

TITLE: Application Procedure for a Suitability Evaluation of Nontraditional Ventilation Controls used in Coal Underground Mines

MSHA Mine Safety and Health Administration, Approval & Certification Center

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## 1.0 PURPOSE

To provide an Application Procedure (SAP) that should be followed by an applicant desiring a Mine Safety and Health Administration (MSHA) "Suitability Rating" for a nontraditional ventilation control (stopping, overcast, or undercast, regulator) for use in underground coal mines. This document outlines application procedures, fee information and summarizes performance requirements used by Approval & Certification (A&CC) personnel to process requests and evaluate ventilation controls, under the spirit of the current regulations, with respect to flammability, strength, and non-combustibility.

## 2.0 SCOPE

- 2.1. This document describes procedures that should be followed by an applicant desiring a "Suitability Number" for a nontraditional ventilation control that is used in underground coal mines. This is a *voluntary* procedure designed to facilitate the evaluation of nontraditional ventilation controls under 30 CFR Part 75.333. A fee is charged.
- 2.2. The Code of Federal Regulations (CFR), Title 30, Part 75.333 outlines strength and non-combustibility requirements for ventilation controls such as overcasts, undercasts, shaft partitions, permanent stoppings and regulators. Part 75.333 requires sealants applied to ventilation controls, to have a flame-spread index of 25 or less when tested according to ASTM E 162-87. Additionally, 75.333 (e)(1)(i) requires nontraditional and new ventilation controls to display equivalent strength when compared to their traditionally accepted counterparts. ASTM E 72-80, Section 12 (Transverse Load - Specimen Vertical) is recognized in this standard as a valid test for making equivalency determinations regarding these designs. Finally, Part 75.333 (e)(1)(ii) requires these same controls to be constructed of noncombustible material.
- 2.3. Upon successful completion of the requirements, MSHA will issue a "Suitability Number" that will be assigned to the ventilation control. This "Suitability Number" will be required to be marked on every subject underground ventilation control to confirm its' suitability.

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### 3.0 REFERENCES

- 3.1. ACRI5001 "Performance Criteria and Test Guidelines for Evaluation of Ventilation Controls in Underground Coal Mines."
- 3.2. ASTM E 72-80, "Conducting Strength Tests of Panels for Building Construction."
- 3.3. ASTM E 162-87, "Surface Flammability of Materials Using a Radiant Heat Energy Source."
- 3.4. ASTM E 119-88. "Test Methods for Fire Tests of Building Construction and Materials."
- 3.5. American Society for Testing and Materials (ASTM) -1916 Race St. Philadelphia, PA 19103.
- 3.6. Title 30 Code of Federal Regulations (30 CFR) Part 75.303 and Part 75.333.

### 4.0 DEFINITIONS

- 4.1. ASTM - American Society for Testing and Materials - A nonprofit organization devoted to the development of voluntary full consensus standards for materials, products, systems, and services and the promotion of related knowledge.
- 4.2. Company assigned application code number - A unique six digit number assigned by the applicant that is used for the tracking of the application paperwork.
- 4.3. MSHA assigned ID number - An identification number (not an acceptance number) that identifies the formulation of a component that is used in producing a finished product, but made by another manufacturer.
- 4.4. Noncombustible material - A material, which when used to construct a ventilation control, results in a control that will continue to serve its intended function for one hour when subjected to a fire test incorporating an ASTM E 119-88 time/temperature heat input, or equivalent.
- 4.5. "Suitability Number" - A number assigned to a ventilation control that indicates that the control has met the requirements of this procedure, and

can be considered as meeting the applicable requirements of 30 CFR Part 75.333.

## 5.0 APPLICATION PROCEDURE

### 5.1. Fees

5.1.1. An hourly fee is charged to process an application. Following the receipt of the application, MSHA will advise the applicant in writing of the estimated charges to process the application. The applicant then must sign and return the letter agreeing to the estimated charges before processing can begin. *This estimate does not include travel charges for witnessing a test when required.* An incomplete application requiring further correspondence with the applicant will take longer to process. Therefore, it is to the applicant's advantage to submit a complete application with all the information and data requested in this procedure. If final total charges are less than the estimated amount, the lesser amount will be charged.

5.1.2. Applicants may submit with their applications, a preauthorization notice. The preauthorization notice is a statement by the applicant authorizing MSHA to expend a stated amount of money in evaluating the application, eliminating the need for MSHA to provide an estimate letter. If final total charges are less than the preauthorize amount, the lesser amount will be charged.

### 5.2. Performance Criteria to be considered suitable

5.2.1. Surface Flame Spread - In accordance with 30 CFR Part 75.333 (f), sealants applied to ventilation controls must have an average flame-spread index of 25 or less when tested according to the parameters of ASTM E 162-87 and ACRI5001.

5.2.1.1. In addition, at the discretion of MSHA, other materials used in the construction of a ventilation control may be required to demonstrate an average flame spread of 25 or less when tested according to the parameters of ASTM E 162-87 and ACRI5001. Examples of these types of materials include, but are not limited to polymers such as plastics and expanded foams. [Contact the A&CC for guidance in this area].

- 5.2.2. Strength - In accordance with 30 CFR Part 75.333 (e)(1)(i), the ventilation control, when tested according to the parameters of ACRI5001 (ASTM E72), must have an average transverse strength of at least 39 pounds per square foot.
- 5.2.3. Non-combustibility (30 CFR Part 75.301) - In accordance with 30 CFR Part 75.333 (e)(ii), the ventilation control is tested for non-combustibility according to the parameters of ACRI5001 (ASTM E 119) and must meet the following:
- 5.2.3.1. The control remains in place during the one hour period of the exposure.
- 5.2.3.2. The control does not permit the passage of visible flames during the one hour period of the exposure.
- 5.2.3.3. Openings in excess of two square inches do not develop in the control during the one hour period of the exposure.
- 5.3. Procedure for Applying for a "Suitability Number"
- 5.3.1. Only an individual or organization that manufactures or controls the assembly of a product may submit an application for a suitability number. The information provided by the applicant for Section 5.7, "Quality Assurance" of this procedure must demonstrate the applicant has control of the manufacturing process.
- 5.3.2. A sample Application Form (Attachment 1) is attached to this procedure. The application should be completed in full and be signed by an authorized representative of the company.
- 5.3.3. Each application should be identified by a unique code number assigned by the applicant. The code number must be six numerical digits and be placed on the initial application, and all subsequent correspondence. See Section 4.2.
- 5.3.4. A separate application should be submitted for each proposed ventilation control design.
- 5.3.5. All sealants used must have been issued a flame spread suitability rating according to Section 5.2.1. If used for strength enhancing such as on dry-

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stacked block, the sealant must have been tested according to Section 5.2.2. If the sealant has been issued an MSHA "IC" acceptance number, the number should be listed on the application.

5.3.6. Address the application to:

Chief, Approval and Certification Center

Mine Safety and Health Administration

765 Technology Drive

Triadelphia, WV 26059

5.4. Formulation

If organic materials or sealants are part of the proposed control construction, each component should be specified by its chemical or generic name, along with its percentage (weight) and tolerance. A component formulation that has been registered with MSHA may be identified by furnishing the MSHA assigned ID number; however, each additional ingredient the manufacturer adds to the registered formulation (ID number) should be identified by the chemical or generic name, along with its percentage (weight) and tolerance.

5.5. Required Test Reports

5.5.1. If the proposed control incorporates a sealant material that is applied to one or both exposed faces of the control and the sealant has not been previously found suitable by MSHA, the applicant must submit ASTM E162-87 test results for this product. The tests should be conducted as outlined in ACRI5001.

5.5.1.1. At the discretion of MSHA the applicant may be required to submit ASTM E 162-87 test results for other materials used in the construction of the control. The tests should be conducted as outlined in ACRI5001.

5.5.2. The applicant must submit results of testing conducted according to ASTM E 72-80 - Section 12, transverse loading of a vertical specimen. The tests should be conducted as outlined in ACRI5001.

- 5.5.3. The applicant must submit results of ASTM E 119 testing, or equivalent, conducted to determine the non-combustibility properties of the assembly. The tests should be conducted as outlined in ACRI5001. Testing details must be provided to MSHA for concurrence prior to testing. The report must include the following:
- 5.5.3.1. Detailed information conceding the construction including manufacturers' of system components and their addresses, including block, coating, reinforcements, etc. A construction drawing of the assembly must also be included in the laboratory report.
- 5.5.3.2. Results of a post test fire damage inspection of the assembly *which includes photographs of both the exposed and unexposed sides of the assembly* and qualitative and quantitative descriptions of the damage incurred by the fire exposure. These descriptions should include recording of extent of damage to the assembly, char damage, (if combustible constructions are tested) size and locations of any holes or openings that have developed, reporting of areas of the assembly that have been compromised, characterized by sagging, bending or other physical damage.
- 5.5.3.3. A statement that indicates whether or not visible flames were observed passing through the assembly during the period of the test. The report must be signed by a responsible official.
- 5.5.3.4. A video tape of the unexposed side of the control during the one hour exposure with superimposed elapse time.
- 5.5.4. The applicant should submit sales literature as it becomes available.
- 5.5.5. The ventilation control testing outlined in Sections 5.2.1, 5.2.2 & 5.2.3 of this procedure must be performed by a test laboratory acceptable to MSHA.
- 5.5.6. MSHA reserves the right to witness all testing. Therefore, the applicant must inform MSHA with sufficient advanced notice of the testing schedule, so that MSHA can witness the tests if desired.
- 5.5.7. MSHA reserves the right to waive, modify, or require additional testing to ensure that health and safety concerns are being met.**

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#### 5.6. Material Safety Data Sheet (MSDS) Information

The applicant must provide MSDS sheets for all construction materials that comprise the ventilation control.

#### 5.7. Quality Assurance

Applications should include information that manufacturers will use to maintain product compliance with the performance criteria. This information should include, as a minimum, the following items:

- 5.7.1. Procurement procedures for the components or ingredients of the control including inspection procedures.
- 5.7.2. Manufacturing practices to maintain the composition of the components.
- 5.7.3. Procedures for record keeping, such as test results, etc.
- 5.7.4. Product sales literature.

#### 5.8. Post-Suitability Evaluation Audit

As part of this evaluation, MSHA reserves the right to request components of the ventilation control from the applicant for evaluation at no cost to MSHA for a post suitability evaluation audit. Samples of each component will not be requested more than once a year, except for cause.

#### 5.9. Issuance of Suitability Number

- 5.9.1. MSHA will provide the applicant with a letter of suitability or non suitability upon completion of its evaluation.
- 5.9.2. An applicant may request a modification (extension request) to a previously issued suitability letter for minor changes in the ventilation control's construction or composition. The need for testing for these types of actions will be determined by MSHA.
- 5.9.3. A product should not be advertised as "recommended," "approved," "accepted" or "sanctioned" by MSHA. However, it may be referred to as "Suitable as a Ventilation Control."

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- 5.9.4. MSHA reserves the right to revoke a suitability number and require the ventilation control's removal from underground mines should, if in MSHA's opinion, it is found to be unsafe, creates a health hazard, or otherwise is not in conformance with the performance criteria.
- 5.9.5. All construction details, formulations and test results, or other information designated as proprietary and/or confidential, will be regarded as such with the exception of the company name, address, phone number, product name, and intended product use.

(Attachment 1)

APPLICATION FORM  
FOR  
NEW OR NONTRADITIONAL VENTILATION CONTROLS  
(30 CFR Part 75.333)

Date \_\_\_\_\_

1. Company Name \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Telephone No.: \_\_\_\_\_ FAX No. \_\_\_\_\_  
E-Mail Address \_\_\_\_\_  
Company Representative \_\_\_\_\_
2. Company Assigned Application No. \_\_\_\_\_  
(Six numerical digits)
3. Product Trade Name/Description (Include all variations)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. General Description of ventilation control potential use and construction  
(detailed description must be included with the ASTM E119 test results)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Formulation of all materials and sealants:

Ingredient	% by Weight	Tolerance (+-%)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

6. Statement concerning the compatibility of the ventilation control construction materials with mine water:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7a. ASTM E 162-87 sealant test results attached (Yes/No) \_\_\_\_\_  
(Test required if a given sealant is an integral part of the construction and has not been issued a suitability letter or an IC acceptance number by MSHA)

7b. ASTM E 162-87 test results attached, if required, for other construction materials (Yes/No) \_\_\_\_\_

8. ASTM E 72-80 test results attached (Yes/No) \_\_\_\_\_  
(If No, attach explanation.)

9. ASTM E 119 test results attached (Yes/No) \_\_\_\_\_  
(If No, attach explanation.)

10. A Material Safety Data Sheet (MSDS) for each of the final end products attached (Yes/No) \_\_\_\_\_  
(If No, attach explanation.)

11. Installation instruction attached (Yes/No) \_\_\_\_\_  
(If No, attach explanation.)
12. Quality assurance information attached (Yes/No) \_\_\_\_\_  
(If No, attach explanation)
13. Sales literature attached (Yes/No) \_\_\_\_\_  
(Sales literature may be sent later when available.)
14. TOXICITY AND QUALITY ASSURANCE STATEMENT

I certify that the ventilation control \_\_\_\_\_  
(Trade Name)

in its final form presents no known toxic hazard under normal use conditions.  
Furthermore, I certify, that we will assure product compliance for this product  
with respect to all specifications submitted to MSHA, A&CC.

Signed \_\_\_\_\_  
(Authorized Company Official)

Title \_\_\_\_\_

Date \_\_\_\_\_