

ISO 13706:2011-12 (E)

Petroleum, petrochemical and natural gas industries - Air-cooled heat exchangers

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	General	5
5	Proposals	6
6	Documentation	7
6.1	Approval information	7
6.2	Final records	8
7	Design	9
7.1	Tube bundle design	9
7.2	Air-side design	22
7.3	Structural design	33
8	Materials	38
8.1	General	38
8.2	Requirements for carbon steel in sour or wet hydrogen sulfide service	38
8.3	Headers	38
8.4	Louvres	38
8.5	Other components	39
9	Fabrication of tube bundle	39
9.1	Welding	39
9.2	Postweld heat treatment	40
9.3	Tube-to-tubesheet joints	40
9.4	Gasket contact surfaces	41
9.5	Thread lubrication	41
9.6	Alignment and tolerances	41
9.7	Assembly	42
10	Inspection, examination and testing	43
10.1	Quality control	43
10.2	Pressure test	45
10.3	Shop run-in	45
10.4	Equipment performance testing	45
10.5	Nameplates	45
11	Preparation for shipment	45
11.1	General	45
11.2	Surfaces and finishes	46
11.3	Identification and notification	46
12	Supplemental requirements	46

12.1	General	46
12.2	Design	46
12.3	Examination	47
12.4	Testing	48
Annex A (informative) Recommended practices		49
Annex B (informative) Checklist and data sheets		55
Annex C (informative) Winterization of air-cooled heat exchangers		66
Annex D (informative) Recommended procedure for airflow measurement of air-cooled heat exchangers		117
Annex E (informative) Measurement of noise from air-cooled heat exchangers		124
Bibliography		141