

MATERIAL AND EQUIPMENT STANDARD

FOR

HOOKS, SHACKLES, EYE BOLTS AND CHAINS

FIRST EDITION

FEBRUARY 2005

This standard specification is reviewed and updated by the relevant technical committee on Apr. 2015. The approved modifications are included in the present issue of IPS.

FOREWORD

The Iranian Petroleum Standards (IPS) reflect the views of the Iranian Ministry of Petroleum and are intended for use in the oil and gas production facilities, oil refineries, chemical and petrochemical plants, gas handling and processing installations and other such facilities.

IPS are based on internationally acceptable standards and include selections from the items stipulated in the referenced standards. They are also supplemented by additional requirements and/or modifications based on the experience acquired by the Iranian Petroleum Industry and the local market availability. The options which are not specified in the text of the standards are itemized in data sheet/s, so that, the user can select his appropriate preferences therein.

The IPS standards are therefore expected to be sufficiently flexible so that the users can adapt these standards to their requirements. However, they may not cover every requirement of each project. For such cases, an addendum to IPS Standard shall be prepared by the user which elaborates the particular requirements of the user. This addendum together with the relevant IPS shall form the job specification for the specific project or work.

The IPS is reviewed and up-dated approximately every five years. Each standards are subject to amendment or withdrawal, if required, thus the latest edition of IPS shall be applicable

The users of IPS are therefore requested to send their views and comments, including any addendum prepared for particular cases to the following address. These comments and recommendations will be reviewed by the relevant technical committee and in case of approval will be incorporated in the next revision of the standard.

Standards and Research department

No.17, Street14, North kheradmand

Karimkhan Avenue, Tehran, Iran .

Postal Code- 1585886851

Tel: 88810459-60 & 66153055

Fax: 88810462

Email: Standards@ nioc.ir

GENERAL DEFINITIONS

Throughout this Standard the following definitions shall apply.

COMPAN:

Refers to one of the related and/or affiliated companies of the Iranian Ministry of Petroleum such as National Iranian Oil Company, National Iranian Gas Company, National Petrochemical Company and National Iranian Oil Refinery And Distribution Company.

PURCHASER:

Means the "Company" where this standard is a part of direct purchaser order by the "Company", and the "Contractor" where this Standard is a part of contract document.

VENDOR AND SUPPLIER:

Refers to firm or person who will supply and/or fabricate the equipment or material.

CONTRACTOR:

Refers to the persons, firm or company whose tender has been accepted by the company.

EXECUTOR:

Executor is the party which carries out all or part of construction and/or commissioning for the project.

INSPECTOR:

The Inspector referred to in this Standard is a person/persons or a body appointed in writing by the company for the inspection of fabrication and installation work.

SHALL:

Is used where a provision is mandatory.

SHOULD:

Is used where a provision is advisory only.

WILL:

Is normally used in connection with the action by the "Company" rather than by a contractor, supplier or vendor.

MAY:

Is used where a provision is completely discretionary.

CONTENTS:	PAGE No.
INTRODUCTION	4
PART ONE HOOKS	
1. SCOPE	7
2. REFERENCES	7
5. SAFETY REQUIREMENTS	7
9. INSPECTION.....	7
10. ATTACHMENTS	7
11. CONFLICTING REQUIREMENTS.....	8
12. PREPARATION FOR SHIPMENT	8
13. GUARANTEE AND WARRANTY	8
PART TWO SHACKLES	
1. SCOPE	10
2. REFERENCES	10
4. FORM AND DIMENSIONS	10
6. MATERIAL	10
15. INSPECTION.....	10
16. CONFLICTING REQUIREMENT	10
17. PREPARATION FOR SHIPMENT	11
PART THREE EYE BOLTS	
1. SCOPE	13
2. REFERENCES	13
8. MATERIAL	13
17. INSPECTION.....	13
18. PACKAGING.....	14
19. PREPARATION FOR SHIPMENT	14
20. GUARANTEE AND WARRANTY	14
PART FOUR STANDARD FOR CHAINS FOR GENERAL LIFTING APPLICATIONS	
1. SCOPE	16
2. REFERENCES	16
7.2 Additional Marking	16
9. CONFLICTING REQUIREMENT	16
10. PREPARATION FOR SHIPMENT	16
11. GUARANTEE AND WARRANTY	16

INTRODUCTION

This Standard has been prepared in four parts as follows;

Part 1:	Hooks
Part 2:	Shackles
Part 3:	Eye bolts
Part 4:	Chains

Each part can be used independently.

Note 1:

This is a revised version of the standard specification for hooks, shackles, eye bolts and chains, which is issued as revision (1). Revision (0) of the said standard specification with IPS-M-GM-170(0) No. is withdrawn.

Note 2:

This standard specification is reviewed and updated by the relevant technical committee on Apr. 2015. The approved modifications by T.C. were sent to IPS users as amendment No. 1 by circular No. 449 on Apr. 2015. These modifications are included in the present issue of IPS.

Part one gives the amendment and supplement to British Standard BS EN 1677-5: 2001+A1: 2009 "Components for Slings-Safety-Part5: Forged Steel Lifting Hooks with Latch – Grade4 ".and shall be read in conjunction with that document.

The amendments/supplement to BS EN standard 1677-5 given in part one of this Standard are directly related to the equivalent sections or clauses in above mentioned BSEN standard. Where Clauses in BS EN standard are referenced within part one of this Standard, it shall mean those clauses are amended in this Standard. Clauses in BS EN standard 1677-5: 2001+A1: 2009 that are not amended by this Standard shall remain valid as part one of this Standard.

Part two gives the amendment and supplement to International Standard ISO 2415, Forth Edition: 2004, "Forged Shackles for General Lifting Purposes-Dee Shackles and Bow Shackles" and shall be read in conjunction with that document.

The amendments/supplement to ISO standard 2415 given in part two of this Standard are directly related to the equivalent sections or clauses in above mentioned ISO standard. Where Clauses in ISO standard are referenced within this Standard, it shall mean those clauses are amended in this Standard. Clauses in ISO standard 2415 Forth Edition: 2004 that are not amended by this Standard shall remain valid as part of this Standard.

Part three gives the amendment and supplement to International Standard ISO 3266, Second Edition: 2010 "Forged Steel Eyebolts Grade 4 for General Lifting Purposes", and shall be read in conjunction with that document.

The amendments/supplement to ISO 3266, Second Edition: 2010 given in part three of this Standard are directly related to the equivalent sections or clauses in above mentioned ISO standard. Where Clauses in ISO standard are referenced within this Standard, it shall mean those clauses are amended in this Standard. Clauses in ISO 3266, Second Edition: 2010 that are not amended by this Standard shall remain valid as part of this Standard.

Part four gives the amendment and supplement to international standard ISO 1834: 1999 "Short Link Chain for Lifting Purposes – General Condition of Acceptance".

The amendments/supplement to ISO standard 1834: 1999 given in part four of this Standard are directly related to the equivalent sections or clauses in above mentioned ISO standard. Where Clauses in ISO standard are referenced within this Standard, it shall mean those clauses are amended in this Standard. Clauses in ISO standard 1834: 1999 that are not amended by this Standard shall remain valid as part of this Standard.

Guidance for Use of this Standard

The amendments/supplement to BS EN ISO/ISO Standards given in this Standard are directly related to the equivalent sections or clauses in BS EN ISO/ISO Standards. For clarity, the section and paragraph numbering of BS EN ISO/ISO Standards has been used as far as possible. Where clauses in BS EN ISO/ISO are referenced within this Standard, it shall mean those clauses are amended by this Standard. Clauses in BS EN ISO/ISO that are not amended by this Standard shall remain valid as written.

The following annotations, as specified hereunder, have been used at the bottom right hand side of each clause or paragraph to indicate the type of change made to the equivalent clause or paragraph of BS EN ISO/ISO.

- Sub. (Substitution)** :The clause in BS EN ISO/ISO shall be deleted and replaced by the new clause in this Standard.
- Del. (Deletion)** :The clause in BS EN ISO/ISO shall be deleted without any replacement.
- Add. (Addition)** :The new clause with the new number shall be added to the relevant section of BS EN ISO/ISO.
- Mod. (Modification)** :Part of the clause or paragraph in BS EN ISO/ISO shall be modified and/or the new description and/or statement is added to that clause.

PART ONE**HOOKS**

(Including BS EN 1677-5: 2001+A1: 2009 and the following amended/supplemented clauses)

1. SCOPE

This Standard covers minimum requirements for hooks for general purpose applications. It is intended to be used in Iranian Oil, Gas, and Petrochemical Industries.

This Standard gives the amendment and supplement to British Standard BS EN 1677-5: 2001+A1: 2009 "Components for Slings-Safety-Part5: Forged Steel Lifting Hooks with Latch – Grade4 ".and shall be read in conjunction with that document.

The amendments/supplement to BS EN standard 1677-5 given in part one of this Standard are directly related to the equivalent sections or clauses in above mentioned BSEN standard. Where Clauses in BS EN standard are referenced within part one of this Standard, it shall mean those clauses are amended in this Standard. Clauses in BS EN standard 1677-5:2001+A1: 2009 that are not amended by this Standard shall remain valid as part one of this Standard.

No deviation from this Standard is permitted without explicit approval of the Company.

The intended deviations shall be clearly indicated and separately listed in the Vendor's proposal.

(Mod.)**2. REFERENCES****(Mod.)**

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the company and the vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

(Mod.)**5. SAFETY REQUIREMENTS****5.3 MATERIAL AND HEAT TREATMENTS****5.3.1.5 Material Designation**

Materials of the hooks shall be specified by ASTM or AISI designations.

(Add.)

5.3.1.6The hook material shall have sufficient ductility to permanently deform before losing the ability to support the load at the temperature at which the specific hook will be used

(Add.)**9. INSPECTION****9.1 Shape, Main Dimensions, and Appearance****(Add.)**

The inspection of hooks for the shape, main dimensions, and appearance be performed with sample extracted from each lot*.

(Add.)

* A lot means a group of hooks belonging to each melting charge and produced from the same material and applied the same heat treatment.

(Add.)**10. ATTACHMENTS****(Add.)**

10.1 The latch shall be designed to retain such items as, but not limited to, slings and chains under slack conditions..

(Add.)

10.2 Attachments such as handles, latch supports, etc., shall not be welded to finished hook in field applications. If welding of an attachment such as these is required, it shall be done in manufacturing

or fabrication prior to any final heat treatment. **(Add.)**

11. CONFLICTING REQUIREMENTS **(Add.)**

In case of conflict between this Standard and documents relating to the inquiry or order, the following priority of documents shall apply:

- **First Priority:** Purchase order and variations thereto.

- **Second Priority:** This Standard specification.

(Add.)

12. PREPARATION FOR SHIPMENT **(Add.)**

Equipment shall be suitably prepared for the type of shipment specified. **(Add.)**

13. GUARANTEE AND WARRANTY **(Add.)**

All hooks supplied shall be guaranteed by the Vendor against faulty design, defective or improper materials, poor workmanship, and failure due to normal usage for one year after being placed in the service. If any defects or malfunctions occur during this period, the Vendor shall make all necessary alteration and replacements free of charge. **(Add.)**

PART TWO**SHACKLES**

(Including ISO 2415, Forth Edition: 2004 and the following amended / supplemented clauses)

1. SCOPE**(Mod.)**

This Standard specification covers minimum requirements for shackles for general purpose applications for use in Iranian Oil, Gas and Petrochemical Industries.

This Standard gives the amendment and supplement to International Standard ISO 2415, Forth Edition: 2004, "Forged Shackles for General Lifting Purposes-Dee Shackles and Bow Shackles" and shall be read in conjunction with that document.

The amendments/supplement to ISO standard 2415 given in part two of this Standard are directly related to the equivalent sections or clauses in above mentioned ISO standard. Where Clauses in ISO standard are referenced within this Standard, it shall mean those clauses are amended in this Standard. Clauses in ISO standard 2415 Forth Edition: 2004 that are not amended by this Standard shall remain valid as part of this Standard.

No deviations from this Standard is permitted without explicit approval of the Company.

The intended deviations shall be clearly indicated and separately listed in the Vendor's proposal.

(Mod.)**2. REFERENCES**

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the company and the vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

(Mod.)**4. FORM AND DIMENSIONS****4.5 Appearance****(Add.)**

The surface shall be smooth and free from injurious defects such as chaps, cracks and flaws.

(Add.)**6. MATERIAL**

6.3 Shackle materials shall be specified by ASTM, or AISI designation codes. When such designations were not possible the nearest ASTM equivalent material shall be submitted by the Vendor.

(Add.)**15. INSPECTION****(Add.)****15.1 Shape, Main Dimensions and Appearance****(Add.)**

The inspection of shackles for the shape, main dimensions and appearance shall be performed with sample extracted from each lot* and shall comply with requirements specified in Section 4. **(Add.)**

***A lot means a group of shackles belonging to each melting charge and produced from the same material and applied the same heat treatment.**

16. CONFLICTING REQUIREMENT**(Add.)**

In case of conflict between this Standard and documents relating to the inquiry or order, the following priority of documents shall apply:

- **First Priority:** Purchase order and variations thereto.

- **Second Priority:** This Standard specification. **(Add.)**

17. PREPARATION FOR SHIPMENT **(Add.)**

Equipment shall be suitably prepared for the type of shipment specified. **(Add.)**

18. GUARANTEE AND WARRANTY **(Add.)**

All shackles supplied shall be guaranteed by the vendor against faulty design, defective or improper materials, poor workmanship, and failure due to normal usage for one year after being used. If any defects or malfunctions occur during this period the Vendor shall make all necessary alteration and replacements free of charge. **(Add.)**

PART THREE**EYE BOLTS**

(Including ISO 3266, Second Edition: 2010 and the following amended / supplemented clauses)

1. SCOPE**(Mod.)**

This Standard covers minimum requirements for eye bolts for general purpose lifting applications. It is intended to be used in Iranian Oil, Gas, Petrochemical Industries.

This Standard gives the amendment and supplement to International Standard ISO 3266, Second Edition: 2010 "Eyebolts for General Lifting Purposes", and shall be read in conjunction with that document.

The amendments/supplement to ISO 3266, Second Edition: 2010 given in part three of this Standard are directly related to the equivalent sections or clauses in above mentioned ISO standard. Where Clauses in ISO standard are referenced within this Standard, it shall mean those clauses are amended in this Standard. Clauses in ISO 3266, Second Edition: 2010 that are not amended by this Standard shall remain valid as part of this Standard.

No deviations from this Standard is permitted without explicit approval of the Company.

The intended deviations shall be clearly indicated and separately listed in the Vendor's proposal.

(Mod.)**2. REFERENCES****(Mod.)**

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the company and the vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

(Mod.)

BS EN 10083-1: "Steels for Quenching and Tempering – Part1: General Technical Delivery Conditions"

(Add.)**8. MATERIAL**

Materials shall be identified by reference to appropriate ASTM or AISI specification. When no such appropriate designation is available, the nearest ASTM or AISI equivalent designation shall be specified or chemical composition and significant physical properties of the material shall be presented in the proposal.

(Mod.)**17. INSPECTION****(Add.)**

Unless otherwise specified in this standard the inspection and testing of eyebolts shall be performed in accordance with BS EN 10083-1.

The inspection of bolts covers items explained in Clauses 17.1 through 17.3.

The method of inspection sampling shall be the subject of agreement between the purchaser and the manufacturer.

(Add.)**17.1 Dimensions and Tolerances Inspection**

The dimensions and tolerances inspection on bolts shall be made by the direct measurement or by other methods and shall conform to the requirements of Clause 5.

(Add.)

17.2 Appearance Inspection

The appearance inspection shall be made by the direct viewing of the product. Bolts shall be free from harmful effects in use by cracks, flaws, burrs and rust. **(Add.)**

17.3 Material Inspection

The material inspection for bolts shall be made by the determination of test sheet result on ladle analysis of chemical composition whether or not it conforms to the material specified. **(Add.)**

18. PACKAGING**(Add.)**

The packaging of bolts shall be made suitably to protect the screwed portion against damage.

For bolts not applied with surface treatment shall be packed after suitably coated with rust preventing oil. **(Add.)**

19. PREPARATION FOR SHIPMENT**(Add.)**

Equipment shall be suitably prepared for the type of shipment specified.

(Add.)**20. GUARANTEE AND WARRANTY****(Add.)**

All bolts supplied shall be guaranteed by the vendor against faulty design, defective or improper materials, poor workmanship, and failure due to normal usage for one year after being used. If any defects or malfunctions occur during this period the vendor shall make all necessary alteration, and replacements free of charge. **(Add.)**

PART FOUR

STANDARD FOR

CHAINS FOR GENERAL LIFTING

APPLICATIONS

(Including ISO 1834: 1999 and the following amended / supplemented clauses)

1. SCOPE

This Standard covers minimum requirements for chains for general lifting applications. It is intended to be used in Iranian Oil, Gas, Petrochemical Industries.

This Standard gives the amendment and supplement to international standard ISO 1834 : 1999 "Short Link Chain for Lifting Purposes – General Condition of Acceptance".

The amendments/supplement to ISO standard 1834: 1999 given in part four of this Standard are directly related to the equivalent sections or clauses in above mentioned ISO standard. Where Clauses in ISO standard are referenced within this Standard, it shall mean those clauses are amended in this Standard. Clauses in ISO standard 1834: 1999 that are not amended by this Standard shall remain valid as part of this Standard.

No deviations from this Standard is permitted without explicit approval of the Company.

The intended deviations shall be clearly indicated and separately listed in the Vendor's proposal.

(Mod.)

2. REFERENCES

(Mod.)

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the company and the vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

(Mod.)

7.2 Additional Marking

The additional marking shall include the name of the manufacturer of the chain by trade mark or symbol.

(Mod.)

9. CONFLICTING REQUIREMENT

(Add.)

In case of conflict between this Standard and documents relating to the inquiry or order, the following priority of documents shall apply:

- **First Priority:** Purchase order and variations thereto.

- **Second Priority:** This Standard specification.

(Add.)

10. PREPARATION FOR SHIPMENT

(Add.)

Equipment shall be suitably prepared for the type of shipment specified.

(Add.)

11. GUARANTEE AND WARRANTY

All chains shall be guaranteed by the Vendor against faulty design, defective or improper materials, poor workmanships, and failure due to normal usage for one year being used. If any defects or malfunctions occur during this period the Vendor shall make all necessary alteration, repairs and replacements free of charge.

(Add.)