

# FLEXWELL-LPG® Piping

## Pipe system for petrol stations

### Flexible Pipe system for automotive LPG in service station construction

#### System advantages

- fast and simple to install without welding and x-raying of welds on site
- no downtime and only minimal interruptions to petrol sales on retrofits
- the most cost effective pipe system

#### General Description

FLEXWELL-LPG® Piping is suitable for automotive LPG (Autogas) buried installations of service stations in both vapour and liquid phase.

LPG's main constituents are Propane (C<sub>3</sub>H<sub>8</sub>) and Butane (C<sub>4</sub>H<sub>10</sub>) which have different boiling points : – 45 °C for propane and – 2 °C for butane. The actual mixture of propane and butane of any automotive LPG marketed varies considerably from one country to another, depending on their sources of LPG. The mix of propane and butane has a profound impact on design requirements of LPG fuelling components; the one for a propane only mix being the most stringent. Care must be exercised in the selection of the minimal design requirements as the equipment may turn to become unsuitable, if the LPG marketed in a country is being changed to propane richer mixtures in view of changing national sources of LPG.

FLEXWELL-LPG® Piping is designed for operating temperatures as low as – 50 °C and operating pressures of PN 25 (360 PSI) as is indicated for propane only mixtures.

#### Application

FLEXWELL-LPG® is a single-walled flexible pipe system designed for the underground transport of LPG. Typically FLEXWELL-LPG® Piping is used as an underground liquid feedline and vapour return between the LPG storage tanks and the liquid gas dispenser in fuelling stations.

#### Construction

The flexible composite pipe has a helically corrugated primary pipe. This is manufactured of EN 1.4571 stainless steel (US equivalent: AISI TP 316 Ti) and has excellent corrosion resistance characteristics as a result. Around this carrier pipe, high-strength reinforcing bands are fitted, which effectively limits longitudinal expansion even at high operating pressures. Corrosion protection for buried installation in the ground is afforded by a bitumastic filler coating and an external PE-LD jacket.



#### Installation

FLEXWELL-LPG® Piping is manufactured in standard factory lengths up to 700 m. The pipework is supplied on a cable reel or coil allowing it to be run directly off the reel or coil into position in the pipe trench. The corrugated primary pipe and the helically fitted reinforcing bands give this piping system remarkably good flexibility and ease of laying. FLEXWELL-LPG® pipework can be cut to the required length on site and, as necessary, bent through very tight angles to run around, under or over existing services.



**Fig. 1:** Installation of the FLEXWELL-LPG® connecting joints is made without the need for welding. A compression type fitting, using a graphite packing makes a perfect seal between the connector and the primary pipe, no specialised tools are needed for assembling this. The connecting joints are available with NPT pipe threaded ends or alternatively with a collar and split flanges for use with a standard flat gasket seal.



**Fig. 2:** A simple jig facilitates uncoiling of the flexible LPG piping on site.

**Physical properties of FLEXWELL-LPG® Piping**

Type designation:	LPG 22/33	LPG 30/40	LPG 39/50	LPG 48/61	LPG 60/74	
material:	•	•	•	•	•	
<ul style="list-style-type: none"> <li>• primary pipe: stainless steel 1.4571*</li> <li>• corrosion proofing: PE-LD jacket on a filler coating of bituminous mastic</li> </ul>	•	•	•	•	•	
max. operating pressure for:	+ 25.0 bar/ 360 PSI	+ 25.0 bar/ 360 PSI	+ 25.0 bar/ 360 PSI	+ 25.0 bar/ 360 PSI	+ 25.0 bar/ 360 PSI	
nominal bore:	DN 20 / ¾"	DN 25 / 1"	DN 32 / 1 ¼"	DN 40 / 1 ½"	DN 50 / 2"	
dimensions:	• internal diameter	22 mm	30 mm	39 mm	48 mm	60 mm
	• external diameter	33 mm	42 mm	52 mm	63 mm	74 mm
	• volume primary pipe (litres/lin. m)	0.40	0.80	1.30	2.00	3.00
min. bending radius:	200 mm	200 mm	300 mm	400 mm	600 mm	
weight: (kg/m)	0.7	0.9	1.5	1.9	2.7	
available type of connectors:	• NPT threaded male end	•	•	•	•	
	also available with reduced NPT threaded male end					
	• split collar flanges	•	•	•	•	
	• welding end	•	•	•	•	

\* US equivalent: AISI TP 316 Ti

All technical data subject to change.

**Approvals, 3rd party testing**

STOOMWEZEN, SCHIELAB, Report No. SL 584/01 dated 07/10/01 – Flexible single-walled pipe for LPG.

**For additional 3rd party testing of connectors refer to:**

TÜV-Nord, Germany, report on burst pressure testing an FLEXWELL connectors using graphite packing.

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