

Closed Die Forgings for Use in the Petroleum and Natural Gas Industry

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Contents

| | Page |
|---|-----------|
| 1 Scope | 1 |
| 1.1 Purpose | 1 |
| 1.2 Applicability | 1 |
| 1.3 Forging Specification Levels (FSLs) | 1 |
| 2 Normative References | 1 |
| 3 Terms, Definitions, Acronyms, and Abbreviations | 2 |
| 3.1 Terms and Definitions | 2 |
| 3.2 Acronyms and Abbreviations | 6 |
| 4 Qualification | 6 |
| 4.1 General | 6 |
| 4.2 Qualification Forging | 6 |
| 4.3 Qualification Forging Evaluation | 7 |
| 4.4 Limits of Forging Qualifications | 10 |
| 4.5 Records of Qualification | 11 |
| 5 Production Forgings | 13 |
| 5.1 Qualification of Procurement Sources for Starting Material | 13 |
| 5.2 Material Specifications | 14 |
| 5.3 Manufacturing Process Specification (MPS) | 14 |
| 5.4 Process Control Parameters | 14 |
| 5.5 Forging Production | 15 |
| 5.6 Inspection, Quality Control, Marking, and Documentation | 15 |
| 5.7 Repair Welding | 16 |
| 5.8 Traceability | 16 |
| 5.9 Marking | 16 |
| 5.10 Records Type and Retention | 17 |
| 5.11 Handling, Storage, and Shipping | 17 |
| 6 Facility Requirements | 17 |
| 6.1 Minimum Facility Requirements for the Forging Manufacturer | 17 |
| 6.2 Activities Applicable to a Forging Manufacturer | 17 |
| Annex A Use of the API Monitoring Program by Licensees | 19 |
| Tables | |
| 1 Material Group | 6 |
| 2 As-forged Weight Range Classes (weight in pounds) | 7 |
| 3 ASTM E45 Method A Inclusion Rating Limits | 9 |
| 4 Minimum Facility Requirements | 18 |

Contents

Page

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Closed Die Forgings for Use in the Petroleum and Natural Gas Industry

1 Scope

1.1 Purpose

This API standard specifies requirements for the qualification and production of closed die forgings for use in API service components in the petroleum and natural gas industries when referenced by an applicable equipment standard or otherwise specified as a requirement for compliance.

1.2 Applicability

This standard is applicable to equipment used in the oil and natural gas industries where service conditions warrant the use of closed die forgings. Examples include pressure-containing or load-bearing components.

1.3 Forging Specification Levels (FSLs)

This standard establishes requirements for four different FSLs. These FSL designations define different levels of forged product technical, quality, and qualification requirements.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASTM A370¹, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM A388/A388M, *Standard Practice for Ultrasonic Examination of Steel Forgings*

ASTM A604, *Standard Practice for Macroetch Testing of Consumable Electrode Remelted Steel Bars and Billets*

ASTM E10, *Standard Test Method for Brinell Hardness Test of Metallic Materials*

ASTM E18, *Standard Test Method for Rockwell Hardness Test of Metallic Materials*

ASTM E45, *Standard Test Method for Determining the Inclusion Content of Steel*

ASTM E110, *Standard Test Method for Indentation Hardness of Metallic Materials by Portable Hardness Testers*

ASTM E112, *Standard Test Method for Determining Average Grain Size*

ASTM E165, *Standard Practice for Liquid Penetrant Examination for General Industry*

ASTM E304, *Standard Method of Macroetch Testing Steel Bars, Billets, Blooms and Forgings*

ASTM E428, *Standard Practice for Fabrication and Control of Metal, Other than Aluminum, Reference Blocks Used in Ultrasonic Testing*

ASTM E562, *Standard Test Method for Determining Volume Fraction by Systematic Manual Point Count*

¹ ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, www.astm.org.