

IGS-M-CH-027(1)

1375

Approved

مصوب



شرکت ملی گاز ایران
مدیریت پژوهش و فناوری
امور تدوین استانداردها

IGS

مشخصات فنی خرید

فیبر سرامیک

Ceramic Fiber

FOREWORD

This standard is intended to be mainly used by **NIGC** and contractors and has been prepared on interpretation of recognized standards , technical documents , knowledge ,backgrounds and experiences in gas industries at national and international levels.

Iranian Gas Standards (**IGS**) are prepared , reviewed and ammended by technical standard committees within NIGC Standardization Div. 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 div.

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 the mentioned div.

2- "**COMPANY**" : refers to national iranian gas company .

3- "**SUPLIER**" : 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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پیشگفتار

- ۱- این استاندارد/دستورالعمل بمنظور استفاده اختصاصی در شرکت ملی گاز ایران و شرکتهای فرعی وابسته تهیه شده است.
- ۲- شرکت ملی گاز ایران در مورد نیازهای عمومی از استانداردهای وزارت نفت (IPS) و در مورد نیازهای اختصاصی از استانداردهای اختصاصی خود (IGS) استفاده می نماید.
- ۳- استانداردهای شرکت ملی گاز ایران (IGS) توسط کمیته های تخصصی استاندارد متشکل از کارشناسان بخش های مختلف و یا مشاور تهیه می شود و توسط شورای استاندارد (منتخب هیئت مدیره شرکت ملی گاز ایران) به تصویب میرسند.
- ۴- در تنظیم متن استانداردهای (IGS) از کلیه منابع شناخته شده استاندارد، اطلاعات فنی - تخصصی مربوط به صنایع گاز دنیا، مشخصات فنی تولیدات سازندگان معتبر جهانی و نیز از نتیجه تحقیقات و تجربیات کارشناسان و متخصصان داخلی بر حسب مورد استفاده می شود. همچنین بمنظور استفاده هر چه بیشتر از تولیدات داخلی قابلیت های سازندگان داخلی نیز مورد توجه قرار میگیرد.
- ۵- استانداردها از طریق پایگاه اینترنتی شرکت* و یالوح فشرده (CD) در اختیار واحدها و کاربران قرار می گیرد .
- ۶- استانداردها بطور متوسط هر ۵ سال یکبار و یادر صورت ضرورت زودتر، مورد بازنگری و بروزرسانی قرار میگیرند. بنابراین کاربران باید همیشه آخرین نگارش را مورد استفاده قرار دهند.
- ۷- هرگونه نظر و یا پیشنهاد اصلاح در مورد استانداردها مورد استقبال و بررسی قرار خواهد گرفت و در صورت تأیید، استاندارد مربوطه نیز مورد تجدیدنظر قرار خواهد گرفت .

تعاریف عمومی

در متن استانداردهای (IGS) از تعاریف و اصطلاحات زیر استفاده میشود.

- ۱- "شرکت" (COMPANY): منظور از شرکت "شرکت ملی گاز ایران" و یا شرکتهای فرعی وابسته میباشد.
- ۲- "فروشنده" (SUPPLIER/VENDOR): به فرد یا موسسه ای اطلاق میگردد که تعهدی رانسبت به شرکت تقبل نموده است.
- ۳- "خریدار" (PURCHASER): منظور از خریدار "شرکت ملی گاز ایران" و یا شرکتهای فرعی وابسته میباشد.
- ۴- "SHALL": در مواردی بکاربرده میشود که انجام خواسته مورد نظر اجباری است
- ۵- "SHOULD": در مواردی بکاربرده میشود که انجام خواسته مورد نظر ترجیحی و درعین حال اختیاری است
- ۶- "MAY": در مواردی بکاربرده میشود که انجام کار به شکل مورد بحث نیز قابل قبول میباشد

IGS-CH-027(0) : 1995 CERAMIC FIBER

TABLE OF CONTENT

		PAGE
1.	SCOPE	2
2.	REFERENCES	2
3.	MATERIAL AND MANUFACTURE	3
4.	CHEMICAL COMPOSITION	3
5.	PHYSICAL AND MECHANICAL PROPERTIES	4
6.	DIMENSIONS	5
7.	WORKMANSHIP	6
8.	SAMPLING	6
9.	QUALITY ASSURANCE	6
10.	INSPECTION	6
11.	CERTIFICATION	6
12.	PACKAGING	7
13.	MARKING	7
14.	STORAGE TIME	7

1. SCOPE

THIS STANDARD SPECIFICATION COVERS THE MINIMUM REQUIREMENTS FOR CHEMICAL COMPOSITION , PROPERTIES , STORAGE LIFE AND PACKAGING FOR CERAMIC FIBRE BLANKETS FOR USE AS REFRACTORY HEAT INSULATING MATERIAL .

2. REFERENCES

THROUGHOUT THIS STANDARD THE FOLLOWING STANDARDS AND CODES ARE REFERRED TO . THE LATEST EDITIONS OF THESE STANDARDS AND CODES THAT ARE IN EFFECT AT THE TIME OF PUBLICATION OF THIS STANDARD . THE APPLICABILITY OF CHANGES IN STANDARDS AND CODES THAT OCCUR AFTER THE DATE OF THIS STANDARD SHALL BE MUTUALLY AGREED UPON BY THE PURCHASER AND SUPPLIER .

ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)

C 167 “ TEST METHOD FOR THICKNESS AND DENSITY OF
BLANKET OR BATT THERMAL INSULATION “

C 201 “ TEST METHOD FOR THERMAL CONDUCTIVITY OF REFRACTORIES “

C 209 “ METHODS OF TESTING INSULATING BOARD (CELLULOSIC FIBER) , STRUCTURAL AND DECORATIVE “

C 356 “ TEST METHOD FOR LINEAR SHRINKAGE OF PREFORMED HIGH TEMPERATURE THERMAL INSULATION SUBJECTED TO SOAKING HEAT “

C 390 “ CRITERIA FOR SAMPLING AND ACCEPTANCE OF PERFORMED THERMAL INSULATION LOTS “

C 573 “ METHODS FOR CHEMICAL ANALYSIS OF FIRECLAY AND HIGH ALUMINA REFRACTORIES “

D 3951 “ STANDARD PRACTICE FOR COMMERCIAL PACKAGING “

BSI (BRITISH STANDARDS INSTITUTION)

BS 1902 : PART 2 ; “ CHEMICAL ANALYSIS (WET METHODS) “

BS 1902 : PART 6 ; “ CERAMIC FIBRE PRODUCTS “

BS 1902 : PART 9 ; “ CHEMICAL ANALYSIS BY INSTRUMENTAL METHODS “

3. MATERIAL AND MANUFACTURE

A FLEXIBLE , NORMALY NEEDED CERAMIC FIBROUS INSULATING MATERIAL , FREE OF BINDERS AND MANUFACTURED ESSENTIALLY FROM ALUMINA , SILICA OR ALUMINO - SILICATES (SEE 5) AND SUPPLIED AS BLANKET FOR USE AS REFRACTORY HEAT INSULATING MATERIAL .

4. CHEMICAL COMPOSITION

THE CHEMICAL COMPOSITION FOR MAJOR CONSTITUENTS OF CERAMIC FIBRE BLANKET SHALL BE ACCORDING TO TABLE 1 WHEN TESTED BY METHODS GIVEN IN BS 1902 : PART 2 OR PART 9 OR ASTM C 573 .

TABLE 1

COMPONENT	WEIGHT %
Al ₂ O ₃	43 MIN.
SiO ₂	54 MAX.
Fe ₂ O ₃	1.8 MAX.
ALKALIS AS Na ₂ O , K ₂ O	2 MAX.

TiO ₂	3.5 MAX.
MgO	TRACE
CaO	1.0 MAX.
B ₂ O ₃	0.1 MAX..
TRACE INORGANICS	0.3 MAX.
LEACHABLE CHLORIDE	20 ppm

5. PHYSICAL AND MECHANICAL PROPERTIES

THE PHYSICAL AND MECHANICAL PROPERTIES OF CERAMIC FIBRE BLANKET SHALL CONFORM TO THE FOLLOWING REQUIREMENTS :

5.1 BULK DENSITY

BULK DENSITY SHALL BE 128 kg/m³ (8 lb / ft³) WITH A TOLERANCE OF + 30 , -15% OF NOMINAL DENSITY WHEN TESTED IN ACCORDANCE WITH ASTM TEST METHOD C 167 OR METHOD 1902 – 604 OF BS 1902 : PART 6 .

THERMAL CONDUCTIVITY

MAXIMUM APPARENT THERMAL CONDUCTIVITY VALUE SHALL BE 0.15 W/m.k AT 600°C WHEN TESTED IN ACCORDANCE WITH ASTM TEST METHOD C 201 MODIFIED .

TEMPERATURE OF USE

TEMPERATURE OF USE SHALL BE 1250°C MINIMUM (SEE 6.4) .

LINEAR SHRINKAGE

LINEAR SHRINKAGE SHALL BE MAXIMUM 5% AT 1250°C AFTER SOAKING HEAT AND TESTED IN ACCORDANCE WITH ASTM TEST METHOD C 356 EXCEPT THAT DIMENSIONS SHALL BE DETERMINED BY TEST METHOD C 167 .

SHOT CONTENT

UNFIBERIZED SHOT CONTENT SHALL BE MAXIMUM 30% BY WEIGHT WHEN TESTED IN ACCORDANCE WITH BS 1902 PART 6 METHOD 1902 – 607 .

5.2 TENSILE STRENGTH

TENSILE STRENGTH SHALL BE MINIMUM 30 kpa WHEN TESTED IN ACCORDANCE WITH ASTM C 209 , SECTION 11 (PARALLEL TO SURFACE) , EXCEPT THAT RATE OF SEPARATION OF THE JAWS SHALL BE 25 TO 50 mm/min (1 TO 2 in./min) .

6. DIMENSIONS

UNLESS OTHERWISE DETERMINED BY THE END USER , THE CERAMIC FIBRE BLANKET SHALL BE FURNISHED IN DIMENSIONS AS SHOWN IN TABLE 2 .

TABLE 2

THICKNESS , mm (in.)	WIDTH , mm (in.)	LENGTH , mm (in.)
38.1 (1-1/2)	610 (24)	7300 (287.4)

6.1 DIMENSIONAL TOLERANCES

THE AVERAGE MEASURED THICKNESS , WIDTH AND LENGTH OF ANY INDIVIDUAL SECTION SHALL NOT DIFFER FROM THE SPECIFIED DIMENSIONS BY MORE THAN THE VALUES SHOWN IN TABLE 3 .

TABLE 3

DIMENSION	TOLERANCE
THICKNESS (mm)	+19.1 , -3.2 (+3/4 , -1/8 in.)
WIDTH (PERCENT)	-2 , +10%
LENGTH	POSITIVES ONLY

7. WORKMANSHIP

THE INSULATION SHALL INDICATE GOOD WORKMANSHIP IN PRODUCTION BY A UNIFORM APPEARANCE , SHALL NOT HAVE ANY VISIBLE DEFECTS SUCH AS TEARS AND HOLES THAT WILL ADVERSELY AFFECT THE SERVICE QUALITY , AND SHALL BE FREE FROM FOREIGN MATERIALS .

8. SAMPLING

THE INSULATION SHALL BE SAMPLED FOR THE PURPOSES OF TEST IN ACCORDANCE WITH ASTM TEST METHOD C 390 .

9. QUALITY ASSURANCE

THE MANUFACTURER SHALL SET UP A QUALITY ASSURANCE SYSTEM TO ENSURE THAT ALL PRODUCT WILL BE FURNISHED IN ACCORDANCE WITH THIS STANDARD SPECIFICATION .

10. INSPECTION

INSPECTION SHALL BE DONE TO VERIFY COMPLIANCE OF PRODUCED MATERIAL AGAINST REQUIREMENT OF PURCHASE ORDER AND STANDARD SPECIFICATION .

11. CERTIFICATION

THE MANUFACTURE AND / OR SUPPLIER SHALL FURNISH THE PURCHASER CERTIFICATION THAT SAMPLES REPRESENTING EACH LOT HAVE BEEN EITHER TESTED OR INSPECTED AS DIRECTED IN THIS STANDARD SPECIFICATION AND THE REQUIREMENTS HAVE BEEN MET. A REPORT OF THE TEST RESULTS SHALL BE FURNISHED.

12. PACKAGING

THE PACKAGING SHALL MEET THE RELEVANT REQUIREMENTS OF ASTM D 3951 .

13. MARKING

EACH CONTAINERS SHALL BE LEGIBLY MARKED WITH THE FOLLOWING INFORMATION :

NAME : CERAMIC FIBRE BLANKET

CLIENT : NATHIONAL IRANIAN GAS COMPANY

STANDARD SPECIFICATION : (IGS-MS-CH-027)

MESC NO.

LENGTH

WIDTH

NOMINAL THICKNESS

QUANTITY OF THE MATERIAL IN THE CONTAINER

MANUFACTURER NAME AND ADDRESS

DATE OF MANUFACTURE

CAUTION : “ STORE IN DRY PLACE “

“ USE NO HOOKS “

14. STORANGE TIME

THE INSULATION BLANKET UNDER THIS STANDARD SPECIFICATION SHALL NOT BE PRESENTED FOR INSPECTION OR SUPPLY IF PRODICTION HAS TAKEN PLACE MORE THAN 12 MONTHS BEFORE THE INSPECTION OR SUPPLY .