

# केन्द्रीय खनन एवं ईंधन अनुसंधान संस्थान

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

बरवा रोड, धनबाद-826015, झारखण्ड, भारत



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## CENTRAL INSTITUTE OF MINING AND FUEL RESEARCH

Formerly : Central Mining Research Institute  
(Council of Scientific & Industrial Research)

BARWA ROAD, DHANBAD-826015, JHARKHAND, INDIA

SPEED POST/COURIER SERVICE

No. CIMFR/TC/P/ *H 333*  
TC CODE NO. FLP/145/06

Dated: *27<sup>th</sup>* July, 2009  
EQUIPMENT ID NO. 438A/06

To,  
**M/s. Kingsley Engineerings Services,**  
**K-17706/1 Karmatur Chowkdi GIDC Ank,**  
**Bhavnagar Gujarat**

**Sub:** Testing as per IS: 11006 - 1984 of your **Flame Arrester, Size 2"**, in Cast Steel construction for use in Gas Group IIA & IIB atmospheres as per IS: 2148-2004.

**- PROTOTYPE TEST REPORT**

**Your Ref. No. KES/FA/11/02,**

**Dated: 19-11-06**

Dear Sir,

Please find enclosed the **Test Report (PROTOTYPE)** of the above samples submitted by you.

***This Institute reserves the right to review, amend or withdraw this 'Test Report' at any time, if considered necessary in the interest of safety.***

Charges of **Rs. 15,448/- (Rupees Fifteen Thousand Four Hundred & Forty eight only)** including applicable service charges involved towards the testing /issuing the schedule have been adjusted against the advance deposit made by you.

Kindly arrange to collect the sample within 90 days from the date of receipt of this letter failing which CIMFR would dispose off the sample by public auction without any further NOTICE to you.

Kindly acknowledge receipt.  
Thanking you.

Yours faithfully,

  
**(G.M. PRASAD)**

HEAD OF THE DEPARTMENT  
**TESTING CELL**

Encl: As above.  
Test Report in Quadruplicate.  
Copy to: 1. Head, Flame & Explosion Lab  
2. Bill Section.

1 of 4

फोन-निदेशक Director

पी.ए.एक्स PAX

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कार्यालय के दिन : सोमवार से शुक्रवार तक Working days : Monday to Friday

के० ख० एवं ई० अ० सं० परीक्षण प्रकोष्ठ - CIMFR TESTING CELL  
केन्द्रीय खनन एवं ईंधन अनुसंधान संस्थान  
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

CENTRAL INSTITUTE OF MINING AND FUEL RESEARCH

FORMERLY : CENTRAL MINING RESEARCH INSTITUTE  
(COUNCIL OF SCIENCE & INDUSTRIAL RESEARCH)

बरवा रोड, धनबाद - 826015 (INDIA) BARWA ROAD, DHANBAD - 826015(INDIA)

परीक्षण प्रमाणपत्र TEST CERTIFICATE

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FORMAT NO.: (CIMFR - FORM: FLP02: F-01)

TC CODE NO.FLP/145/06

EQUIPMENT ID NO. 438A/06

[Test Report No. CIMFR/TC/P/1333 Dated: 27<sup>th</sup> July, 2009, issued to M/s. Kingsley Engineering Services, K-17706/1 Karmatur Chowkdi GIDC Ank, Bhawch Gujarat]

SCHEDULE - I

- 1. Name & Address of Applicant & Manufacturer :** M/s. Kingsley Engineering Services,  
K-17706/1 Karmatur Chowkdi GIDC  
Ankleshwar, Bharuch, GUJARAT
- 2. Name of the apparatus:** Flame Arrestor, Size 2", in Cast Steel construction for use in Gas Group IIA & IIB atmospheres as per IS: 2148-2004.
- 3. Size:** 2"
- 4. Gas Group:** IIA/IIB as per IS: 2148-2004.
- 5. Material of construction:** Body in MS/SS construction, Bank (Arrester element) in SS 304/SS316 corrugated matrix.
- 6. Quenching diameter:** max 0.5mm.
- 7. Apparatus (Brief Description):**  
**Deflagration 2" Flame Arrester:**

Flame Arrestor is a device, which is generally connected to the pipeline having protected and unprotected sides. The flame arrester prevents any flame travelling from unprotected sided to the protected side of the pipeline.

The Bank Shell (Body) of the Flame Arrester is having two nos. of Banks or arrester elements each of 25mm width. These Bank or arrester elements are made of S.S. 304/316 Corrugated Matrix with quenching diameter (mesh size) not more than 0.5mm. This Bank Shell is fixed between two nos. Bodies in Cast Steel Construction and fixed with 4nos., 3/8" X100long MS Studs with nuts & spring washers. The flange-to-flange length for the flame arrester is 270mm. CAF gasket of 3mm thickness is also provided between Body and Bank Shell on both sides.

27/07/09

## के० ख० एवं ई० अ० सं० परीक्षण प्रकोष्ठ - CIMFR TESTING CELL



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## TEST CERTIFICATE

FORMAT NO.: (CIMFR: DOM, FLP02: F-01)

TC CODE NO.FLP/145/06

EQUIPMENT ID NO. 438A/06

**8. Drawings:** The unit is designed and constructed in accordance with the following drawing:

Drg. No.	Rev.	Date	Title
KES/FA/GA	0	12/06/09	FLAME ARRESTOR

**9. Declaration of applicant/manufacturer as to standards with which the apparatus complies in respect of:**

- (a) As to Flame Arrestor: IS: 11006-1984  
 (b) As to classification to gas group: IS: 2148-2004.

**NOTE:** The CIMFR has however not checked and tested the compliance of the apparatus to any standards other than clause 11.1 Explosion Test of IS: 11006-1984.

SCOPE OF THE CERTIFICATE

The certificate issued by the certifying authority testify that the apparatus has been found to comply with the definition of the flame arrester contained in the relevant Indian standard specification. They do not vouch for the quality of the equipment in any other respect.

***This Institute reserves the right to review, amend or withdraw this 'Test Report' at any time, if considered necessary in the interest of safety.***

22102109

## के० ख० एवं ई० अ० सं० परीक्षण प्रकोष्ठ - CIMFR TESTING CELL



TEST CERTIFICATE

FORMAT NO. (CIMFR/DM/FLP02: F-01)

TC CODE NO.FLP/145/06

EQUIPMENT ID NO. 438A/06

TESTING CELL

**RESULT OF THE EXPLOSION TEST FOR FLAME ARRESTERS**

Date of test: 28.07-2009

**Gas mixture used for testing:** 37% (Hydrogen in air) in air for Gas Gr. IIA/IIB as per IS 2148-2004.

**Explosion test:** The tests were conducted on the above flame arresters as per clause 11.1 of IS 11006-1984.

**No. of tests:** The explosion tests were conducted five times with fresh gas mixture each time by igniting the gas mixture by low energy spark plug/fuse.

**Test results:** In each test it was found that the explosive mixture present in the vent line at the protected side was not ignited. Hence explosion occurred on the unprotected side was unable to travel to the protected side of the vent line through the flame-arrestor.

Sr. No.	Size of Flame arrester	Test reference nos.
1	2" Flame arrester	438A0601 TO 438A0605

**Conclusion:** The **Flame-Arrester, 2" Size**, under reference meets the test requirement of clause 11.1 of IS: 11006-1984.

Reported by

*Rishwakarma*  
(R. K. VISHWAKARMA)  
SCIENTIST

Approved by

*A.K. Singh*  
(A. K. SINGH) 27/07/09  
HEAD OF THE DEPARTMENT

Dated: 27<sup>th</sup> July, 2009  
Flame & Explosion Laboratory,  
Central Mining Research Institute, (CSIR-INDIA)  
Barwa Road, Dhanbad -826001, Jharkhand, India.