

# DIN CEN ISO/TS 24817:2011-04 (E)

Petroleum, petrochemical and natural gas industries - Composite repairs for pipework - Qualification and design, installation, testing and inspection (ISO/TS 24817:2006); English version CEN ISO/TS 24817:2011

---

Inhalt	Seite
Foreword .....	4
Introduction.....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	7
4 Symbols and abbreviated terms .....	10
4.1 Symbols.....	10
4.2 Abbreviated terms .....	13
5 Applications .....	13
6 Qualification and design.....	15
6.1 Risk assessment .....	15
6.2 Repair class .....	16
6.3 Repair lifetime.....	16
6.4 Required data.....	16
6.4.1 Background.....	16
6.4.2 Original equipment design data.....	17
6.4.3 Maintenance and operational histories.....	17
6.4.4 Service condition data .....	17
6.4.5 Repair system qualification data .....	17
6.5 Design methodology .....	19
6.5.1 Overview.....	19
6.5.2 Environmental compatibility .....	19
6.5.3 Design temperature effects .....	20
6.5.4 Design based on substrate-allowable stress (defect type A) .....	21
6.5.5 Design based on repair laminate allowable strains (defect type A).....	23
6.5.6 Design based on repair-allowable stresses determined by performance testing (defect type A).....	25
6.5.7 Design of repairs for through-wall defects (defect type B).....	26
6.5.8 Axial extent of repair .....	28
6.5.9 Optional design considerations.....	29
6.5.10 Repair of other components .....	33
6.5.11 Design output .....	40
6.6 Requalification.....	40
6.6.1 Overview.....	40
6.6.2 For type A defect repairs .....	40
6.6.3 For type B defect repairs .....	40
7 Installation.....	40
7.1 General .....	40
7.2 Materials of construction.....	41
7.3 Storage conditions .....	41
7.4 Method statements.....	41
7.5 Installer qualifications.....	42
7.6 Installation guidance.....	42
7.7 Live repairs .....	43
7.8 Repair of clamps, piping components, tanks or vessels .....	43

7.9	Environmental considerations .....	43
8	Testing and inspection.....	44
8.1	General.....	44
8.2	Allowable defects for the repair system.....	44
8.3	Repair of defects within the repair system .....	46
8.4	Inspection methods .....	46
8.5	Repair system maintenance and replacement strategy .....	46
8.5.1	Overview .....	46
8.5.2	External defects .....	46
8.5.3	Internal or through-wall defects .....	46
9	System testing .....	47
10	Future modifications .....	47
11	Decommissioning .....	47
Annex A	(normative) Design data sheet .....	48
Annex B	(normative) Qualification data.....	51
Annex C	(normative) Short-term pipe spool survival test .....	53
Annex D	(normative) Measurement of $\lambda_{LCL}$ for through-wall defect calculation .....	55
Annex E	(normative) Measurement of performance test data.....	58
Annex F	(normative) Measurement of impact performance .....	61
Annex G	(normative) Measurement of the degradation factor .....	62
Annex H	(informative) Axial extent of repair look-up table .....	64
Annex I	(normative) Installer qualification .....	66
Annex J	(normative) Installation requirements and guidance .....	69
Bibliography	.....	72

Fore