



شرکت ملی گاز ایران

امورتدوین استانداردها

IGS

راهنمای انجام کار

کاتالیست مرکاپتان زدا

Mercaptan Oxidation Catalyst



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شرکت ملی گاز ایران



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باسلام،

به استحضار می‌رساند در جلسه ۱۵۲۵ مورخ ۱۳۹۱/۹/۱۲ هیأت مدیره، نامه شماره گ/۹/۰۰/۱۲۴۸۸۶ مورخ ۱۳۹۱/۹/۷ مدیر پژوهش و فناوری و رئیس شورای استاندارد در مورد تصویب نهایی استاندارد تحت عنوان «کاتالیست مرکاپتان زدا به شماره تقاضای IGS-R-CH-052(0) مطرح و مورد تصویب قرار گرفت.

این مصوبه در حکم مصوبه مجمع عمومی شرکتهای تابعه محسوب و برای کلیه شرکتهای تابعه لازم الاجراء می‌باشد.

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FOREWORD

This standard is intended to be mainly used by NIGC and contractors and has been prepared on interpretation recognized standards, technical documents, knowledge, backgrounds and experiences in gas industries at national and international levels. Iranian gas standards (IGS) are prepared, reviewed and amended by technical standard committees within NIGC Standardization division and submitted to the NIGC's "STANDARDS COUNCIL" for approval.

IGS Standards are subject to revision, amendment or withdrawal, if required, thus the latest edition of IGS shall be checked/inquired by NIGC users.

This standard must not be modified or altered by the end users within NIGC and her contractors. Any deviation from normative references and / or well known manufacturers specifications must be reported to Standardization division.

Any comments from concerned parties on NIGC distributed IGS are welcome to technical standards committees and will receive serious attention and consideration should a revision to standards is recommended .

GENERAL DEFINITIONS:

Throughout this standard the following definitions, where applicable, should be followed:

- 1- "STANDARDIZATION DIV." has been organized to deal with all aspects of industrial standards in NIGC. Therefore, all queries for clarification or amendments are requested to be directed to mentioned div.
- 2- "COMPANY": refers to national Iranian gas company.
- 3- "SUPPLIER": refers to a firm who will supply the service, equipment or material to IGS specification whether as the prime producer or manufacturer or a trading firm.
- 4- "SHALL ": is used where a provision is mandatory.
- 5- "SHOULD": is used where a provision is advised only.
- 6- "MAY": is used where a provision is completely discretionary.

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TABLE OF CONTENT

1. SCOPE	1
2. REFERENCE	1
3. DEFINITION	1
4. SYSTEM DESIGN	2
5. QUALIFICATION PROCEDURE	2
6. QUALITY ASSURANCE	2
7. APPLICABILITY	2
8. SAMPLES	3
9. INSPECTION	3
10. MARKING	4
11. PACKAGING	4
12. STORAGE LIFE	4
13. DOCUMENTATION	4
ANNEX A – Mercaptan Oxidation Catalyst Typical Properties	5
ANNEX B – Catalyst Data Sheet	6
ANNEX C – Mercaptan Removal Unit Data	7
ANNEX D – Gas Treating Plant Data	8
ANNEX E – Propane/Butane/LPG Treating Plant Data	13
ANNEX F – Test Methods	16

1. SCOPE

This standard specification provides the technical procedure for selection/substitution new mercaptan oxidation catalyst that is used for removing mercaptans from natural gas, LPG, butane and propane.

2. REFERENCE

Throughout this standard specification the following standard is referred to. The editions of this standard that is in effect at the time of issues of this standard specification (2012) shall, to the extent specified herein, form part of this standard specification. The applicability of changes in standard that occur after the date of this standard specification shall be mutually agreed upon by the purchaser and the manufacturer/supplier.

ISO 9001 (2008) "Quality Systems – Model for Quality Assurance in Design, Development, Production, Installation and Servicing"

3. DEFINITIONS

3.1 Mercaptan Oxidation Catalyst

It is a proprietary catalytic chemical process used in natural gas, LPG, butane and propane processing plants to remove mercaptans by converting them to liquid hydrocarbon disulfides.

3.2 Extraction Unit

A gas extraction unit is normally consisting of a combination column that includes prewash, extraction and water wash section while for liquids is normally including only an extractor column.

3.3 Regeneration Unit

A caustic regeneration system will convert the extracted mercaptans to disulfide oil that is separated and removed while the regenerated caustic is returned to the extraction unit.

3.4 Technical Approved

The technical approved is the first step for qualification of catalyst which technical information has been evaluated and approved by technical division.

3.5 Laboratory Approved

The laboratory approved is the second step for qualification of catalyst which has passed laboratory tests.

3.6 Test Field Approved

The test field approved is the third step for qualification of catalyst which has passed the operational test.

4. SYSTEM DESIGN

The manufacturer/supplier shall submit catalyst to be able oxidation of mercaptans to disulfides in mercaptan removal units as specified in Annex C.

The manufacturer/supplier shall give full details of the proposed catalyst including chemical base and its characteristics as mentioned in Annex B.

Note: Annexes D and E show typical questionnaires for mercaptan oxidation catalyst evaluation.

5. QUALIFICATION PROCEDURE

The manufacturer/supplier shall pass following steps respectively as well as all requirements of this standard specification:

5.1 Technical Approved (Step 1)

The manufacturer/supplier of catalyst shall provide information including original technical catalogue, MSDS and manufacturing product data sheet. The technical division shall evaluate information. The catalyst shall be approved by technical division.

5.2 Laboratory Approved (Step 2)

The manufacturer/supplier that approved by technical division shall provide sufficient sample for laboratory tests. The laboratory tests will consist of laboratory tests which are performed in local laboratory and/or accredited laboratory. The catalyst shall be passed these tests.

Note: Laboratory tests are given in Table A-1 of Annex A. Table A-1 provides typical properties for catalysts that have been used in natural gas refineries and presents guidelines for establishing minimum requirements for entering to step 3.

5.3 Field Test Approved (Step 3)

The manufacturer/supplier that passed laboratory tests shall provide sufficient amount of catalyst for a 90 days period of operational test. The catalyst shall be passed operational test.

6. QUALITY ASSURANCE

The manufacturer/supplier shall set up and maintain a quality assurance system for product supplied. The purchaser shall have the right to undertake inspection and testing of the products to ensure compliance with requirements of this standard specification.

7. APPLICABILITY

The catalyst shall be easily applicable when used for loading into the system without any impractical effort.

8. SAMPLES

8.1 Laboratory Test Sample

Laboratory test sample shall consist of sufficient amount of catalyst that shall be forwarded to the purchaser for laboratory tests. Samples shall be plainly identified by attached durable tag marked with at least the following information:

- Manufacturer's/Supplier's Name
- Brand Name
- Description
- Date of Manufacture

8.2 Operational Test Sample

Operational test samples shall consist of sufficient amount of catalyst that shall be forwarded to the purchaser for operational test. Samples shall be plainly identified by attached durable tag marked with at least the following information:

- Manufacturer's/Supplier's Name
- Brand Name
- Description
- Instruction for Use
- Analytical Control
- Dosage (with reference to Annex C)
- Storing
- Date of Manufacture

9. INSPECTION

The manufacturer/supplier shall be responsible for carrying out all the tests required by this standard specification, using his own or other reliable facilities, and he shall maintain complete records of all such tests and qualifications. Such records shall be available for review by the purchaser. The manufacturer/supplier shall furnish to the purchaser a certificate of quality stating that each batch has been sampled, tested, and qualified in accordance with this standard specification and has been found to meet the requirements specified.

The manufacturer/supplier shall afford the purchaser's inspector all reasonable facilities required for inspection of each batch of production in accordance with this standard specification. Such inspection in no way relieves the manufacturer/supplier of his responsibilities under the term of this standard specification.

The purchaser reserves the right to perform any inspections set forth in this standard specification where such inspections are deemed necessary to assure that supplies and services conform to the prescribed requirements.

The purchaser's inspector reserve the right to have access to the materials subject to inspection for the purpose of witnessing selection of the samples, preparation of the test samples and performance of the test(s). For such tests, the inspector reserves the right to indicate the sample(s) from which the quantities will be taken in accordance with the provisions of this standard specification.

10. MARKING

10.1 Marking of Containers

Each container shall be legibly marked with at least following information:

Composition

MESC No.

Handling Guidelines

Safety Precautions

Storage Conditions

Date of Manufacture

Date of expiry

Batch No.

Order No.

Net weight

Gross weight

Name and Address of Manufacturer/Supplier

HMIS (Hazardous Material Identification System including health, fire, reactivity, personal protection, specified hazard, etc)

10.2 Precautionary Marking

All individual containers shall be marked with precautionary symbols and/or phrases.

11. PACKAGING

11.1 The catalyst shall be suitably packed in approved containers in accordance with the requirement of the purchase order.

11.2 The containers shall be protected against all damages or defects which may occur during handling.

12. STORAGE LIFE

The catalyst shall meet all requirements of this standard specification at least 24 months from date of delivery at manufacturer's/supplier's mentioned storage condition.

13. DOCUMENTATION

The manufacturer/supplier shall provide sufficient information and shall supply the technical information as a minimum requirement as follows:

- ISO 9001 for management quality control of offered mercaptan oxidation catalyst that be used for removing mercaptans from natural gas, LPG, butane and propane issued by an internationally recognized body.
- Approval test report, original technical catalogues, manufacturing product data sheet and application procedure recommendation and guidelines.
- Material Safety Data Sheet (MSDS).
- Filled, signed and stamped data sheet stating in Annex B.