

# DIN EN 16125:2016-03 (E)

## LPG Equipment and Accessories - Pipework systems and supports - LPG liquid phase and vapour pressure phase

---

<b>Contents</b>		<b>Page</b>
European foreword .....		4
Introduction .....		5
1	Scope .....	6
2	Normative references .....	6
3	Terms and definitions .....	9
4	Design safety considerations .....	11
4.1	General .....	11
4.2	Environmental considerations .....	11
4.3	Operating conditions .....	12
4.4	Protection against hazards .....	12
4.4.1	Protection against mechanical damage .....	12
4.4.2	Resistance to corrosive substances and atmospheres .....	12
4.4.3	Protection against condensation .....	12
5	Materials .....	14
5.1	Environmental .....	14
5.2	General .....	14
5.3	Accessories .....	14
5.3.1	General .....	14
5.3.2	Gaskets and ring joints .....	14
5.3.3	Valves and fittings .....	14
5.4	Lubricants, sealants and adhesives .....	15
6	Design .....	15
6.1	General .....	15
6.2	LPG pipework installation technical documentation .....	15
6.3	Measuring instruments .....	15
6.4	Over Pressure protection .....	15
6.5	Above-ground pipework .....	16
6.5.1	Clearance above ground .....	16
6.5.2	Pipework separation distances from above-ground electrical services .....	16
6.5.3	Ventilation of concealed piping .....	17
6.5.4	Pipe supports .....	17
6.6	Underground pipes .....	18
6.6.1	General .....	18
6.6.2	Underground pipe separation distances .....	19
6.7	Pipework loading .....	19
6.8	Equipotential bonding .....	19
7	Identification and corrosion protection of above-ground pipework .....	20
7.1	Corrosion protection .....	20
7.2	Colour coding .....	20
7.3	Reflectivity .....	20
8	Welded pipes and fittings .....	23
8.1	General .....	23

8.2	Competency .....	24
8.3	Inspection of welds .....	24
8.4	Testing personnel .....	24
8.5	Acceptance criteria .....	25
8.6	Repairing welds .....	25
8.7	Brazed copper joints .....	25
9	Inspection and documentation .....	25
9.1	General .....	25
9.2	Inspection and testing of corrosion protection .....	26
9.2.1	Coatings on underground pipework .....	26
9.2.2	Above-ground pipework protection .....	26
9.2.3	Recording of test results .....	26
10	Testing .....	26
10.1	General .....	26
10.2	Test media .....	26
10.3	Strength testing .....	27
10.3.1	General .....	27
10.3.2	Test Procedure .....	27
10.3.3	Test pressure and duration .....	28
10.3.4	Acceptance criteria .....	28
10.3.5	Repairs and retest .....	28
10.4	Leak testing .....	28
10.4.1	General .....	28
10.4.2	Gauge Selection .....	28
10.4.3	Test pressure and duration .....	28
10.4.4	Test media .....	29
10.4.5	Acceptance criteria .....	29
10.4.6	Repairs and retest .....	29
11	Commissioning .....	29
12	Maintenance .....	29
Annex A (informative) Pipe sizing - liquid phase .....		30
A.1	General .....	30
A.2	Viscosity of LPG .....	30
A.3	Calculation of liquid velocity flow in pipework .....	30
A.4	Calculation of Reynolds number .....	31
A.5	Liquid flow capacity and pressure drop in pipework .....	31
A.6	Liquid flow capacity and pressure drop through valves and fittings .....	32
Annex B (informative) Pipe sizing - gas phase .....		37
B.1	General .....	37
B.2	Calculation of full vapour flow and pressure drop in pipes .....	37
B.3	Vapour flow capacity and pressure drop through valves and fittings .....	37
B.4	Gas velocity .....	37
Annex C (informative) Pipework Integrity Management Systems (PIMS) .....		38
C.1	Pipework Integrity Management .....	38
C.2	Basic PIMS for LPG plants .....	38
C.3	Assessment of condition .....	38
C.4	Response (remedial action/ future monitoring or inspection) .....	38
C.5	Frequency of inspection and maintenance .....	39
Annex D (informative) Environmental checklist .....		40
Annex E (informative) Manufacturing and type testing of composite pipes .....		41

<b>E.1</b>	<b>General</b> .....	<b>41</b>
<b>E.2</b>	<b>Materials</b> .....	<b>41</b>
<b>E.3</b>	<b>Physical properties</b> .....	<b>42</b>
<b>E.4</b>	<b>Manuals</b> .....	<b>42</b>
<b>E.5</b>	<b>Records</b> .....	<b>43</b>
	<b>Bibliography</b> .....	<b>44</b>