Alonzo M. Poteet III, Associate Deputy Administrator for Congressional and Intergovernmental Affairs
Robert R. Rhyne, D.D.S., Assistant Chief Medical Director for Dentistry
Michael Rudd, Director, Office of Personnel and Labor Relations
H. Robert Saldivar, Director, Office of Acquisition and Materiel Management
Richard G. Thomas, Executive Assistant to the Chief Medical Director
Robert W. Schultz, Deputy Associate Deputy Administrator for Logistics
Donal B. Thompson, Regional Director, Southeastern Region
John Vogel, Chief Benefits Director
Albert B. Washko, Regional Director, Northeastern Region
Daniel H. Winship, M.D., Associate Deputy Chief Medical Director
Charles V. Yarbrough, Director, Management Support Office
Albert Zamberlan, Regional Director, Great Lakes Region.

Dated: November 9, 1988.

Thomas K. Turnage,

Administrator.

[FR Doc. 88-26692 Filed 11-17-88; 8:45 am]

BILLING CODE 8320-01-M

Sunshine Act Meetings

Federal Register
Vol. 53, No. 223
Friday, November 18, 1988

This section of the FEDERAL REGISTER contains notices of meetings published under the "Government in the Sunshine Act" (Pub. L. 94-409) 5 U.S.C. 552b(e)(3).

FEDERAL RESERVE SYSTEM BOARD OF GOVERNORS

TIME AND DATE: 10:00 a.m., Wednesday, November 23, 1988.

PLACE: Marriner S. Eccles Federal Reserve Board Building, C Street entrance between 20th and 21st Streets, NW., Washington, DC 20551.

STATUS: Open.

MATTERS TO BE CONSIDERED:

1. Proposed 1989 Federal Reserve Board budget.
2. Any items carried forward from a previously announced meeting.

Note.—This meeting will be recorded for the benefit of those unable to attend. Cassettes will be available for listening in the Board's Freedom of Information Office, and copies may be ordered for $5 per cassette by calling (202) 452-3684 or by writing to: Freedom of Information Office, Board of Governors of the Federal Reserve System, Washington, DC 20551.

CONTACT PERSON FOR MORE INFORMATION: Mr. Joseph R. Coyne, Assistant to the Board; (202) 452-3204.

Date: November 16, 1988.

James McAfee,

Associate Secretary of the Board.

[FR Doc. 88-26842 Filed 11-16-88; 3:40 pm]

BILLING CODE 6210-01-M

FEDERAL RESERVE SYSTEM BOARD OF GOVERNORS

TIME AND DATE: Approximately 10:30 a.m., Wednesday, November 23, 1988, following a recess at the conclusion of the open meeting.

PLACE: Marriner S. Eccles Federal Reserve Board Building, C Street entrance between 20th and 21st Streets, NW., Washington, DC 20551.

STATUS: Closed.

MATTERS TO BE CONSIDERED:

1. Personnel actions (appointments, promotions, assignments, reassignments, and salary actions) involving individual Federal Reserve System employees.
2. Any items carried forward from a previously announced meeting.

CONTACT PERSON FOR MORE INFORMATION: Mr. Joseph R. Coyne, Assistant to the Board; (202) 452-3204. You may call (202) 452-3207, beginning at approximately 5 p.m. two business days before this meeting, for a recorded announcement of bank and bank holding company applications scheduled for the meeting.

Date: November 16, 1988.

James McAfee,

Associate Secretary of the Board.

[FR Doc. 88-26843 Filed 11-16-88; 3:40 pm]

BILLING CODE 6210-01-M

SECURITIES AND EXCHANGE COMMISSION

Agency Meeting

Notice is hereby given, pursuant to the provisions of the Government in the Sunshine Act, Pub. L. 94-409, that the Securities and Exchange Commission will hold the following meeting during the week of November 21, 1988.

A closed meeting will be held on Wednesday, November 23, 1988, at 10:00 a.m.

The Commissioners, Counsel to the Commissioners, the Secretary of the Commission, and recording secretaries will attend the closed meeting. Certain staff members who are responsible for the calendared matters may also be present.

The General Counsel of the Commission, or his designee, has certified that, in his opinion, one or more of the exemptions set forth in 5 U.S.C. 552b(c)(4), (8), (9)(A) and (10) and 17 CFR 200.402(a)(4), (8), (9)(i) and (10), permit consideration of the scheduled matters at a closed meeting.

Commissioner Fleischman, as duty officer, voted to consider the items listed for the closed meeting in closed session.

The subject matter of the closed meeting scheduled for Wednesday, November 23, 1988, at 10:00 a.m., will be:

Institution of injunctive actions.
Settlement of injunctive actions.
Institution of administrative proceedings of an enforcement nature.
Settlement of administrative proceedings of an enforcement nature.
Amend administrative proceeding of an enforcement nature. Opinions.

At times changes in Commission priorities require alterations in the scheduling of meeting items. For further information and to ascertain what, if any, matters have been added, deleted or postponed, please contact: John Kincaid at (202) 272-2300.

Jonathan G. Katz,

Secretary.

November 14, 1988.

[FR Doc. 88-26756 Filed 11-15-88; 4:27 pm]

BILLING CODE 8010-01-M

Corrections

Federal Register
Vol. 53, No. 223
Friday, November 18, 1988

This section of the FEDERAL REGISTER contains editorial corrections of previously published Presidential, Rule, Proposed Rule, and Notice documents and volumes of the Code of Federal Regulations. These corrections are prepared by the Office of the Federal Register. Agency prepared corrections are issued as signed documents and appear in the appropriate document categories elsewhere in the issue.

DEPARTMENT OF AGRICULTURE

7 CFR PART 1c

DEPARTMENT OF ENERGY

10 CFR PART 745

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

14 CFR PART 1230

DEPARTMENT OF COMMERCE

15 CFR PART 27

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR PART 1028

INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

Agency for International Development

22 CFR PART 225

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

24 CFR PART 60

DEPARTMENT OF JUSTICE

28 CFR PART 46

DEPARTMENT OF DEFENSE

32 CFR PART 219

DEPARTMENT OF EDUCATION

34 CFR PART 97

VETERANS ADMINISTRATION

38 CFR PART 16

ENVIRONMENTAL PROTECTION AGENCY

40 CFR PART 26

DEPARTMENT OF HEALTH AND HUMAN SERVICES

45 CFR PART 46

NATIONAL SCIENCE FOUNDATION

45 CFR PART 690

DEPARTMENT OF TRANSPORTATION

49 CFR PART 11

Federal Policy for the Protection of Human Subjects

Correction

In proposed rule document 88-25552 beginning on page 45661 in the issue of Thursday, November 10, 1988, make the following corrections:

1. On page 45661, in the first column, in the heading to the document, the CFR citation for the Department of Agriculture and the title for the Veterans Administration should read as set forth above.

2. On the same page, in the second column, in the third line, "Veterans' " should read "Veterans".

3. On the same page, in the third column, in the first complete paragraph, in the 18th line, "Veterans' " should read "Veterans".

4. On page 45665, in the first column, in the second complete paragraph, in the seventh line, "accepted" was misspelled.

5. On the same page, in the second column, in the sixth line, "mischievous" was misspelled.

6. On page 45669, in the first column, below "**INTERNATIONAL DEVELOPMENT COOPERATION AGENCY**", and above the CFR cite, add "Agency for International Development".

7. On page 45676, in the third column, in the first complete paragraph, in the first line, "reasonably" was misspelled.

BILLING CODE 1505-01-D

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 658

[Docket No. 80990-8227]

Shrimp Fishery of the Gulf of Mexico

Correction

In rule document 88-25917 beginning on page 45270 in the issue of Wednesday, November 9, 1988, make the following correction:

§ 658.22 [Corrected]

On page 45272, in the first column, in the last line, in § 658.22(b), "24˚46 7'N. latitude," should read "24˚46.7'N. latitude,".

BILLING CODE 1505-01-D

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 704

[OPTS-82032A; FRL-3466-5]

EDTMPA and Its Salts; Submission of Notice of Manufacture or Import

Correction

In rule document 88-24396 beginning on page 41335 in the issue of Friday, October 21, 1988, make the following corrections:

1. On page 41336, in the first column, in the table, under "Chemical name", in the 2nd, 3rd, 4th, 5th, 7th, 9th, 11th, 13th, 14th, 16th, 17th, 19th, and 21st entries, in the first line of each entry, "ethanediby" should read "ethanediyl".

2. On the same page, in the same column, in the table, under "Chemical name", in the eighth entry, in the fourth line, "O''''']" should read "O''''']-".

BILLING CODE 1505-01-D

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 716

[OPTS-84027; FRL-3292-4]

Preliminary Assessment Information and Health and Safety Data Reporting; Addition of Chemicals

Correction

In rule document 87-26555 beginning on page 44826 in the issue of Friday, November 20, 1987, make the following correction:

§ 716.35 [Corrected]

On page 44828, in the third column, in the heading of § 716.35, "copies" should read "lists".

BILLING CODE 1505-01-D

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

21 CFR Parts 50 and 56

[Docket No. 87N-0032]

Protection of Human Subjects; Informed Consent; Standards for Institutional Review Boards for Clinical Investigations

Correction

In proposed rule document 88-25553 beginning on page 45678 in the issue of Thursday, November 10, 1988, make the following corrections:

1. On page 45679, in the second column, in paragraph 3., in the ninth line, "Departmen tof Agriculture" should read "Department of Agriculture"

2. On page 45680, in the first column, in the fourth complete paragraph, in the seventh line, "member ship" should read "membership".

BILLING CODE 1505-01-D

federal register

Friday
November 18, 1988

Part II

Department of Labor

Mine Safety and Health Administration

30 CFR Part 15

Requirements for Approval of Explosives and Sheathed Explosive Units; Final Rule

DEPARTMENT OF LABOR

Mine Safety and Health Administration

30 CFR Part 15

Requirements for Approval of Explosives and Sheathed Explosive Units

AGENCY: Mine Safety and Health Administration, Labor.

ACTION: Final Rule.

SUMMARY: This rule revises the Mine Safety and Health Administration's (MSHA) existing regulations for approval of explosives and adds new requirements for approval of sheathed explosive units. The revisions upgrade existing provisions consistent with current technology, eliminate duplicative and unnecessary provisions, reorganize the existing requirements, and provide alternative methods of compliance where possible.

EFFECTIVE DATES: This final rule is effective January 17, 1989. However, those manufacturers proceeding under the provisions of the previous rule may file requests for approval or extension of approval of explosives under that rule until November 20, 1989.

FOR FURTHER INFORMATION CONTACT: Patricia W. Silvey, Director, Office of Standards, Regulations and Variances, MSHA, 4015 Wilson Boulevard, Room 613, Arlington, Virginia 22203, (703) 235–1910.

SUPPLEMENTARY INFORMATION:

I. Background

MSHA is revising the existing requirements for approval of explosives and adding new requirements for approval of sheathed explosive units. These revisions are issued pursuant to section 508 of the Federal Mine Safety and Health Act of 1977.

On July 9, 1982, MSHA published an Advance Notice of proposed Rulemaking (ANPRM) in the **Federal Register** (47 FR 30025) which announced a comprehensive review of the underground coal mining standards in 30 CFR Part 75 and solicited public comments. As part of the review, MSHA specifically sought comment on blasting and explosives standards and related approval regulations.

On June 5, 1984, MSHA published a notice in the **Federal Register** (49 FR 23281) which announced the availability of its preproposal draft of revisions to the approval requirements for explosives, sheathed explosive units, and related blasting equipment, and scheduled a public conference. The public conference was held July 11, 1984, in Pittsburgh, Pennsylvania and was well attended by representatives of the mining community. MSHA received written comments regarding its preproposal draft from affected manufacturers and other segments of the mining community.

After reviewing the comments received in response to the preproposal draft, MSHA published a proposed rule on November 12, 1986, in the **Federal Register** (51 FR 41046). The proposal set out revisions to the existing regulations for approval of explosives in Part 15 and added new requirements for approval of sheathed explosive units.

On March 26, 1987 (52 FR 9670), MSHA published a notice of public hearing which outlined the major issues raised during the comment period. A public hearing was held April 22, 1987 in Bruceton, Pennsylvania during which further comment on the proposal was received. A transcript of the proceeding was taken and made available for public inspection. Following the public hearings, interested persons were allowed to submit supplementary statements and data until the record closed on May 15, 1987.

MSHA reviewed all written and oral statements submitted in response to the proposed rule and at the public hearing. Comments were received from all segments of the mining community including explosive manufacturers, trade associations and representatives of miners. This final rule was developed after a full evaluation of the entire public record.

The Agency's final rule addresses the comments received and is consistent with Executive Order 12291, the Regulatory Flexibility Act, and the Paperwork Reduction Act.

II. Discussion and Summary of the Final Rule

The use of explosive in underground coal mines and certain underground metal and nonmetal gassy mines continues to present a potentially serious risk of injuries and death to miners. One major hazard associated with the use of explosives is the accidental ignition of mine gases and coal dust.

The use of explosives approved as permissible reduce the potential for igniting flammable mixtures of methane gas or coal dust that may be present in areas where blasting is performed. The flames produced by the detonation of approved explosives are significantly shorter in duration and length than black blasting powder or nonapproved dynamites which were primarily used in blasting operations before approved explosives were required for use undergound.

MSHA's existing regulations governing the approval of explosives have not been revised since 1961. Since that time, technological advances have led to the development of new types of explosives suitable for use in underground mines. Analytical techniques used by the Bureau of Mines in testing and evaluating explosives for MSHA have advanced comparably. This final rule updates the existing regulations to reflect this state-of-the-art technology and deletes obsolete provisions.

The final rule establishes three subparts in this Part 15. Subpart A contains general approval procedures and requirements that are applicable to all subparts. Subpart B revises the technical requirements for the testing and evaluation of explosives and Subpart C establishes new technical requirements for the approval of sheathed explosive units or other units to be fired outside the confines of a borehole.

Subpart B contains a new gallery test which provides for evaluation of explosives under conditions that are more representative of actual conditions in underground mines. Other provisions revise the existing requirements for toxic gases that are produced by detonation of explosives and establish a new method for calculating the equivalent volume of various gases relative to carbon monoxide. This is based on the threshold limit values, time weighted average (TLV–TWA) included for these gases in the chemical substances section of the publication of the American Conference of Governmental Industrial Hygienists (ACGIH) entitled "TLV's, Threshold Limit Values and Biological Exposure Indices for 1988–1989 ('TLV Booklet')."

The provisions in Subpart C are new and establish requirements for the approval of sheathed explosive units or other units to be fired outside the confines of a borehole. The sheathed unit, intended for use without being confined in a borehole, is designed so that it will not ignite a flammable mixture of methane and/or coal dust when fired. It has been developed for use in dislodging loose roof slabs and overhangs, rockfall leveling, slab or boulder breaking and in other situations where the unconfined application of explosives is appropriate to improve mine conditions.

In the preamble to the proposed rule for Part 15, MSHA referenced its rulemaking on 30 CFR Part 7. There, the Agency proposed that for approval of

certain products the applicant or a third party selected by the applicant would conduct the required testing according to test procedures set forth by the Agency and require certification of test results by the applicant. MSHA specifically solicited comments as to whether the Agency should continue testing for approval of explosives and sheathed explosive units or if the testing under Part 15 might more appropriately be conducted by applicants or third parties and, therefore, included as a subpart under Part 7. The Agency was especially interested in information concerning the industry's capability with regard to facilities for conducting the required tests for approval of explosives and sheathed explosive units. In responding to this issue commenters stated that explosives and sheathed explosive units should not be included as products under Part 7. They believed that the concept of applicant or third-party testing would not be feasible in the explosives industry at this time since no manufacturer or third-party test facility had the capability to perform all the required tests. Therefore, as recommended by commenters, the final rule provides for continued Agency testing of products addressed by Part 15.

The final rule deletes existing § 15.24 concerning miscellaneous tests as those tests were used for research purposes and were not approval related. It also deletes the existing provisions in Part 15 which describe the blasting practices that must be followed in underground coal mines. These provisions are addressed in revisions to the safety standards in 30 CFR Part 75 which are being published simultaneously with this final rule.

The term "permissible" which is used in the existing standards was replaced in the proposal with the term "approved." Commenters objected to the change. They stated that the term "permissible" has been used for over 75 years and is well recognized throughout the mining industry. MSHA continues to believe that the terminology used to identify products which have been examined by the Agency to determine conformity with regulatory requirements must be standardized. The term which most appropriately reflects MSHA's action in this area is "approved." Therefore, the phrase "approved explosive" will be used in revised Part 15 in lieu of "permissible explosive." However, since explosives approved as permissible under the Part 15 regulations in effect prior to the effective date of this rule may continue to be manufactured and used in underground mines requiring approved explosives, the safety standard in Part 75 will define the term "permissible explosive" as one approved by MSHA. Further, a definition of "approval" consistent with the definition of this term in this part is added to Subpart N of Part 75.

Tests and evaluations made under this part will be performed for MSHA by the Bureau of Mines, U.S. Department of the Interior (Bureau). The Bureau testing facility is located near Pittsburgh, Pennsylvania.

III. Discussion of the Subparts

The following section-by-section analysis discusses each provision of the subparts of the final rule and addresses the comments received on the proposal.

Subpart A—General Provisions

Section 15.1 Purpose and effective dates.

This provision, derived from existing § 15.1, revises and simplifies the statement of purpose and more accurately reflects the scope of Part 15. It clarifies that the requirements set forth in the final rule are for approval of explosives and sheathed explosives units for use in underground coal mines and certain underground metal and nonmetal gassy mines. It also specifies the effective date applicable to the explosives and sheathed explosive units program. MSHA realizes that applicants need a phase-in or transition period when changing from previous to new revised approval regulations for products and two approaches for handling the transition were delineated in the proposal. The Agency proposed a delay of one year after publication of the final rule for the explosives approval requirements in Subpart B to take effect. However, Subpart A containing general provisions and Subpart C setting approval requirements for sheathed explosive units were to be effective 30 days after publication of the final rule so sheathed units could be made available for use in underground mines as quickly as possible. Alternatively, MSHA indicated it was considering making all subparts of the regulation, including the new revised explosives requirements in Subpart B, take effect 30 days after publication of the final rule. However, manufacturers with explosives applications in process could file requests for approval or extension of approval under the previous regulations until one year after the effective date of the new regulations. During this one-year phase-in period, applicants could submit an approval request for explosives under either the previous regulation or the new revised regulation.

The comments received on this question generally favored the second approach. Commenters stated that it provided manufacturers with greater flexibility since they could complete applications currently in process under the previous regulation while at the same time planning compliance with or even submitting applications under the new regulations immediately. In addition, they favored this approach since it followed the transition procedure set forth in MSHA's Part 7 regulations.

Consistent with the comments as well as with the approach taken on this issue in Part 7, the final rule provides that all subparts of the revised Part 15 regulation take effect 60 days after publication. It also provides that manufacturers proceeding under the provisions of the previous regulation may request approval or extension of approval of explosives under that regulation until one year from the effective date of the revisions. After the one-year period, all applications for approval or extension of approval of explosives or sheathed explosive units will be evaluated under the revised Part 15. The final rule also provides that explosives issued an approval under regulations in place prior to the effective date of these revisions, and in compliance with those regulations, could continue to be manufactured as long as no changes were made. Changes to previously approved explosives must be submitted as new approvals under the revisions to Part 15 set out in this final rule. This provision was added in response to commenters who sought clarification as to how the Agency intended to treat previously approved explosives manufactured in compliance with prior explosives approval regulations. With regard to the question of what standards would be used in auditing these explosives, MSHA will audit explosives based on the technical requirements upon which the approval was issued. Language reflecting this position is incorporated in § 15.10 Post-Approval Product Audit.

Section 15.2 Definitions

The following definitions apply to Part 15 approvals. They are designed to clarify the requirements of Part 15 and respond to the issues identified by commenters.

Applicant. This term, which is derived from the existing standards, identifies the party seeking approval of an explosive or sheathed explosive unit under this part.

Approval. This term replaces the existing phrase "certificate of approval."

It is used to describe a written document issued by MSHA which states that an explosive or explosive unit meets the requirements of this part and which authorizes the use of an approval marking identifying the explosive or explosive unit as approved as permissible.

Explosive. This definition revises the existing definition to more clearly indicate the type of products for which this part is intended. The existing definition's reference to "blasting devices as defined in Part 17 of this subchapter," has not been included in the final rule since these devices are no longer manufactured or used in underground mines.

Extension of approval. This phrase, which is new, is used to describe a written document issued by MSHA that states that a change to a previously approved explosive or sheathed explosive unit meets the requirements of this part. It is based on existing terminology that is used when changes are made on products approved in accordance with 30 CFR, Parts 18 through 36.

Minimum product firing temperature. This term is new and means the lowest product temperature at which an explosive is approved for use. It was not included in the proposal, but was added to the final rule in response to commenters who sought clarification as to whether firing temperature in the air-gap sensitivity test referred to product temperature or ambient temperature.

Post-approval product audit. This term is new and is used to describe MSHA's examination and testing, or both, of approved explosives or explosive units to determine whether those products meet the technical requirements and have been manufactured as approved. Some commenters stated that it was unclear what was meant by the phrase "to determine whether those products meet the requirements of the approval," used in the proposed definition for post-approval product audit. The final rule revises the proposed definition to clarify that the Agency will conduct such audits to determine whether the products meet the technical requirements in Part 15 and have been manufactured as approved.

Some commenters recommended that the term "audit" be replaced with the term "check." They stated that the word "audit" could be interpreted differently in the future and subject manufacturers to extensive audits. The Agency believes that the term "audit" more accurately describes the process that will be used to determine compliance with these requirements.

Sheath. This term, which is new, is used to describe that portion of a sheathed explosive unit which will be dispersed to form a flame inhibiting cloud upon firing of the explosives contained in the sheathed unit.

Sheathed explosive unit. This term is new and is used to describe an explosive device that can be fired without being confined in a borehole. It is designed so that it will not ignite a flammable mixture of methane or coal dust when fired.

Test detonator. This term has a new definition which identifies the types of detonators that will be used to test explosives submitted for approval under this part The existing definition which specifies that these detonators contain a base charge of 0.25±0.02 gram of pentaerythritol tetranitrate (PETN) is replaced since this strength detonator is no longer being manufactured for commercial use.

Several commenters recommended that a "test detonator" be defined as an "instantaneous electric detonator with a copper-alloy shell and iron or copper leg wires that is commercially available for use in underground coal mines." They further recommended that a test detonator contain "a base charge of 0.40–0.45 gram of pentaerythritol tetranitrate (PETN) pressed to a specific gravity of 1.4 g/cc and primed with standard weight of primer." These commenters stated that since test detonators are to be used for determining air-gap sensitivity of an explosive, it is imperative that detonators with a standard base charge be specified.

Detonators with a base charge of 0.40–0.45 gram PETN, which is a No. 8 strength detonator, is the minimum strength detonator currently being manufactured in the United States for underground gassy mines. Detonators that have an initiating strength equivalent to that of a detonator with a base charge of 0.40–0.45 gram PETN will be used by the Agency to conduct the appropriate tests under this final rule. Specialized systems using technology other than that identified in this rule will be addressed through the new technology provisions in §§ 15.20(i) and 15.30(g). The safe performance of approved explosives or shethed units can be significantly affected if the proper strength detonator is not used. Therefore, a provision has been added in § 15.7 on approval marking to require the labeling for explosives and sheathed units to state the test detonator strength used in the approval testing. This will assist operators in selecting the proper strength detonator to use with explosives and sheathed explosive units and will also assist approval holders by ensuring that the same strength detonator is used by MSHA for approval and audit testing.

During the course of rulemaking on Part 15, a commenter urged that MSHA develop approval regulations for detonators used in the initiation of approved explosives in underground mines. MSHA, after considering the need to establish approval requirements for detonators, will seek to include an approval schedule for detonators in its regulatory program.

The definitions in the existing regulations for "basic specifications," "poisonous gases," "ingredients," "Bureau," "MESA," and "MSHA" are not included in the final rule because they are commonly known throughout the mining community.

Section 15.3 Observers at tests and evaluations.

This standard is derived from existing § 15.9 and is intended to protect proprietary information which could be available to observers at tests and evaluations conducted under this part.

The final rule provides that only MSHA and Bureau of Mines personnel, representatives of the applicant, and such other persons agreed upon by MSHA and the applicant are permitted to be present during the tests and evaluations conducted under Part 15. In response to comments, § 15.3 specifies that "MSHA and Bureau of Mines personnel" instead of "government personnel" may be present during testing and evaluation. This change reflects MSHA's view that only necessary persons be present when the tests and evaluations are performed. This will minimize the possibility of any inadvertent release of proprietary information.

As was indicated in the proposal, existing § 15.8 which addresses consultation between a prospective applicant and personnel at MSHA's Approval and Certification Center has been deleted in the final rule. A commenter raised concerns as to whether MSHA intends to continue providing appropriate consultation services at no cost to the applicant. Manufacturers may consult with MSHA regarding the test procedures and requirements for explosives and sheathed explosive units prior to

submission of an application for approval under Part 15. However, once an application is received for action, costs will be charged pursuant to Part 5, including the time attributable to consultation.

Section 15.4 Application procedures and requirements.

This section, which is derived from existing §§ 15.3 and 15.15, sets forth the procedures and requirements for requesting approval of explosives or sheathed explosive units. It does not contain specific provisions concerning the fees to be charged for approval of explosives and sheathed explosive units. Instead, § 15.4(b) requires that fees calculated pursuant to Part 5, Fees for Testing, Evaluation, and Approval of Mining Products, (52 FR 17506) be submitted with each application for approval or extension of approval.

In a separate rulemaking, MSHA published a new Part 5 (Fees for Testing, Evaluation, and Approval of Mining Products) in the **Federal Register** on May 8, 1987 (52 FR 17506). That final rule revised the Agency's existing system of charging user fees for the testing, evaluation and approval of products manufactured for use in underground mines. Fees for MSHA processing of an application under Part 15 will be subject to an hourly rate charge for evaluation and flat rate charges for tests. On hourly rate actions, applicants will be billed for the fee when processing of the action is completed. The final fee will include, in addition to the hourly rate and flat test rate charges, actual travel and transportation expenses incurred when testing and evaluation requires the investigator to travel to the manufacturing or installation site. The Agency may consider converting to a flat fee schedule, payable with the application, after reviewing its hourly rate data.

MSHA will charge $33 per hour and an application fee of $100 for processing requests for approval or extension of approval for explosives under Subpart B and sheathed units under Subpart C. Flat rate fees for tests are shown in the table below. The test fees for explosives are revised from those listed in the final rule for Part 5 based on the revisions to the approval regulation. Test fees for sheathed units are new rates developed to recover costs of processing and testing. The fee schedule published in May 1987 will apply to applications for approval or extension of approval filed under the previous Part 15 regulations.

Part 15—Fees For Approval of Explosives and Sheathed Explosive Units

APPROVAL OF EXPLOSIVES

Test	Fee
Weigh-in	$420
Physical examination	295
Chemical analysis	1,797
Air Gap: Minimum product firing temperature	418
Air Gap: Room temperature	320
Pendulum friction	148
Detonation rate	320
Gallery Test 7	4,917
Gallery Test 8	3,537
Toxic gases (large chamber)	732

APPROVAL OF SHEATHED EXPLOSIVE UNITS

Test	Fee
Physical examination	$128
Chemical analysis	1,044
Gallery Test 9	1,944
Gallery Test 10	1,944
Gallery Test 11	1,944
Gallery Test 12	1,944
Drop Test	648
Temperature Effects/Detonation	672
Toxic Gases	580

The final rule organizes the application procedures into the three kinds of approval actions an applicant may request under Part 15: an original approval, a subsequent approval of a similar product, and extension of approval. In requesting an original (first time) approval for an explosive or sheathed explosive unit, MSHA will require the submission of all information necessary to evaluate all facets of the explosive or sheathed explosive unit as it relates to the approval requirements. If, after receipt of an original approval, the applicant requests subsequent approval of similar product or an extension of approval for the original product, the applicant will not be required to submit documentation duplicative of previously submitted information. Only information related to changes in the previously approved product will be required, avoiding unnecessary paperwork.

The final rule retains the existing requirement that changes in the specifications of a previously approved explosive or sheathed explosive unit must be approved by MSHA. This will avoid changes being made that could affect the safe performance of the explosive or sheathed explosive unit.

Section 15.4(c) (2) of the final rule requires applicants requesting approval of explosives to include "a laboratory number or other suitable designation identifying the explosive" at the time of application with the brand or trade name provided prior to issuance of approval. This constitutes a change from the proposal which required applicants to submit, at the time of application, the brand or trade name under which the explosive would be marketed if approved. Several commenters objected, however, pointing out that applicants frequently submit several explosive candidates for testing and do not determine the brand or trade name of the candidates until completion of the approval tests. Thus, applicants are no longer required to submit the brand or trade name at the time an application is submitted, but instead can provide it later. However, an approval will not be issued until the brand or trade name has been received by MSHA.

The final rule revises the existing requirement concerning assignment of different brand or trade names for approved explosives which specifies that, when a change in chemical composition is approved, the former composition shall not be used again unless reapproved by MSHA. Under § 15.4(f)(3) MSHA may require that a new or changed explosive or sheathed explosive unit be distinguishable from those associated with the former composition. This change recognizes that methods, other than different brand or trade names, could be used to identify products which perform differently and is based on MSHA's view that reapproval of an explosive or sheathed explosive unit, which otherwise performs safely, is not necessary because of a name change.

The existing requirement that the strength of the exposive be determined by the ballistic mortar test has been deleted in the final rule. MSHA has determined that it is not essential to know the strength of the explosive to determine whether the explosive will perform safely. In addition, of the numerous field samples of approved explosives that have been tested over the last ten years, all were found to be in compliance with the strength requirements. This was true even when the field samples were not in compliance with other specifications of the approval.

Section 15.5 Test samples.

The final rule reviews and updates the provisions of existing §§ 15.5 and 15.6 concerning the shipment, quantity, and quality of explosives and sheathed explosive units to be submitted for testing. The final rule retains, with clarifying changes, provisions from the existing regulations that prohibit

shipment of samples until notification from MSHA, require storage of samples in a magazine for at least 30 days prior to testing and, establish when test samples not be tested because of their chemical composition or condition. New provisions have been added specifying that explosives will not be tested that use aluminum clips to seal explosive cartridges, contain any combination or perchlorate and aluminum, contain more than 5 percent perchlorate, or contain any perchlorate and less than 5 percent water.

Section 15.5(a) requires the applicant, upon request by MSHA, to submit samples of explosives and sheathed explosive units for testing and evaluation by MSHA. The section also sets forth the quantities of these products to be submitted.

Under § 15.5(a)(2), the applicant is required to submit 70 pounds of 1-¼-inch diameter explosives and additional cartridges according to a formula based on cartridge length. This formula constitutes a change from the proposal which increased the existing requirement of explosives to be submitted for testing from 100 to 150 pounds. Use of the formula method will provide a more accurate number of explosives needed for testing, while at the same time providing the increased quantity of explosives necessary to conduct the new minimum product firing temperature tests included in the final rule. Section 15.5(a)(3) also uses a formula to specify the number of cartridges in diameters less than 1-¼ inches that must be submitted for testing.

The existing requirement that applicants submit explosive cartridges in 8-inch lengths has been deleted in the final rule. This will allow applicants the flexibility to submit samples that are representative of the cartridge lengths to be manufactured.

Under § 15.5(b), MSHA will not test explosives or sheathed explosive units that: (1) Contain chlorites, chlorates, or substances that react over an extended period and cause degradation of the explosive or sheathed unit; (2) are chemically unstable; (3) show leakage; (4) use aluminum clips to seal the cartridge; (5) contain any combination of perchlorate and aluminum; (6) contain more than 5 percent perchlorate; or (7) contain any perchlorate and less than 5 percent water.

One commenter suggested that explosive cartridges with aluminum clips be permitted, stating that the hazard of incendivity associated with aluminum clips is not sufficient to warrant their exclusion. It is generally recognized by the mining community, however, that aluminum can present an incendivity hazard, particularly when contacting rusty metal, and should not be used in areas where there is a possibility of igniting methane or coal dust. Therefore, the final rule continues to prohibit testing of explosive cartridges with aluminum clips.

The final rule retains the provision specifying that MSHA will not test an explosive containing more than 5 percent perchlorate. Perchlorate is an ester or salt of perchloric acid which is used in explosives to enhance sensitivity, primarily to improve the low temperature performance of approved explosives. Several commenters objected to this provision stating that it was unduly designed restrictive. They further stated that MSHA should consider approval of explosives that contain more than 5 percent perchlorate providing that the manufacturer can show that such explosives are chemically stable, do not degrade or react over an extended time in storage and meet all the requirements for sensitivity and performance. In addition, one commenter indicated that it had products containing up to 10 percent perchlorate which had good safety stability histories. These products had been DOT classified which included impact and thermal stability testing.

As indicated in the proposal, research conducted by the Bureau of Mines shows that the use of perchlorate in approved explosives does not result in instability of the explosive when the amount of perchlorate does not exceed 5 percent and the explosive contains 5 percent or more of water. However, at that time, neither the Bureau of Mines nor MSHA was aware of any data or information on whether explosives with more than 5 percent perchlorate could be used safely and therefore, specifically requested that information or data be provided on the issue. Although commenters generally objected to the prohibition, sufficient data or information was not received to allow MSHA to establish appropriate tests or criteria for evaluating such explosives. As a result, the final rule retains the prohibition against testing of explosives with more than 5 percent perchlorate.

However, explosives with more than 5 percent perchlorate may be evaluated under the new technology provision in § 15.20(i) of the final rule. Under this provision, consideration would be given to evaluating those products under United Nations Test Series 3 which includes an impact test for sensitivity The Agency is also considering the need to store these explosives for an extended period prior to performing tests to determine whether the chemical stability has been affected by the increased proportion of perchlorate and whether the explosive will degrade or react over an extended time. MSHA will expect manufacturers requesting approval of explosives with more than 5 percent perchlocate under § 15.20(i) to address these issues through suggested test criteria and procedures.

Once MSHA approves and explosive with more than 5 percent perchlorate under the new technology provision, the Agency will make the modified tests and requirements used by MSHA to evaluate such explosive available to manufacturers and other interested persons. If over a period of time MSHA receives a number of applications for explosives with more than 5 percent perchlorate, MSHA will revise the explosive approval regulations in Part 15 through the rulemaking process to allow such explosives.

Commenters also raised questions concerning the prohibition of any combination of perchlorate and aluminum in explosives, finding this provision was also design restrictive. Further, one manufacturer stated that it had produced explosives containing aluminum and perchlorate with good safety stability histories. In combining perchlorate and aluminum in explosives, the perchlorate is an oxidizer and the aluminum is a highly efficient fuel source which also acts as the sensitizer. The perchlorate can be sensitive to friction that may result from impact in handling, and in the presence of aluminum for fuel, the resistance to explosion may not provide the assurance of safety necessary to gassy underground mines. Accordingly, the final rule retains the prohibition against testing of explosives composed of a combination of perchlorate and aluminum. However, as with explosives containing more than 5 percent perchlorate, MSHA will evaluate explosives incorporating a combination of perchlorate and aluminum under the new technology provision in § 15.20(i).

Section 15.5(c) requires explosives and sheathed explosives units to be stored prior to testing. It retains the existing requirement for storage in a magazine for at least 30 days before gallery tests are conducted. This storage period is designed to provide an indication of explosive or explosive unit stability so MSHA can determine whether the character of the product has cnanged.

Section 15.6 Issuance of approval.

This section is derived from existing § 15.13 and specifies the actions to be

taken by MSHA upon review of applications for approval of explosives and sheathed explosive units. The final rule provides that MSHA will issue an approval or a notice denying approval after tests and evaluations have been completed. The approval or notice denying approval will be in writing.

The proposed rule deleted the existing requirement that applicants be provided a written report summarizing the results of the investigation of the application. Commenters objected to this deletion, stating that the report provided useful information to manufacturers concerning their products. This report, however, has proved most useful to applicants when approval of an explosive application was denied by MSHA as it set forth the rationale for denial. MSHAS believes that manufacturers should be given the reasons for denial of an approval. Therefore, paragraph (a) of the final rule provides, in lieu of an investigative report, that a notice denying approval must specify the reasons for MSHA's action.

Several commenters also suggested that MSHA be required to complete all approval actions within 90 days. Another commenter strongly disagreed, stating that an approval deadline would only serve to cause shortcuts in testing procedures and could result in products being approved for us in gassy underground mines that do not meet the technical requirements.

The final rule does not established a time limit for the completion of final actions on requests for approval of explosives and sheathed explosive units due to the complexity and variables involved in the approval process. Variables such as the number of applications received for approval are beyond the control of MSHA. An approval deadline is especially inappropriate given that the final rule allows approval of explosives or sheathed units that incorporate new technology or new applications of existing technology as established in §§ 15.20(i) and 15.30(g). Concerning the timing of the approval process, the Agency is aware that excessive delay could have an adverse affect on the quality and integrity of the product being tested. MSHA has eliminated the performance of nonapproval-related tests and has simplified reports on approval actions to reduce processing time. The total time for processing of approval actions for explosives was decreased by 18 percent in fiscal year 1988 from the previous year. Streamlining internal approval procedures will continue to be an MSHA priority.

Section 15.6(b) prohibits applicants for approval from advertising or otherwise representing an explosive or sheathed explosive unit as approved until MSHA has issued an approval. This provision, which is new, is consistent with similar prohibitions applicable to applicants for approval under other MSHA approval regulations such as 30 CFR Part 18.

Section 15.7 Approval marking.

This section is derived from existing § 15.14 and provides for labeling of approved explosives and sheathed explosive units. The final rule retains existing requirements that approved explosives be marketed only under the brand or trade name specified in the approval and that the wrapper of each cartridge as well as each case of explosives bear a label indicating that the explosive is approved. These requirements also apply to sheathed explosive units. Added to the approval marking provision in the final rule is the requirement that the explosive and sheathed unit contain the test detonator strength used in the approval testing, and the minimum product firing temperature.

The final rule requires that the wrapper of each cartridge and each case of approved explosives and the outer covering of each sheathed explosive unit and each case of approved sheathed explosive units be labeled with the minimum product firing temperature. The preproposal draft would have required each case of approved explosives and sheathed explosive units to be labeled with the minimum firing temperature. The proposal retained the performance requirement for a mimimum firing temperature but the manner of conveying this information was to be determined by explosive manufacturers. As discussed and specified in the new regulations for Part 75, Safety Standards for Explosives and Blasting, explosives or sheathed explosive units must not be fired when the product is below the minimum product firing temperature. One commenter said that explosives labeled with the minimum firing temperature could cause users to confuse outside air temperature with the temperature of the product. The Agency has clarified this issue by defining the minimum firing temperature as the lowest product temperature at which the explosive or sheathed explosive unit is approved for use. The commenter also stated that the labeling requirement would be more effectively accomplished through inserting detailed instructions in each case of explosives as to storage and use which is current practice and through user education and training. However, the Agency has eliminated the case insert in the final rule and does not believe that the case insert served to effectively provide guidance to the blaster. MSHA accident data shows failure by the blaster to follow safe blasting practices or regulations to be a contributing factor in over 80 percent of the fatal blasting accidents from 1978 through 1984. Upon further consideration of this information, MSHA has determined that blasters require more specific guidance in the safe handling and use of explosives.

The labeling of each explosive cartridge and sheathed unit with the minimum product firing temperature readily provides the blaster with the information on-site without having to read through a case insert which is very difficult to accomplish in the underground mining environment. The inclusion of this provision in the final rule transmits information necessary for user compliance with the explosives and blasting standards in Part 75. Accordingly, explosives and sheathed unit approval labels must provide the minimum firing temperature for the product.

The approval label must also provide the test detonator strength used in the approval testing of the explosive or sheathed unit. The safe performance of approved explosives or sheathed units can be significantly affected if the proper strength detonator is not used when blasting. Section 1310(e) of Part 75 requires that detonators have sufficient strength to initiate the explosives being used. The inclusion of the test detonator strength on the approval label will assist blasters in selecting the proper strength detonator to use with explosives and sheathed units and thus provide important information for user compliance with blasting safety standards. Moreover, it will ensure that the same strength detonator is used for post-approval audit testing as that used during the initial approval testing.

As noted above, the existing requirements for a case insert, warning the user that the explosive is approved only when used in conformance with the requirements of Part 15, is not included in the final rule. Requirements governing the use of explosives are appropriately included in related safety standards and should not be addressed in requirements for approval of explosives.

Section 15.8 Quality assurance.

This section is derived from existing § 15.14, except paragraph (b) which is new. The MSHA approval label is relied

upon in the mining community as an indication that the product is safe for use in mines. Under the final rule, the approval-holder is required to manufacture the product in accordance with the specifications of the approval and report to MSHA any knowledge of explosives or sheathed explosive units distributed that do not comply with the approval.

One commenter objected to the proposal's deletion of a provision requiring applicants to submit detailed quality control plans and quality control inspection and testing instructions for acceptance by MSHA. Any changes to them would also have been subject to MSHA acceptance. MSHA continues to believe that there is a need for quality control in the production of approved explosive products. For this reason, the final rule retains the basic requirement that approved explosives and sheathed explosive units be manufactured in accordance with the approval. The design and implementation of a quality assurance program to accomplish this, however, is the manufacturer's responsibility and, therefore, has not been made subject to review or acceptance by MSHA.

Adherence to the final rule's requirements for quality assurance will provide substantial protection against the distribution of defective explosive products. However, MSHA recognizes that this can occur. In such an event, § 15.8(b) requires the approval-holder to report immediately to the Agency any knowledge that explosives or sheathed explosive units have been distributed which do not meet the requirements upon which the approval is based. This knowledge could come from the results of audits conducted by the approval-holder, reports from users, or other sources. Upon receiving such a report, MSHA will work with the approval-holder to implement appropriate corrective action.

Commenters requested that MSHA provide guidance on how approval-holders would comply with the requirement to report knowledge of distributed explosives or sheathed explosive units which did not meet the technical requirements. Since such explosive products can create a hazard, immediate notification should be by expeditious means, such as by telephone. The notification should include a description of the nature and extent of the problem, the locations where the explosives or sheathed explosive units have been distributed, and the approval-holder's plans for corrective action. Corrective action may include recalling the explosive products or restricting use of them pending conformance with the approval specifications. MSHA will review all of the information provided, including the approval-holder's program of corrective action. If the program is inadequate, MSHA will work with the manufacturer to develop a more appropriate program. If appropriate corrective action cannot be agreed upon by the approval-holder and MSHA, the Agency may seek revocation of the approval, or other action as necessary.

Section 15.9 Disclosure of information.

This section is derived from existing §§ 5.9 and 15.17 which address the disclosure of information on explosives tested and evaluated under Part 15. MSHA intends to continue the current practice of treating information on product specifications and performance as proprietary information and will protect its disclosure to the fullest extent consistent with The Freedom of Information Act, F.O.I.A. (5 U.S.C. 552). Under the final rule, MSHA will notify the applicant of requests for product information received by the Agency and will provide the manufacturer the opportunity to present its position on disclosure. Information identified by the manufacturer as proprietary will not be disclosed, unless, as provided by F.O.I.A., MSHA determines that disclosure will further the public interest and will not impede the discharge of any of the functions of the Agency. No objections were raised by commenters to this provision.

Provisions from the existing regulation concerning MSHA publication of lists and other information on approved explosives are not included in the final rule. The dissemination of information that is nonconfidential need not be addressed by these regulations. However, MSHA intends to continue to provide the mining community with this information.

Section 15.10 Post-approval product audit.

This section is derived from existing § 15.20 and from provisions on post-approval product audit contained in the Agency's approval rulemaking in 30 CFR Part 7. As was indicated in the preamble to proposed Part 15, it maintains a consistent approach on the issue of product audits with that outlined in Part 7.

The final rule provides that approved explosives and sheathed explosive units be subject to periodic audit by MSHA for the purpose of determining conformity with the technical requirements upon which the approval was based. This aspect of the final rule, by providing a mechanism for independent evaluation by MSHA of approved products on a random basis, complements the quality assurance provision that requires approval-holders to manufacture their explosive products as approved. Moreover, it is consistent with recommendations from internal reviews of MSHA's approval program.

Approved explosives or sheathed units audited by MSHA will be selected by the Agency as representative of those distributed for use in mines. When an approved explosives product is requested by MSHA for audit from the approval-holder, the Agency will examine and evaluate it and conduct any testing necessary at the Bureau of Mines testing facility. This reflects a change from the proposal which allowed for the audit to occur at a "mutually agreeable site" since manufacturers indicated that they do not have adequate facilities for testing explosives and sheathed units. Approval-holders, however, will be notified by MSHA of the time for any audit-related testing of approved explosives or sheathed explosive units to allow them an opportunity to witness such tests.

In determining which approved explosives or sheathed explosive units will be subject to audit at any particular time, MSHA will consider a variety of factors such as whether the manufacturer has previously produced the approved product or similar products, whether the approved product is new or part of a new product line, or whether the approved product is intended for a unique application or limited distribution. Other considerations may include product complexity, the manufacturer's previous product audit results, product population in the mining community, and the time since the last audit or since the product was first approved.

Several commenters expressed concern over the proposal's requirement that explosives and sheathed explosive units selected from the field for auditing meet the same technical requirements as required for approval. This is a change from existing regulations which test field samples under less stringent criteria and allows for some field degradation such as in air gap sensitivity. It is important for explosive products available for use in underground gassy mine atmospheres to, at all times, be in compliance with the technical requirements on which approval is based without regard to the age of the product or the length of time the explosive or sheathed unit has been stored in the field. This is consistent with the approach taken in all of MSHA's other approval programs where

audited products, including consumable items such as flame-resistant hydraulic fluid, must meet all the technical requirements upon which approval was granted. Commenters have presented no evidence during rulemaking to show that this is technically infeasible. If manufacturers believe that their products degrade sufficiently over time so they cannot continue to meet the technical requirements then they should provide a shelf or storage life for explosives or sheathed units. MSHA will consider explosives with expired shelf dates to be deteriorated and therefore required to be removed by mine operators in accordance with § 75.1328.

Under the final rule, approved products can be obtained for audit from the approval-holder or from sources other than the manufacturer such as mine suppliers or distributors. The approval-holder may, however, only be required to provide one case of explosives or 25 sheathed explosives once a year, at no cost to MSHA, except for cause. MSHA can obtain products for audit from the approval-holder or other sources such as mine suppliers or distributors at any time at MSHA expense.

Based on MSHA's experience, the Agency anticipates few instances in which more than this quantity of approved explosives or sheathed units will be required "for cause" from any one manufacturer in any one year. There are circumstances, however under which an additional audit is appropriate to ascertain compliance with the technical requirements upon which an approval was based. Examples of such circumstances include verified complaints about the safety of an approved product, evidence of product changes that have not been approved, audit test results that warrant further testing to determine compliance, and evaluation of corrective action taken by an approval-holder. Under these circumstances, the approval-holder must provide, at no cost to MSHA, additional approved explosives or sheathed units so the Agency can ensure that the approval-holder is meeting the obligation to manufacture them as approved.

Several commenters indicated that shipping small quantities of explosives would impose unreasonable costs on manufacturers because most major carriers base their tariffs on a 7,500- or 10,000-pound minimum for shipment of Class A explosives. When shipment of explosives or sheathed explosive units is necessary for audit, MSHA believes that most approval-holders will ship them in the same vehicles as other shipments of explosives to customers, their regional supply magazines, or to the Bureau of Mines.

When discrepancies are found during MSHA audits of approved products, MSHA will require that the manufacturer take all necessary corrective actions. These actions could include, but are not limited to, the approval-holder recalling the lot or batch of explosives or sheathed units or issuing users notices. Revocation of the approval by MSHA may result when discrepancies in approved products are not successfully corrected.

A new paragraph (d) has been added to § 15.10 of the final rule to address commenters' questions regarding the auditing of previously approved explosives. It provides that explosives approved under regulations in effect prior to the effective date of this rule shall conform to the provisions on field samples set forth in those regulations (See 30 CFR Part 15, 1987 Edition).

Section 15.11 Revocation.

This section is derived from existing § 15.16 and from the provision on revocation in 30 CFR Part 7. It is indentical to the revocation section in Part 7 as MSHA believes that all approval-holders must be accorded the same rights and subject to the same process regardless of the approval regulations under which the approval was granted.

The final rule provides that MSHA may revoke an approval granted under Part 15 whenever an explosive or sheathed explosive unit fails to meet the applicable technical requirements specified in Subpart B or C or creates a hazard when used in a mine. Commenters recommended that the revocation procedures require MSHA to fully describe the cause or reason for a revocation action, and that the procedures include an appeal process for the approval-holder to challenge the basis for such action. The Agency recognizes that an MSHA approval is important to the marketability of a product used in the mining industry. For this reason it has been MSHA's practice to treat approval-holders as "licensees" under the Administrative Procedure Act (APA). Consistent with this practice, the final rule provides that approval-holders be accorded certain protections prior to revocation of an approval. These include being provided with (1) A written notice of the Agency's intent to revoke a product approval, with an explanation of the reasons for the proposed revocation, (2) an opportunity to demonstrate or achieve compliance with the technical requirements for approval, and (3) an opportunity for a hearing upon request.

Also in accord with the APA is the final rule provision which permits MSHA to suspend an approval, without prior notification to the approval-holder, if a product poses an imminent hazard to the safety or health of miners. Under such circumstances, an approval may be suspended immediately to protect the safety and health of any affected miners. Upon suspension of an approval, the product involved is no longer approved and MSHA will require mine operators to withdraw the product from use during the course of any suspension. MSHA will also immediately advise approval-holders of any suspension so effective corrective action can be started as soon as possible.

Subpart B—Explosives

Section 15.20 Technical requirements.

This section is derived from existing §§ 15.10, 15.11, 15.12 and 15.21, except for paragraphs (g)(1), and (g)(2), which are new. Section 15.20 of the final rule sets forth the technical requirements for approval of explosives.

Paragraph (a) requires the chemical composition of the explosive, as determined by MSHA analysis, to conform to the composition furnished by the applicant. If in conformance, the applicant's composition description is incorporated into the approval and is the standard to determine compliance with the approval during MSHA audits.

One commenter questioned why two sets of tolerances were necessary and suggested that the chemical composition of explosives be required to meet only the tolerances specified in § 15.21. The tolerances set in § 15.21 represent a baseline standard of variation which all explosives submitted for approval must meet, regardless of their chemical composition. However, the particular mixture of ingredients in an explosive may require tighter tolerances for the explosive to perform safely and for the purpose designed. Based on its data and knowledge of the technical functioning of the explosive involved, the manufacturer is in the best position to provide these mixture-specific tolerances. Therefore, the final rule requires that the chemical composition of an explosive meet the tolerances furnished by the applicant in addition to the tolerances specified in § 15.21.

Paragraph (b) requires the explosive to detonate completely in the rate-of-detonation test. This test is intended to determine whether the explosive has a tendency to misfire or partially detonate. The test is conducted on a 50-

inch column of 1¼ inch diameter cartridges and on the same quantity of the smallest diameter cartridge less than 1¼ inch submitted by the applicant.

Under the proposal the rate-of-detonation test was to be conducted using a test detonator without a booster to initiate all explosives submitted for approval. The proposed rule eliminated the use of a booster in addition to a test detonator to initiate gelatinous explosives because boosters were not used in the mine environment. However, commenters stated that the use of boosters with gelatinous explosives yields more reproducible results in laboratory testing with regard to detonation velocity and recommended their continued use. Accordingly, the rate-of-detonation test has been modified in the final rule to specify the use of a 60-gram tetryl pellet booster for testing of gelatinous explosives.

Some commenters also suggested that the rate-of-detonation test be performed at the minimum firing temperature of the explosive since explosives tested at temperatures below this level could result in incomplete detonation or erratic rate of detonation. The effect of temperature on explosives is better evaluated under the air-gap sensitivity requirements in § 15.20(c) than in subparagraph (b) on rate of detonation. The air-gap test provides a more stringent measure of the explosive's ability to detonate as it is designed to ensure that a product, at its minimum firing temperature, will propagate the gap or space between explosive cartridges. This is in contrast to the rate-of-detonation test where cartridges are next to each other in a column. Therefore, the final rule continues to provide that the rate-of-detonation test be conducted at an ambient temperature between 68 and 86 °F.

Paragraph (c) requires that the air-gap sensitivity of the explosives be at least 2 inches at the minimum firing temperature and at least 3 inches at a temperature between 68 and 86 °F. This requirement enables MSHA to evaluate whether the explosive will transmit detonation across a small air gap to another explosive cartridge in the column. The air-gap sensitivity is determined in the explosion-by-influence test using the 7-inch cartridge method. The 7-inch cartridge method is conducted with two 8-inch cartridges. One inch is cut off the end of each cartridge. The cartridges are placed in a paper tube, the cut ends facing each other with the appropriate 2-inch or 3-inch air gap between them. Then, one cartridge is fired to test the effect of the detonation on the other. This test method represents a modification of the existing halved-cartridge method.

A comment from one manufacturer suggested retaining the existing halved-cartridge method of conducting the explosion-by-influence test rather than using the 7-inch cartridge method. MSHA proposed changing to the 7-inch method because use of a nearly whole cartridge better simulates actual conditions that may occur in the mining environment. This was not disputed by the comments and thus, the explosion-by-influence test in the final rule will be performed using the 7-inch cartridge method.

Recommendations were also received from commenters to specify the paper tube used in the test: The weight and type of paper; the length and width of the sheet of paper; and the number of wraps of paper. This additional specification, they stated, would help ensure that tests are conducted uniformly. MSHA disagrees that variations in the paper tube specifications could significantly affect the repeatability of tests and therefore has not included such detailed specifications in the final rule.

The final rule, like the proposal, recognizes different sensitivities in the air-gap test at different temperatures. Under § 15.20(c) an air-gap sensitivity of 2 inches is required at the minimum product firing temperature and 3 inches required at temperatures of 68 to 85 °F. This is consistent with existing §§ 15.12 and 15.21, which require an air-gap sensitivity of 3 inches in the initial approval test, but allows an air-gap sensitivity of 2 inches for field samples of approved explosives. Several commenters recommended specifying a 2-inch air gap at a temperature between 68 and 86 °F to be used in any post-approval product audit of explosives. As was explained in the earlier preamble discussion on this issue in § 15.10 Post Approval Product Audit, it is important for explosives available for use in gassy underground mines to, at all times, be in compliance with the technical requirements on which approval is based regardless of the age of the product or the length of time the explosives or sheathed unit has been stored in the field. As a result, the final rule requires products audited under § 15.10 to meet the same 3 and 2-inch air-gap sensitivity as is required for the original approval testing.

The minimum product firing temperature at which the air-gap sensitivity will be conducted is either that proposed by the applicant or 41 °F, whichever is lower. Thus, under the final rule, explosives will be required to perform adequately at a temperature as low as 41 °F. If specified by the applicant, the explosives will be tested at a lower temperature. The lowest temperature at which the explosive passes the test will be specified in the approval.

A further comment recommended exempting unit charges or cartridges from the air-gap sensitivity requirement in § 15.20(c). Unit charges or cartridges would be a package configuration designed to require that only one cartridge or continuous charge be loaded in a borehole. With only one cartridge or continuous charge in a borehole, the air-gap sensitivity, cartridge to cartridge would not be a factor in performance. Such unit charges or cartridges could still be used with single cartridges which may present the potential for an air gap to exist when loaded into a borehole. This could also occur with a continuous cartridge depending on its length.

Paragraph (d) specifies the performance required for an explosive in gallery test 7. The test demonstrates whether the explosive will ignite an explosive mixture of methane and air. Gallery test 7 is conducted by firing, one at a time from the borehole of a steel cannon, at least 20 explosive charges of varying weights. The explosives are primed with a test detonator and stemmed and tamped. This test is conducted in air containing 7.7 to 8.3 percent natural gas and at a temperature between 68 and 86 °F.

A commenter suggested that gallery test 7 and other gallery tests be performed on samples of explosives identical to those intended to be marketed for use in underground mines. MSHA agrees and has addressed this concern by specifying that gallery test 7 be conducted on explosives that include wrappers and seals.

The test procedure in both gallery tests 7 and 8 calls for tamping of the explosive prior to firing. Commenters generally objected to the tamping, noting that tamping is not permitted in the mines. In addition, they indicated that tamping can affect the rheology and sensitivity of explosives and suggested two alternatives for revising § 15.20 (d) and (e). One option was to provide larger diameter samples for testing and eliminate tamping altogether. The other alternative was to continue tamping, but permit the applicant to provide larger diameter cartridges for testing explosives where the rheology or sensitivity of the explosive could be adversely affected by tamping. While mine operators are prohibited from tamping the explosives, they need to

tamp the stemming to fill the cross-section of the borehole as required by the Part 75 explosives safety standards. Such tamping of the stemming material has the potential of putting pressure on the column of explosives. Also, Bureau of Mines research shows that crushing explosive cartridges to fill a borehole increases the risk for ignition of methane during blasting as compared to loading cartridges in a continuous train without crushing. The tamping of explosives in the gallery tests provides a factor of safety based on experimental studies. Accordingly, the gallery test has been designed to take this into account and provide the necessary measure of safety should this situation occur.

Paragraph (e) specifies the performance required for an explosive in gallery test 8. The test demonstrates whether the explosive will ignite an explosive mixture of methane and air in which bituminous coal dust has been predispersed. The test is conducted by firing, one at a time from the borehole of a steel cannon, at least 10 unstemmed explosive charges of varying weights. The explosives are primed with a test detonator and tamped. This test is conducted in 640 cubic feet of air containing 3.8 to 4.2 percent natural gas, into which 8 pounds of bituminous coal dust has been predispersed. The air is at a temperature between 68 and 86 °F.

Gallery test 8 in the final rule replaced existing gallery test 4, which provides for coal dust to be placed on shelves in the gallery, rather than being predispersed. The new test conditions facilitate improved quantitative comparisons of explosive incendivity. The test is also designed to better simulate conditions in the mining environment.

Paragraph (f) establishes the requirements for the performance of an explosive in the pendulum-friction test. The test demonstrates whether the explosive is unduly sensitive to impact and friction. The explosive is required to show "no perceptible reaction" under the conditions of the test. "No perceptible reaction", as used in the final rule, means the explosive does not burn, explode, or exhibit a local crackling. The test apparatus consists of an "A" frame, a weighted pendulum to which a steel or hard fiber-faced shoe is attached, and a steel anvil. The explosive sample is placed on the anvil and the pendulum is adjusted and released from a height of 59 inches.

Paragraph (g) is a revision and update of existing § 15.12(f) and specifies that the total volume equivalent to carbon monoxide (CO) of the toxic gases produced by detonation of the explosive not exceed 2.5 cubic feet per pound of explosive. In the preproposal, the Agency included this limitation to be determined by the large chamber test in which the explosive shall propagate completely. The large chamber test will be used under this final rule.

The existing requirement in §15.12(f) that limits the volume of poisonous gases to 2.5 cubic feet per pound of explosive was not retained in the proposal. This was because MSHA believed, at that stage of the rulemaking process, that the hazards associated with toxic gases were appropriately addressed in 30 CFR 75.301–2 which requires that concentrations of noxious or poisonous gases not exceed the current threshold limit values (TLV) as specified by the American Conference of Governmental Industrial Hygienists. However, in the proposal the Agency sought information and data on any benefits to be obtained by retention of this provision.

Commenters opposed the deletion of the poisonous gas limitation stating that they consider the limitation to be a valuable criterion in formulating approved explosives. In addition, they do not believe the limitation duplicates the requirements of 30 CFR 75.301–2, but instead ensures the effectiveness of the protections afforded by the Part 75 provision.

Upon further analysis, MSHA has determined that a toxic gas limitation should be retained. While current ventilation regulations address exposure to a number of toxic gases, including those associated with the detonation of explosives, MSHA's experience indicates that control of such gases produced by explosives is a particularly effective means for limiting the high concentrations of toxic fumes that can be produced by detonation during blasting. That the initial concentrations are particularly hazardous is exemplified by four blasting-related accidents which occurred between 1980 and 1985 and resulted in 9 fatalities from exposure to toxic gases or fumes. Further, retaining a limitation will better enable MSHA to ensure compliance with short-term exposure limits included in MSHA's air quality regulations. These considerations, coupled with strong support from commenters for retaining the existing toxic gas provision, persuaded the Agency that a fume requirement is necessary to minimize hazards. Accordingly, MSHA has included a limitation on toxic gases in the final rule, but has modified the existing provision so that the total volume is determined relative to carbon monoxide. The final rule requirement follows, with minor editorial changes, the language in the provision limiting toxic gases set out in the preproposal draft of this rulemaking.

Paragraph (g)(1) discusses the large chamber test which is conducted so the gaseous products from the detonation can be collected and analyzed. The large chamber test, which has a volume of approximately 1350 cubic feet, replaces the Bichel and Crawshaw-Jones tests conducted under the existing requirements. The explosive charge is stemmed and fired from a cannon into the large chamber. This chamber test simulates conditions that are more representative of actual conditions of use (stemmed, simulated borehole, large expansion ratio) than the existing tests. The large chamber test also eliminates the use of two test apparatuses that are currently used for toxic gas determinations.

Paragraph (g)(2) specifies the method for determining the effective toxicity of each toxic gas produced by relating the toxic gas to carbon monoxide. The method utilizes the threshold limit value, time weighted average (TLV–TWA) of the ingredient and the TLV–TWA of carbon monoxide. This method is derived from the American Conference of Governmental Industrial Hygienists (ACGIH) following a combined component effect for mixtures. It is based on TLV's included in the Chemical Substances section of the publication of the American Conference of Governmental Industrial Hygienists (ACGIH) entitled "TLV's, Threshold Limit Values for 1988–1989 ('TLV Booklet')."

Under the method, the equivalent volume of each toxic gas produced relative to CO is determined by multiplying the measured volume of gas by a conversion factor. The conversion factor is equal to the TLV–TWA in parts-per-million for CO divided by the TLV–TWA for the toxic gas. The TLV–TWA conversion factor for each gas for which MSHA will test is specified in Table I following §15.20(g)(2). The total volume equivalent to CO of the toxic gases produced by detonation of the explosive is the sum of the equivalent volumes of individual toxic gases.

Paragraph (h) prescribes the tests to be conducted when a change is proposed to an approved explosive. A change involving cartridge diameter or length requires MSHA examination to determine what tests, if any, are necessary to evaluate the proposed change. A change to a cartridge diameter smaller than the smallest diameter cartridge covered by the approval requires that the rate-of-detonation and explosion-by-influence tests be conducted. This testing enables

MSHA to determine whether the approved explosive in the smaller diameter cartridges will continue to perform in accordance with the approval. A commenter suggested that the requirement for the explosion-by-influence test be deleted because testing done for the original approval on 1¼ inch diameter cartridges is sufficient to ensure reliable detonation of approved explosives. In MSHA's experience, however, detonation is not always reliable with certain explosive formulations when used in small diameter cartridges and, therefore, the other tests are necessary to ensure the safe performance of the modified explosive.

Paragraph (i) gives MSHA the flexibility to approve an explosive that incorporates new technology or new applications of existing technology for which the tests or performance requirements of the final rule are not appropriate. An approval will be issued under this provision only if it is determined by testing and evaluation that the explosive performs as safely as an explosive that meets the requirements of this rule. MSHA will develop appropriate tests and performance requirements when the explosive is submitted for approval. Variations in the test and evaluation methods will continue to emphasize the critical aspects of approved explosives, including stable chemical formulation and protection against ignition of an explosive atmosphere. This reflects MSHA's primary concern with the safe performance of explosives in the mining environment, rather than with their design.

Once MSHA approves an explosive under this section, the Agency will make the modified tests and requirements used by MSHA to evaluate a particular technology available to manufacturers and other interested persons. If over a period of time MSHA receives a number of applications for the same type of technology or newly adapted technology, MSHA will revise the explosive approval regulations through the rulemaking process to recognize such development.

One commenter objected to inclusion of this provision in the proposed rule because approval of an explosive under tests and criteria not contained in the rule would be improper. The commenter indicated that all approval requirements should be promulgated through rulemaking. The flexibility provided by this provision is necessary to ensure that MSHA's explosives approval program can best serve the needs of safety in a timely manner. MSHA foresees use of this provision only to accommodate innovation in the formulation of explosives. At the time MSHA issues an approval under this section, the Agency will make the criteria used to test and evaluate the product available to the mining community.

Section 15.21 Tolerances for ingredients.

This section is derived from existing § 15.21 and establishes tolerances for each ingredient in an explosive based on the composition set forth in the approval of an explosive. It revises the existing provisions and adds tolerance requirements for aluminum and physical sensitizing agents. Newer types of explosives often contain these substances which can affect the safe performance of an explosive and, therefore, these tolerances provide a safety limit for variations in the explosive composition.

The preproposal draft provision which would have established a tolerance of ±0.5 percent for aluminum and physical sensitizing agents was not included in the proposal. However, because aluminum and physical sensitizers can affect the safe performance of an approved explosive, tolerance requirements are necessary for these ingredients. Under the proposal, the applicant was allowed to establish a tolerance for these ingredients, based on its own technical data or experience.

One commenter objected to allowing the applicant to set the tolerances for aluminum and physical sensitizers, stating that it was MSHA's responsibility, as the safety agency involved, to specify the limits of variation for these ingredients. Several commenters stated that physical sensitizers may be in the form of density control agents which are not necessarily added during the manufacturing process as a certain percentage of the explosive formulation. Also, since physical sensitizers combined differently may be based on the chemical formulation of the explosive, the manufacturer is in the best position to set the tolerances appropriate to the explosive composition involved. Therefore, § 15.21(a) specifies the tolerances for physical sensitizers as those set by the applicant. However, small variations in the quantity of aluminum can affect the safe performance of approved explosives and, for this reason, it is important to closely control the allowable tolerance for aluminum. Commenters stated that the analytical methods used to determine the aluminum content in an explosive are subject to greater variations than ±0.5 percent and that inherent variations in the manufacturing process make adherence to this tolerance unrealistic. Upon further review, MSHA believes that it is technically attainable to achieve a ±0.7 percent tolerance for aluminum. Bureau of Mines measurements of aluminum in over 100 explosive samples show that less than 6 percent of the samples varied in tolerance by ±0.7 percent from the amount specified by the individual companies. Additionally, limited data from the Bureau of Mines indicates that a several percent tolerance variation in aluminum may affect the safe performance of an approved explosive. Therefore, MSHA specifies a ±0.7 percent tolerance for aluminum in the final rule.

The final rule, based on the comments received, retains the tolerances specified in the existing standards for carbonaceous materials, moisture, and other ingredients contained in the explosive formulation. Explosives manufactured within these tolerances have historically proven to be safe for use.

Section 15.22 Tolerance for performance, wrapper and specific gravity.

This section is derived from existing § 15.21 and prescribes the limits of variation for rate-of-detonation and specific gravity of the explosive for the weight of wrapper. The final rule is unchanged from the proposal and explosives are required to be manufactured in accordance with each specified tolerance.

Subpart C—Requirements for Approval of Sheathed Explosive Units or Other Explosive Units Designed To Be Fired Outside the Confines of a Borehole

Section 15.30 Technical requirements.

This section is new and sets forth the technical requirements for approval of sheathed explosive units. The comments received generally favored the concept of sheathed explosive units which are designed to be fired outside the confines of a borehold. One commenter stated that sheathed units will be especially beneficial in roof fall recovery and construction work and will provide a safe alternative to the hazards of firing "open shots." However, explosives manufacturers indicated in their comments that since no company is presently producing such units, they were unable to provide comments on Subpart C. Accordingly, the final requirements for sheathed explosive units in Subpart C are unchanged from

the proposal, except for identical modifications in the drop test in § 15.30(d) and the detonation test in § 15.30(f) to address the use of previously approved explosives in sheathed units.

Paragraph (a) specifies that the sheathed explosive unit contain no more than 1½ pounds of approved explosive. This quantity of explosives is the maximum amount used in the prototype units designed and tested by the Bureau of Mines, which were found to be adequate for all situations where sheathed explosives are likely to be used.

Paragraph (b) requires that the chemical composition of the sheath, as determined by MSHA analysis, conform to the composition furnished by the applicant. If in conformance, the applicant's composition description will be incorporated in the approval and will then be the standard to determine compliance with the approval during MSHA audits.

Paragraph (c) sets forth requirements for the detonator well for the sheathed explosive unit. The detonator well allows the detonator to be securely inserted into the unit in order to provide for reliable detonation.

Paragraph (d) specifies performance requirements for the outer covering of the sheathed explosive unit to ensure that the unit is durable and appropriate for use in underground mines. Units are subjected to a drop test to determine whether the contents are susceptible to shifting or damage under conditions comparable to those likely to be encountered in underground mines. The test is performed with the unit at the minimum product firing temperature established for the explosive in the unit. For units with explosives approved under prior regulations, the drop test is performed at 41 °F.

Paragraph (e) specifies the performance requirements for sheathed explosive units in gallery tests 9, 10, 11, and 12. Under the final rule, sheathed explosive units are subjected to 10 trials of each gallery test and are required to detonate completely without causing any ignition of methane or coal dust.

Gallery test 9 is conducted with 3 sheathed explosive units placed 2 feet apart on a concrete slab in an explosive methane-air atmosphere. The test provides for evaluation under conditions simulating the blasting of fallen rock in an underground mine.

Gallery test 10 is conducted with 3 sheathed explosive units in the same arrangement as in gallery test 9 in an explosive methane-air atmosphere in which bituminous coal dust has been predispersed.

Gallery test 11 is conducted with 3 sheathed explosive units arranged in a triangular pattern in a simulated crevice formed by two concrete slabs. The test is performed in an explosive methane-air atmosphere under conditions simulating blasting of an overhanging roof slab.

Gallery test 12 is conducted with 3 sheathed explosive units arranged in a triangular pattern in a corner formed by three steel plates. The test is performed in an explosive methane-air atmosphere under conditions simulating blasting along a rib where compression and reflection of the explosive shock wave are produced. A commenter suggested that gallery tests 9, 11, and 12 also be conducted in an atmosphere containing predispersed bituminous coal dust. The commenter believed that, because of the possibility of sheathed explosive units used in inadequately rock-dusted areas, the likelihood of a dust ignition should be evaluated in approving the units. However, the methane-air and methane-coal dust air atmosphere specified in the gallery tests are easier to ignite than coal dust alone and provide a more stringent tests of the units incendivity than the test proposed by the commenter.

Paragraph (f) requires that each of 10 sheathed explosive units detonate completely when fired at the minimum product firing temperature established for the explosive used in the unit or at 41°F for units with previously approved explosives. The test evaluates the effect of temperature on the sensitivity of the explosive and the performance of the flame-inhibiting material in the unit.

Paragraph (g) gives MSHA the flexibility to approve an explosive unit that incorporates new technology or new applications of existing technology for which the tests or performance requirements of the final rule are not appropriate. An approval will be issued under this provision only if it is determined by testing and evaluation that the explosive unit performs as safely as one that meets the requirements of the proposed rule. Under the final rule, MSHA will develop the appropriate tests and performance requirements when the explosive unit is submitted for approval. Variations in the test and evaluation methods will continue to emphasize the critical aspects of sheathed explosive units, including stable chemical formulation, durable construction, and protection against ignition of an explosive atmosphere. This reflects MSHA's concern with the safe performance of explosive units designed to be fired outside the confines of a borehold in the mining environment, rather than with their design.

Once MSHA approves an explosive unit under this section, the Agency will make the modified tests and requirements used by MSHA to evaluate a particular technology available to manufacturers and other interested persons. If over a period of time MSHA receives a number of applications for the same type of technology or newly adopted technology, MSHA will revise Subpart C through the rulemaking process to recognize such developments

One commenter objected to inclusion of this provision in the rule because approval of an explosive unit under tests and criteria not contained in the rule would be improper. The commenter indicated that all approval requirements should be promulgated through rulemaking. The flexibility provided by this provision is necessary to ensure that MSHA's explosives approval program best serves the needs of safety in a timely manner. MSHA foresees use of this provision only to accommodate innovation in explosive units designed to be fired outside the confines of a borehole.

Section 15.31 Tolerance of ingredients.

This section is new and prescribes the limits of variation from the composition of the sheath set forth in the approval of the sheathed explosive unit. Under the final rule, the tolerance for each ingredient in the sheath is required to be within the tolerance specified in Table II. The tolerances specified in Table II are derived from the existing requirements for ingredients in explosives. MSHA believes that these tolerances are also appropriate for sheathed explosive units.

Section 15.32 Tolerance for weight of explosive, sheath, wrapper and specific gravity.

This section is new and prescribes the limits of variation for certain characteristics of the sheathed explosive unit. Under the final rule, the sheathed explosive unit is required to be manufactured in accordance with the specified tolerances.

Derivation Table

The following derivation table lists: (1) Each section number of the final rule; and (2) the number of the existing regulation from which the final rule is derived.

DERIVATION TABLE

New Section	Old Section
15.1	15.1.
15.2	15.2.
15.3	15.9.
15.4	15.3, 15.4 and 15.15.
15.5	15.5 and 15.6.
15.6	15.13.
15.7	15.14.
15.8(a)	15.14.
15.8(b)	New.
15.9	15.9 and 15.17.
15.10	15.20, 15.21.
15.11	15.16 and 15.22.
15.20(a)	15.11, 15.12(a).
15.20(b), (c), (d), (e), (f), (g), (h)(3).	15.5(d), 15.10, 15.12 and 15.21.
15.20(h)(1), (h)(2)	15.5(d).
15.20(i)	New.
15.21	15.21.
15.22	15.21.
15.30	New.
15.31	New.
15.32	New.

Distribution Table

The following distribution table lists: (1) Each section number of the existing regulation; and (2) the section number of the final rule which contains provisions derived from the corresponding existing section.

DISTRIBUTION TABLE

Old Section	New Section
15.1	15.1.
15.2	15.2.
15.3	15.4.
15.4	Part 5.
15.5	15.5.
15.6(a), (b), (c), (d)	15.5.
15.6(e)	Removed.
15.7	Removed.
15.8	Removed.
15.9	15.3 and 15.9.
15.10(a)(1), (a)(2), (b)(1), (b)(3), (b)(4), (b)(5), (b)(6), (b)(7).	15.20.
15.10(b)(2)	Removed.
15.11	15.20(a).
15.12(a), (b), (c), (d), (e), (f), (g), (h)	15.20.
15.13	15.6.
15.14(a), (b), (c)	15.7.
15.14(d)	Removed.
15.14(e)	15.8(a).
15.15	15.4.
15.16	15.11.
15.17	15.9.
15.18	Removed.
15.19(a), (b), (c)	Part 75.
15.19(d), (e)	Removed.
15.20	15.10.
15.21(a)(1), (a)(3), (a)(4), (a)(5), (a)(6), (b)(5).	15.10.
15.21(a)(2), (b)(4)	Removed.
15.21(b)(1), (b)(2)	15.21.
15.21(b)(3), (b)(6), (b)(7)	15.22.
15.22	Removed.
15.23	Removed.
15.24	Removed.
The Federal Mine Safety Code (as incorporated by section 15.19(e).	Part 75.

III. Drafting Information

The persons principally responsible for preparing this final rule are: Harry C. Verakis, Technical Support, MSHA; Helen Caraway, Office of Standards, Regulations, and Variances, MSHA; Edward C. Connor, Coal Mine Safety and Health, MSHA; Richard Mainiero, Bureau of Mines, Department of Interior; and Linda B. Fort, Office of the Solicitor, Department of Labor.

IV. Executive Order 12291 and Regulatory Flexibility Act

In accordance with Executive Order 12291, a regulatory flexibility analysis has been developed by the Agency for the purpose of comparing the cost associated with the final rule with the cost of existing requirements for approval of explosives for underground coal mines. In this analysis, summarized below, MSHA has determined that the final rule will not result in major cost increases nor have an effect of $100,000,000 or more on the economy. Therefore, the rule is not within the criteria for a major rule and a Regulatory Impact Analysis is not required.

The Regulatory Flexibility Act requires that agencies evaluate and include, wherever possible, compliance alternatives that minimize any adverse impact on small businesses when developing regulatory proposals. MSHA revisions to the existing rule update and clarify existing compliance requirements. Clarified compliance requirements which reflect advances in technology should benefit both large and small manufacturers of explosives.

There are only seven companies who have been granted approvals for explosives to be used in underground gassy mines. Three employ over 100 people and one is a multinational corporation. MSHA has determined that the final rule will not have a significant economic impact on a substantial number of small entities. Therefore, a regulatory flexibility analysis is not required. The Agency has, however, prepared an initial regulatory flexibility analysis and estimates that the annual cost for industry compliance with the existing requirements is $204,125 compared to $277,170 for Subpart A (General Provisions) of the final rule. This represents a cost increase of 36 percent when compared to the existing rule. Approximately 60 percent of this increase is due to the approval requirements for sheathed explosive units which are new. However, these costs will be offset totally by the projected cost savings of $261,497 from the use of approved sheathed in underground coal mines. In addition, allowing the use of sheathed units underground should result in a reduction in blasting injuries. MSHA accident data from 1978 to 1987 reveals that there were 9 incidents which resulted in a total of four fatalities and 14 injuries caused by firing unconfined shots.

No fixed estimates were calculated for Subpart B as requests for such data revealed that costs could range from $0 to approximately $500,000 depending upon the ingredients used in explosives to meet the technical requirements of the rule. Further, because Subpart C (Sheathed Explosive Units) represents a new requirement, cost estimates for commercial production of sheathed units were not available.

V. Paperwork Reduction Act

This final rule contains information collection requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

Seven companies are listed by MSHA as having a total of about 100 different approved explosives. MSHA receives about 25 applications for some type of explosives approval per year. Approximately 12 approvals are issued each year and about 13 applications are denied approval. MSHA estimates that applications for approval require an average of five hours labor to prepare. The burden per application remains essentially the same under the final rule as under the existing requirement. MSHA estimates that the total annual recordkeeping burden under the final rule may increase slightly, primarily due to the introduction of sheathed explosive units. However, the total burden could be reduced if the total number of applications received remains at present levels.

Paperwork requirements for Part 15 are approved under OMB control number 1219–0066 which covers all of MSHA's equipment testing requirements in 30 CFR Parts 11 through 36. Part 15, which relates to explosives approval, currently specifies that the applicant submit a statement in duplicate explaining the nature and composition of the explosive. The final rule streamlines the process by specifically stating the information required for approval and extensions of approval. Information in duplicate is not required in the final rule. Moreover, the applicant will not be required to resubmit documentation duplicative of previously submitted information when requesting subsequent approval of a similar product or an extension of approval. Only information related to changes in the previously approved explosive or

sheathed explosive unit is required, avoiding unnecessary paperwork.

The final rule retains the existing requirement that the wrapper of each cartridge and each case of explosives be labeled with the brand or trade name and with a statement that the explosive is approved by MSHA. The final rule also extends these requirements to apply to sheathed explosive units. Added to the final rule is a requirement that each wrapper and case of explosives and sheathed units be marked with the test detonator strength and the minimum product firing temperature. Absent a Federal requirement, approval-holders would label explosive cartriduges, sheathed explosive units and cases with the brand or trade name and would need to purchase new plates to change the name of new formulations prior to marketing. MSHA estimates that the cost of the wrapper is essentially the same with or without the words "MSHA Approved Explosive", the test detonator strength, and the minimum product firing temperature. MSHA, therefore, has associated no cost with the requirement that the label include these items.

Prior to commercial production, manufacturers conduct exhaustive tests to evaluate the performance of explosives under a variety of field conditions. Manufacturers typically include design aspects in explosive formulations so the products will properly function over the range of temperatures that may be encountered in blasting operations in underground coal mines. Characteristics related to minimum product firing temperature are part of the manufacturer's design parameters for explosives and such data is presently available in product technical information and literature.

The existing requirement for approval holder to provide a case-insert, warning the user that the explosive is approved only when used in conformance with the requirements of Part 15, is not included in the final rule. MSHA believes that requirements governing the use of explosives are appropriately included in related safety standards and should not be addressed in requirements for approval of explosives. Since the final rule deletes this case-insert requirement, the total annual cost savings would be about $2400.

The final rule adds a new requirement that approval holders report to MSHA any knowledge of the distribution of approved explosives or sheathed explosive units not meeting the specifications of the approval. Few manufactured lots of explosives, which do not meet the specifications of the approval, are distributed inadvertently. Based on a worst case analysis, MSHA estimates that each approval holder may need to report the distribution of explosives or sheathed units which do not meet specifications once per year. The total cost for these reports would be about $100.

In accordance with section 3504(h) of the Paperwork Reduction Act of 1980 (Title 44 U.S.C. Chapter 35), the collection of information requirements contained in the final rule have been approved by OMB under control number 1219-0066.

List of Subjects in 30 CFR Part 15

Administrative practice and procedure, Explosives, Mine Safety and health, Underground mining.

Date: November 9, 1988.

David C. O'Neal,

Deputy Assistant Secretary for Mine Safety and Health.

Accordingly, Chapter I of Title 30, Code of Federal Regulation is amended by revising Part 15 to read as follows:

PART 15—REQUIREMENTS FOR APPROVAL OF EXPLOSIVES AND SHEATHED EXPLOSIVE UNITS

Subpart A—General Provisions

Sec.

Subpart B—Requirements for Approval of Explosives

Subpart C—Requirements for Approval of Sheathed Explosive Units or Other Explosive Units Designed to be Fired Outside the Confines of a Borehole

Authority: 30 U.S.C. 957.

Subpart A—General Provisions

§ 15.1 Purpose and effective dates.

This part sets forth the requriements for approval of explosives and sheathed explosive units to be used in underground coal mines and certain underground metal and nonmetal gassy mines and is effective January 17, 1989. Those manufacturers proceeding under the provisions of the previous regulation may file requests for approval or extension of approval of explosives under that regulation until November 20, 1989. After November 20, 1989, all requests for approval or extension of approval of explosives or sheathed explosive units shall be made in accordance with Subpart A and the applicable subpart of this part. Explosives issued an approval under regulations in place prior to January 17, 1989, and in compliance with those regulations, may continue to be manufactured and marked as approved as long as no change to the explosive is made.

§ 15.2 Definitions.

The following definitions apply in this part.

Applicant. An individual or organization that manufactures or controls the production of an explosive or an explosive unit and that applies to MSHA for approval of that explosive or explosive unit.

Approval. A document issued by MSHA which states that an explosive or explosive unit has met the requirements of this part and which authorizes an approval marking identifying the explosive or explosive unit as approved as permissible.

Explosive. A substance, compound, or mixture, the primary purpose of which is to function by explosion.

Extension of approval. A document issued by MSHA which states that the change to an explosive or explosive unit previously approved by MSHA under this part meets the requirements of this part and which authorizes the continued use of the approval marking after the appropriate extension number has been added.

Minimum product firing temperature. The lowest product temperature at which the explosive or explosive unit is approved for use under this part.

Post-approval product audit. Examination, testing, or both, by MSHA of approved explosives or explosive units selected by MSHA to determine whether they meet the technical requirements and have been manufactured as approved.

Sheath. A chemical compound or mixture incorporated in a sheathed explosive unit and which forms a flame inhibiting cloud on detonation of the explosive.

Sheathed explosive unit. A device consisting of an approved or permissible explosive covered by a sheath encased in a sealed covering and designated to

be fired outside the confines of a borehole.

Test detonator. An instantaneous detonator that has a strength equivalent to that of a detonator with a base charge of 0.40–0.45 grams PETN.

§ 15.3 Observers at tests and evaluations.

Only personnel of MSHA and the Bureau of Mines, U.S. Department of the Interior, representatives of the applicant, and such other persons as agreed upon by MSHA and the applicant shall be present during tests and evaluations conducted under this part.

§ 15.4 Application procedures and requirements.

(a) *Application.* Requests for an approval or an extension of approval under this part shall be sent to: U.S. Department of Labor, Mine Safety and Health Administration, Approval and Certification Center, P.O. Box 251, Industrial Park Road, Triadelphia, West Virginia 26059.

(b) *Fees.* Fees calculated in accordance with Part 5 of this Title shall be submitted in accordance with § 5.40.

(c) *Original approval for explosives.* Each application for approval of an explosive shall include—

(1) A technical description of the explosive, including the chemical composition of the explosive with tolerances for each ingredient;

(2) A laboratory number or other suitable designation identifying the explosive. The applicant shall provide the brand or trade name under which the explosive will be marketed prior to issuance of the approval;

(3) The lengths and diameters of explosive cartridges for which approval is requested;

(4) The proposed minimum product firing temperature of the explosive; and

(5) The name, address, and telephone number of the applicant's representative responsible for answering any questions regarding the application.

(d) *Original approval for sheathed explosive units.* Each application for approval of a sheathed explosive unit shall include—

(1) A technical description of the sheathed explosive unit which includes the chemical composition of the sheath, with tolerances for each ingredient, and the types of material used for the outer covering;

(2) The minimum thickness weight, and specific gravity of the sheath and outer covering;

(3) The brand or trade name, weight, specific gravity, and minimum product firing temperature of the approved explosive to be used in the unit;

(4) The ratio of the weight of the sheath to the weight of the explosive; and

(5) The name, address and telephone number of the applicant's representative responsible for answering any questions regarding the application.

(e) *Subsequent approval of a similar explosive or sheathed explosive unit.* Each application for approval of an explosive or sheathed explosive unit similar to one for which the applicant already holds an approval shall include—

(1) The approval number of the explosive or sheathed explosive unit which most closely resembles the new one;

(2) The information specified in paragraphs (c) and (d) of this section for an original approval, as applicable, except that any document which is the same as the one listed by MSHA in the prior approval need not be submitted but shall be noted in the application; and

(3) An explanation of all change from the existing approval.

(f) *Extension of the approval.* Any change in an approved explosive or sheathed explosive unit from the documentation on file at MSHA that affects the technical requirements of this Part shall be submitted for approval prior to implementing the change.

(1) Each application for an extension of approval shall include—

(i) The MSHA-assigned approval number for the explosive or sheathed explosive unit for which the extension is sought;

(ii) A description of the proposed change to the approved explosive or sheathed explosive unit; and

(iii) The name, address, and telephone number of the applicant's representative responsible for answering any questions regarding the application.

(2) MSHA will determine what tests, additional information, samples, or material, if any, are required to evaluate the proposed change.

(3) When a change involves the chemical composition of an approved explosive or sheathed explosive unit which affects the firing characteristics, MSHA may require the explosive or sheathed explosive unit to be distinguished from those associated with the former composition.

(Approved by the Office of Management and Budget under control number 1219–0066)

§ 15.5 Test samples.

(a) *Submission of test samples.* (1) The applicant shall not submit explosives or sheathed explosive units to be tested until requested to do so by MSHA.

(2) The applicant shall submit 70 pounds of 1¼-inch diameter explosives and additional cartridges in the amount of 3200 divided by the length in inches, except for cartridges 12, 20 and greater than 36 inches long. The applicant shall submit 70 pounds and additional cartridges in the amount of 3800 divided by the length in inches for cartridges 12, 20 and greater than 36 inches long.

(3) If approval is requested for cartridges in diameters less than 1-¼ inches, the applicant shall submit a number of cartridges equal to 1800 divided by the length in inches, except for cartridges 12, 20 and greater than 36 inches long. The applicant shall submit cartridges in the amount of 2200 divided by the length in inches for cartridges 12, 20 and greater than 36 inches long.

(4) If approval is requested for cartridges in diameters larger than 1-¼ inches, the applicant shall submit an additional 10 cartridges of each larger diameter.

(5) If approval is requested for cartridges in more than one length, the applicant shall submit an additional 10 cartridges for each additional length and diameter combination.

(6) Each applicant seeking approval of sheathed explosive units shall submit 140 units.

(b) *Condition and composition.* Explosives and sheathed explosive units will not be tested that—

(1) Contain chlorites, chlorates, or substances that will react over an extended time and cause degradation of the explosive or sheathed explosive unit;

(2) Are chemically unstable;

(3) Show leakage;

(4) Use aluminum clips to seal the cartridge;

(5) Contain any combination of perchlorate and aluminum;

(6) Contain more than 5 percent perchlorate; or

(7) Contain any perchlorate and less than 5 percent water.

(c) *Storage.* Explosives and sheathed explosive units shall be stored in a magazine for at least 30 days before gallery tests are conducted.

§ 15.6 Issuance of approval.

(a) MSHA will issue an approval or a notice of the reasons for denying approval after completing the evaluation and testing provided for by this part.

(b) An applicant shall not advertise or otherwise represent an explosive or sheathed explosive unit as approved until MSHA has issued an approval.

§ 15.7 Approval marking.

(a) An approved explosive or sheathed explosive unit shall be marketed only under the brand or test name specified in the approval.

(b) The wrapper of each cartridge and each case of approved explosives shall be legibly labeled with the following: the brand or trade name, "MSHA Approved Explosive", the test detonator strength, and the minimum product firing temperature.

(c) The other covering of each sheathed explosive unit and each case of approved sheathed explosive units shall be legibly labeled with the following: the brand or trade name, "MSHA Approved Sheathed Explosive Unit", the test detonator strength, and the minimum product firing temperature.

(Approved by the Office of Management and Budget under control number 1219-0066)

§ 15.8 Quality assurance.

(a) Applicants granted an approval or an extension of approval under this part shall manufacture the explosive or sheathed explosive unit as approved.

(b) Applicants shall immediately report to the MSHA Approval and Certification Center, any knowledge of explosives or sheathed explosive units that have been distributed that do not meet the specifications of the approval.

(Approved by the Office of Management and Budget under control number 1219-0066)

§ 15.9 Disclosure of information.

(a) All information concerning product specifications and performance submitted to MSHA by the applicant shall be considered proprietary information.

(b) MSHA will notify the applicants of requests for disclosure of information concerning its explosives or sheathed explosive units and shall give the applicant an opportunity to provide MSHA with a statement of its position prior to any disclosure.

§ 15.10 Post-approval product audit.

(a) Approved explosives and sheathed explosive units shall be subject to periodic audits by MSHA for the purpose of determining conformity with the technical requirements upon which the approval was based. Any approved explosive or sheathed explosive unit which is to be audited shall be selected by MSHA and be representative of those distributed for use in mines. The approval-holder may obtain any final report resulting from such audit.

(b) No more than once a year, except for cause, the approval-holder, at MSHA's request, shall make one case of explosives or 25 sheathed explosive units available at no cost to MSHA for an audit. The approval-holder may observe any tests conducted during this audit.

(c) An approved explosive or sheathed explosive unit shall be subject to audit for cause at any time MSHA believes that it is not in compliance with the technical requirements upon which the approval was based.

(d) Explosives approved under regulations in effect prior to January 17, 1989, shall conform to the provisions on field samples set out in those regulations (See 30 CFR Part 15, 1987 Edition).

§ 15.11 Revocation.

(a) MSHA may revoke for cause an approval issued under this part if the explosive or sheathed explosive unit—

(1) Fails to meet the applicable technical requirements; or

(2) Creates a hazard when used in a mine.

(b) Prior to revoking an approval, the approval-holder shall be informed in writing of MSHA's intention to revoke. The notice shall—

(1) Explain the specific reasons for the proposed revocation; and

(2) Provide the approval-holder an opportunity to demonstrate or achieve compliance with the product approval requirements.

(c) Upon request, the approval-holder shall be afforded an opportunity for a hearing.

(d) If an explosive or sheathed explosive unit poses an imminent hazard to the safety or health of miners, the approval may be immediately suspended without a written notice of the agency's intention to revoke. The suspension may continue until the revocation proceedings are completed.

Subpart B—Requirements for Approval of Explosives

§ 15.20 Technical requirements.

(a) *Chemical composition.* The chemical composition of the explosive shall be within the tolerances furnished by the applicant.

(b) *Rate-of-detonation test.* The explosive shall propagate completely in the rate-of-detonation test. The test is conducted at an ambient temperature between 68 and 86 °F. Nongelatinous explosives are initiated with a test detonator only, while gelatinous explosives are initiated with a test detonator and a 60-gram tetryl pellet booster. The test is conducted on—

(1) A 50-inch column of 1¼ inch diameter cartridges; and

(2) A 50-inch column of the smallest diameter cartridges less than 1¼ inches submitted for testing.

(c) *Air-gap sensitivity.* The air-gap sensitivity of the explosive shall be at least 2 inches at the minimum product firing temperature and 3 inches at a temperature between 68 and 86 °F, and the explosive shall propagate completely.

(1) Air-gap sensitivity of the explosive is determined in the explosion-by-influence test using the 7-inch cartridge method. The air-gap sensitivity is determined for 1¼ inch diameter cartridges and each cartridge diameter smaller than 1¼ inches. Explosives are initiated with a test detonator.

(2) The 7-inch cartridge method is conducted with two 8-inch cartridges. One inch is cut off the end of each cartridge. The cartridges are placed in a paper tube, the cut ends facing each other, with the appropriate 2-inch or 3-inch air gap between them. The test is conducted at a temperature between 68 and 86 °F and at the minimum product firing temperature proposed by the applicant, or 41 °F, whichever is lower. The test temperature at which the explosive propagates completely will be specified in the approval as the minimum product firing temperature at which the explosive is approved for use.

(d) *Gallery Test 7.* The explosive shall yield a value of at least 450 grams for the lower 95 percent confidence limit (L_{95}) on the weight for 50 percent probability of ignition (W_{50}) in gallery test 7 and shall propagate completely. The L_{95} and W_{50} values for the explosive are determined by using the Bruceton up-and-down method. A minimum of 20 trials are made with explosive charges of varying weights, including wrapper and seals. Each charge is primed with a test detonator, then tamped and stemmed with one pound of dry-milled fire clay into the borehole of a steel cannon. The cannon is fired into air containing 7.7 to 8.3 percent of natural gas. The air temperature is between 68 and 86 °F.

(e) *Gallery Test 8.* The explosive shall yield a value of at least 350 grams for the weight for 50 percent probability of ignition (W_{CDG}) in gallery test 8 and shall propagate completely. The (W_{CDG}) value for the explosive is determined using the Bruceton up-and-down method. A minimum of 10 tests are made with explosive charges of varying weights, including wrapper and seals. Each charge is primed with a test detonator, then tamped into the borehole of a steel cannon. The cannon is fired into a mixture of 8 pounds of bituminous coal dust predispersed into 640 cubic feet of air containing 3.8 to 4.2 percent of natural gas. The air temperature is between 68 and 86 °F.

(f) *Pendulum-friction test.* The explosive shall show no perceptible reaction in the pendulum-friction test with the hard fiber-faced shoe. Ten trials of the test are conducted by releasing the steel shoe from a height of 59 inches. If there is evidence of sensitivity, the test is repeated with the hard fiber-faced shoe.

(g) *Toxic gases.* The total volume equivalent to carbon monoxide (CO) of toxic gases produced by detonation of the explosive shall not exceed 2.5 cubic feet per pound of explosive as determined in the large chamber test. The explosive shall propagate completely.

(1) The large chamber test is conducted with a one-pound explosive charge, including wrapper and seal, primed with a test detonator. The explosive charge is loaded into the borehole of a steel cannon, then tamped and stemmed with one pound of dry-milled fire clay. The cannon is fired into the large chamber and the gaseous products resulting from detonation of the explosive are collected and analyzed for toxic gases. At least two trials are conducted.

(2) The equivalent volume of each toxic gas produced, relative to CO, is determined by multiplying the measured volume of the gas by a conversion factor. The conversion factor is equal to the threshold limit value, time weighted average (TLV–TWA) in parts-per-million for CO divided by the TLV–TWA for the toxic gas. The TLV–TWA conversion factor for each gas for which MSHA shall test is specified in Table I of this subpart. The total volume equivalent to CO of the toxic gases produced by detonation of the explosive is the sum of the equivalent volumes of the individual toxic gases.

TABLE I.—CONVERSION FACTORS FOR TOXIC GASES

[For Equivalent Volume Relative to Carbon Monoxide]

	Toxic Gas	
	Conversion Factor	TLV–TWA (PPM)
Ammonia	2	25
Carbon Dioxide	0.01	5000
Carbon Monoxide	1	50
Hydrogen Sulfide	5	10
Nitric Oxide	2	25
Nitrogen Dioxide	17	3
Sulfur Dioxide	25	2

(h) *Cartridge diameter and length changes.* (1) For proposed changes to an approved explosive involving only cartridge diameter or length, MSHA will determine what tests, if any, will be required.

(2) When a proposed change to an approved explosive involves a smaller diameter than that specified in the approval, the rate-of-detonation and air-gap sensitivity tests will be conducted.

(3) No test will be conducted on cartridges with diameters the same as or smaller than those that previously failed to detonate in the rate-of-detonation test.

(i) *New technology.* MSHA may approve an explosive that incorporates technology for which the requirements of this subpart are not applicable if MSHA determines that the explosive is as safe as those which meet the requirements of this subpart.

§ 15.21 Tolerances for ingredients.

Tolerances for each ingredient in an explosive, which are expressed as a percentage of the total explosive, shall not exceed the following:

(a) Physical sensitizers: The tolerances established by the applicant;

(b) Aluminum: ±0.7 percent;

(c) Carbonaceous materials: ±3 percent; and

(d) Moisture and ingredients other than specified in paragraphs (a), (b), and (c) of this section: The tolerances specified in Table II.

TABLE II.—TOLERANCES FOR MOISTURE AND OTHER INGREDIENTS

Quantity of ingredients (as percent of total explosive or sheath)	Tolerance percent
0 to 5.0	1.2
5.1 to 10.0	1.5
10.1 to 20.0	1.7
20.1 to 30.0	2.0
30.1 to 40.0	2.3
40.1 to 50.0	2.5
50.1 to 55.0	2.8
55.1 to 100.0	3.0

§ 15.22 Tolerances for performance, wrapper and specific gravity.

(a) The rate of detonation of the explosive shall be within ±15 percent of that specified in the approval.

(b) The weight of wrapper per 100 grams of explosive shall be within ±2 grams of that specified in the approval.

(c) The apparent specific gravity of the explosive shall be within ±7.5 percent of that specified in the approval.

Subpart C—Requirements for Approval of Sheathed Explosive Units or Other Explosive Units Designed to be Fired Outside the Confines of a Borehole

§ 15.30 Technical requirements.

(a) *Quantity of explosive.* The sheathed explosive unit shall contain not more than 1½ pounds of an approved or permissible explosive.

(b) *Chemical composition.* The chemical composition of the sheath shall be within the tolerances furnished by the applicant.

(c) *Detonator well.* The sheathed explosive unit shall have a detonator well that—

(1) Is protected by a sealed covering;

(2) Permits an instantaneous detonator to be inserted in the unit with the detonator completely embedded in the well;

(3) Is provided with a means of securing the detonator in the well; and

(4) Is clearly marked.

(d) *Drop test.* The outer covering of the sheathed explosive unit shall not tear or rupture and the internal components shall not shift position or be damaged in the drop test.

(1) The drop test is conducted on at least 10 sheathed explosive units. Each unit is dropped on its top, bottom, and edge from a height of 6 feet onto a concrete surface. For units with explosives approved with a minimum product firing temperature, the drop test is performed with the unit at the minimum product firing temperature established for the explosive in the unit. For units with explosives approved under regulations in effect prior to [the effective date of this rule], the drop test is performed with the unit at 41 °F.

(2) At least four units which have been drop-tested shall be cut-open and examined.

(3) At least six units which have been drop-tested shall be subjected to gallery tests 9 and 10 as provided in paragraphs (e)(1) and (e)(2) of this section.

(e) *Gallery tests.* No sheathed explosive unit shall cause an ignition in gallery tests 9, 10, 11, or 12. Ten trials in each gallery test shall be conducted and each sheathed explosive unit shall propagate completely in all tests.

(1) Gallery test 9 is conducted in each trial with three sheathed explosive units placed in a row 2 feet apart. One of the trials is conducted with sheathed explosive units which have been subjected to the drop test as provided in paragraph (d)(3) of this section. The units are placed on a concrete slab, primed with test detonators and fired in air containing 7.7 to 8.3 percent natural

gas or 8.7 to 9.3 percent methane. The air temperature is between 41 and 86 °F.

(2) Gallery test 10 is conducted in each trial with three sheathed explosive units placed in a row 2 feet apart. One of the trials is conducted with sheathed explosive units which have been subjected to the drop test as provided in paragraph (d)(3) of this section. The units are placed on a concrete slab, primed with test detonators and fired in air containing 3.8 to 4.2 percent natural gas, or 4.3 to 4.7 percent methane, mixed with 0.2 ounces per cubic foot of predispersed bituminous coal dust. The air temperature is between 41 and 86 °F.

(3) Gallery test 11 is conducted in each trial with three sheathed explosive units arranged in a triangular pattern with the units in contact with each other. The units are placed in a simulated crevice formed between two square concrete slabs, each measuring 24 inches on a side and 2 inches in thickness. The crevice is formed by placing one slab on top of the other and raising the edge of the upper slab at least 4 inches. The sheathed explosive units are primed with test detonators and fired in air containing 7.7 to 8.3 percent natural gas or 8.7 to 9.3 percent methane. The air temperature is between 41 and 86 °F.

(4) Gallery test 12 is conducted in each trial with three sheathed explosive units arranged in a triangular pattern with the units in contact with each other. The units are placed in a corner formed by three square steel plates, each measuring 24 inches on a side and one inch in thickness. The sheathed explosive units are primed with test detonators and fired in air containing 7.7 to 8.3 percent natural gas or 8.7 to 9.3 percent methane. The air temperature is between 41 and 86 °F.

(f) *Detonation test.* Each of ten sheathed explosive units shall propagate completely when fired at the minimum product firing temperature for the explosive used in the unit or 41 °F for units with explosives approved under regulations in effect prior to [insert the effective date of this rule]. The units are initiated with test detonators.

(g) *New technology.* MSHA may approve an explosive unit designed to be fired outside the confines of a borehole that incorporates technology for which the requirements of this subpart are not applicable if MSHA determines that such explosive unit is as safe as those which meet the requirements of this subpart.

§ 15.31 Tolerances for ingredients.

Tolerances established by the applicant for each ingredient in the sheath shall not exceed the tolerances specified in Table II § 15.21 of this part.

§ 15.32 Tolerances for weight of explosive, sheath, wrapper, and specific gravity.

(a) The weight of the explosive, the sheath, and the outer covering shall each be within ±7.5 percent of that specified in the approval.

(b) The ratio of the weight of the sheath to that of the explosive shall be within ±7.5 percent of that specified in the approval.

(c) The specific gravity of the explosive and sheath shall be within ±7.5 percent of that specified in the approval.

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