual spool for checking vacuum integrity if required. Each spool also contains molecular sieve and palladium oxide to enhance the long term vacuum integrity.

**Evacuation port:** We use a combined evacuation / relief port design and simple to use evacuation tool.

**Heat In-leak:** The table below provides heat in-leak rates for the line only. Typically, the bayonet or field weld joint will be greater than the rigid heat in-leak rate

**Cleaning:** Our cleaning and assembly procedures ensure we achieve perfect vacuum. We have a dedicated large air-conditioned room for cleaning and wrapping our lines and meet all cleaning standards.

LINE SIZE	OUTER JACKET	RIGID LINE		FLEXIBLE HOSE	
		Heat In-leak BTU/HR/FT	Heat In-leak	Heat In-leak BTU/HR/FT	Heat In-leak W/m
1/2" NB	2 1/2" NB	0.4	0.38	1	0.95
3/4" NB	2 1/2" NB	0.45	0.43	1.2	1.14
1" NB	2 1/2" NB	0.5	0.48	1.4	1.33
1 1/2" NB	3" NB	0.6	0.57	1.8	1.7
2" NB	4" NB	0.8	0.76	2.4	2.28
3" NB	8" NB	1	0.95	3	2.85
4" NB	10" NB	1.25	1.19		
6" NB	10" NB	1.7	1.62		

Data Book & QA: Each Super Insulated Vacuum Line is supplied with a data book and quality manual. It includes a copy of the completed ITP, all necessary test, material and cleaning certificates, as well as "As Built" drawings of what has been supplied. Operating manuals, spare parts list, and maintenance manuals are also included.

# Our Products Include:



## Vaporizers

- Ambient
- Fan forced
- Steam heated
- Electrically heated
- Water heated
- Stainless / Monel lined
- High pressure cylinder filling
- Special purpose vaporizers



## Vacuum jacketed piping

- Gas vents
- Gas phase separators
- Vent heaters
- Auto-fill systems
- ½" to 6" standard designs with bayonet joints
- Welded connections available in all sizes
- Flexible vacuum jacketed hoses



Turnkey systems

## Cryogenic piping skids

- Gas mixing
- Flow measurement
- Pressure regulation
- Cylinder filling systems
- Cryogenic pump skids

**Call us today for more details on our great range of products and services !!**



**Taylor-Wharton**  
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### The Americas

Phone: (251) 643-3024

### Asia-Pacific & Europe

Phone: (+ 60 3) 5191-3003

### Email

[sales@twcryo.com](mailto:sales@twcryo.com)

[customerservice@twcryo.com](mailto:customerservice@twcryo.com)