

**DEPARTMENT OF TRANSPORTATION****Research and Special Programs Administration****49 CFR Parts 172, 173, 174, and 177**

[Docket No. HM-198, Amdt. Nos. 172-112, 173-205, 174-64, 177-72]

**Molten Sulfur**

**AGENCY:** Research and Special Programs Administration (RSPA), DOT.

**ACTION:** Final rule.

**SUMMARY:** RSPA is amending the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-179) to regulate molten sulfur as an ORM-C material. This material would be subjected to the hazard communication, general packaging and incident reporting requirements contained in the HMR. These changes are necessary to provide emergency response personnel with sufficient hazard identification information to respond to transportation incidents, and to increase the overall safety in the transport of this material.

**EFFECTIVE DATE:** These amendments are effective on January 2, 1989. However, compliance with the regulations as amended herein is authorized as of June 13, 1988.

**FOR FURTHER INFORMATION CONTACT:**

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**SUPPLEMENTARY INFORMATION:****I. Background**

On November 21, 1986, RSPA published a notice of proposed rulemaking (NPRM) in the *Federal Register*, under Docket HM-198, Notice No. 86-6 (51 FR 42114). In Notice 86-6, RSPA proposed to add molten sulfur to the § 172.101 Table, with a hazard class of "flammable solid" and a packaging reference to § 173.24. A "+" symbol appeared in Column 1 of the § 172.101 Table to indicate that this material would be regulated as a flammable solid even though it did not meet the definition for "flammable solid" in § 173.150. This action to regulate molten sulfur was based on RSPA's belief that molten sulfur may pose an unreasonable risk to health and safety or property when transported in commerce.

Several incidents involving the transport of molten sulfur, including three in the state of California since 1985, have emphasized the need for

regulation of this material. Accidents involving spills near Barstow County and Culver City in 1986, and another in Benecia in 1985, demonstrated a lack of hazard communication. In each of these incidents, lack of swift and accurate identification of the material led to delays in handling the incidents and, in at least two instances, contributed to injuries sustained by persons on the scene. Molten sulfur will burn persons coming in contact with it and may present a toxic hazard due to the presence of limited quantities of hydrogen sulfide gas. If molten sulfur is ignited, it produces large quantities of toxic sulfur dioxide and may cause a fire to spread as a result of the burning liquid's tendency to flow quite readily. The Benecia, California incident resulted in two persons being killed and twenty-six persons being injured by the spill and closure of a major transportation artery for twenty-four hours. The interested reader is directed to Notice No. 86-6 for additional background information concerning the Benecia, California incident.

Notice No. 86-6 consisted of two parts: An NPRM addressed to molten sulfur and an advance notice of proposed rulemaking, consisting of a series of eleven questions, addressed to other molten materials, such as molten aluminum. This final rule addresses only molten sulfur. RSPA will address other molten materials in a future rulemaking action.

In response to the NPRM, RSPA received 36 comments addressed to molten sulfur. Five commenters supported the proposed actions, essentially as proposed, citing the need for hazard communication requirements and general packaging requirements. Several of these commenters stated that the flammable solid hazard class was appropriate for consistency with the classification of molten sulfur in the United Nations Recommendations on the Transport of Dangerous Goods (UN Recommendations).

Ten commenters opposed any regulation of molten sulfur. These commenters contended that regulation was inappropriate, some on the basis that the hazards posed by the material do not justify regulation and others on the basis that the material does not meet the definition of a flammable solid.

Twenty-one commenters were in favor of regulating molten sulfur but opposed its classification as a flammable solid. Several commenters representing rail concerns stated that classification of molten sulfur as a flammable solid would subject rail cars transporting the material to train placement requirements. In addition,

commenters contended that this would significantly increase the costs incurred by rail carriers and shippers of molten sulfur. Based on information provided by commenters, RSPA estimated that over 90,000 rail carloads of molten sulfur are transported each year.

Several commenters argued that, because molten sulfur does not meet the definition in § 173.150 for a flammable solid, it is inappropriate, and potentially confusing, to classify it as a flammable solid. Commenters suggested that molten sulfur be classed as an ORM-C, rather than a flammable solid.

RSPA's primary reason for initiating this rulemaking action was to extend the hazard communication requirements to molten sulfur. RSPA proposed to class the material as a flammable solid, rather than an ORM-C, because shipping papers and markings are normally required for shipments of flammable solids, but not for ORM-C materials in all instances. RSPA believes that the need for both shipping paper and markings is essential to communicate the hazards of molten sulfur.

RSPA agrees with the commenters that molten sulfur does not meet the definition in § 173.150 for a flammable solid, nor does it meet the defining criteria for flammable solids in the UN Recommendations. However, there are many hazardous materials which do not meet the defining criteria of the hazard class to which they are assigned. These materials appear in the § 172.101 Table with a "+" symbol in column 1.

After consideration of the merits of the comments submitted, RSPA agrees with the commenters that classing of molten sulfur as a flammable solid may be inappropriate. With regard to the hazards posed by molten sulfur, it appears that molten sulfur poses a lesser degree of hazard than other materials regulated as flammable solids. Also, it appears that any safety benefits that might be attributable to requiring FLAMMABLE SOLID placards on transport vehicles, and train placement requirements for tank cars of molten sulfur, would be outweighed by the costs of these regulatory requirements.

RSPA believes that an appropriate level of safety, with regard to the hazard communication requirements, can be achieved by placing molten sulfur in the ORM-C hazard class, by requiring shipping papers in all modes of transport, and by requiring bulk packagings to be marked with the proper shipping name "MOLTEN SULFUR" and with identification numbers as prescribed in § 172.332. Therefore, in this final rule, RSPA is amending the HMR as follows. A new

entry is added to the § 172.101 Table to provide for Sulfur, molten, classed as an ORM-C. Section 172.200(b) is revised to require shipping papers for ORM materials when transported in a regulated mode. Section 173.1080 is revised to provide for packaging of molten sulfur in conformance with § 173.510 and to require the marking of bulk packages containing the material. Sections 174.24(b) and 177.817(d) are amended for consistency with the changes made in § 172.200.

The revision to § 172.200(b) affects materials other than molten sulfur and clarifies the application of shipping paper requirements to ORM-A, B, and C materials. Most ORM-A, B, and C materials are regulated only for transportation by aircraft or vessel, or both, as indicated in the § 172.101 Table by the appearance of the symbols, "A" and "W" in Column 1. Under the language originally adopted in Docket HM-103/112 (41 FR 16044), ORM-A, B, and C materials were subject to shipping paper requirements only when transported in a regulated mode, i.e., in the air or water modes. Subsequent amendments to the HMR added ORM-B and C materials (e.g., gallium and asbestos, respectively) that are regulated in all modes of transportation. These subsequent amendments were intended to subject these materials to shipping paper requirements when transported in any mode when there is no "A" or "W" in Column 1 of the § 172.101 Table. In Docket HM-137 (41 FR 37114), wherein gallium metal, liquid, and gallium metal, solid, were subjected to regulation under the HMR, it was specifically stated that " \* \* \* the provisions of 49 CFR Part 172, Subparts C and D (relating to shipping papers and markings) \* \* \* are applicable to shipments of gallium metal \* \* \*". Inadvertently, § 172.200(b) was not revised at that time to clarify that shipping papers are required any time an ORM-A, B, or C material is transported in a regulated mode. This error is corrected in this final rule. In addition, the language of §§ 174.24(b) and 177.817(d) is revised for consistency with the revised § 172.200(b).

Most commenters contended that specific packaging requirements are not needed for molten sulfur and that § 173.24 should be referenced for general packaging requirements. In this rule, RSPA specifies packaging in accordance

with the general packaging requirements of § 173.510, which, in effect, requires conformance with § 173.24. RSPA believes that reference to general packaging requirements in §§ 173.510 and 173.24, instead of adoption of more specific packaging requirements, is acceptable for the present time. RSPA anticipates further consideration of the need for more specific packaging requirements as part of RSPA's consideration of the need for packaging standards for molten materials in general which, as previously mentioned, will be addressed in a future NPRM.

Several commenters contended that RSPA should create a distinct hazard class for molten sulfur and other molten materials. RSPA desires to avoid a proliferation of hazard classes to address materials with unique characteristics and believes that the actions taken in this final rule address the safety issues in a practicable manner. However, RSPA wishes to note that Docket HM-181 (Notice No. 87-4; 52 FR 42772) contains a proposal to eliminate the ORM-C hazard class in favor of the internationally recognized Class 9 for miscellaneous hazardous materials. Therefore, this issue will be given further consideration in future rulemaking action. Also, since molten sulfur is classed as a flammable solid (i.e., Division 4.1), rather than a Class 9 material, in the United Nations Recommendations on the Transport of Dangerous Goods and the International Maritime Dangerous Goods Code, RSPA may propose a change in this classification.

#### Administrative Notices

##### *Executive Order 12291*

The RSPA has determined that this final rule (1) is not "major" under Executive Order 12291; (2) is not "significant" under DOT's regulatory policies and procedures (44 FR 11034); (3) will not affect not-for-profit enterprises or small governmental jurisdictions; and (4) does not require an environmental impact statement under the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*). A regulatory evaluation is available for review in the Docket.

##### *Executive Order 12612*

This action has been analyzed in accordance with the principles and

criteria contained in Executive Order 12612, and it has been determined that the proposed final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

#### *Impact on Small Entities*

Based on limited information concerning size and nature of entities likely to be affected by this final rule, I certify that this regulation will not have a significant economic impact on a substantial number of small entities.

#### *Paperwork Reduction Act*

Information collection requirements contained in the current § 172.200 pertaining to shipping papers have been approved by the Office of Management and Budget under the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96-511) and assigned control number, OMB No. 2137-034 (expiration date 11-30-90).

#### List of Subjects

##### *49 CFR Part 172*

Hazardous materials transportation, Shipping papers, Marking and labeling.

##### *49 CFR Part 173*

Hazardous materials transportation, Packaging and containers.

##### *49 CFR Part 174*

Hazardous materials transportation, Rail carriers.

##### *49 CFR Part 177*

Hazardous materials transportation, Motor carriers.

### **PART 172—HAZARDOUS MATERIALS TABLES AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS**

1. The authority citation for Part 172 continues to read as follows:

**Authority:** 49 U.S.C. 1803, 1804, 1805, and 1806; 49 CFR Part 1, unless otherwise noted.

2. In § 172.101, the Hazardous Materials Table is amended by adding a new entry in appropriate alphabetical sequence, as follows:

## § 172.101 Hazardous Materials Table.

| + /E/<br>A/W. | Hazardous materials<br>description and proper<br>shipping names | Hazard<br>class. | Identifi-<br>cation<br>No. | Label(s) required<br>(if not excepted) | Packaging       |                               | Maximum net quantity, in<br>one package          |                           | Water shipments      |                          |   |
|---------------|---|------------------|----------------------------|--|-----------------|-------------------------------|--|---------------------------|----------------------|--------------------------|---|
|               |   |                  |                            |  | Excep-<br>tions | Specific<br>require-<br>ments | Passenger<br>carrying,<br>aircraft or<br>railcar | Cargo<br>aircraft<br>only | Cargo<br>ves-<br>sel | Pas-<br>senger<br>vessel | Other<br>requirements                               |
| (1)           | (2)   | (3)              | (3(a))                     | (4)                                    | (5(a))          | (5(b))                        | (6(a))   | (6(b))                    | (7(a))               | (7(b))                   | (7(c))  |
|               | (Add) Sulfur, molten.....                                       | ORM-C            | UN2448                     | None.....                              | 173.505         | 173.1080                      | Forbidden...                                     | Forbidden...              | 1                    | 1                        | Stow away from<br>oxidizers and<br>living quarters. |

3. In § 172.200, paragraph (b) is revised to read as follows:

§ 172.200 Applicability.

(b) This subpart does not apply to any material, other than a hazardous waste or a hazardous substance, that is—

(1) Identified by the letter "A" in Column 1 of the § 172.101 Table, except when the material is offered or intended for transportation by air; or

(2) Identified by the letter "W" in Column 1 of the § 172.101 Table, except when the material is offered or intended for transportation by water; or

(3) An ORM-D, except when the material is offered or intended for transportation by air.

**PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS**

4. The authority citation for Part 173 continues to read as follows:

Authority: 49 App. U.S.C. 1803, 1084, 1805, 1806, 1807, and 1808; 49 CFR Part 1, unless otherwise noted.

5. Section 173.1080 is revised to read as follows:

§ 173.1080 Sulfur, molten or solid.

(a) *Solid sulfur.* When offered for transportation by water, solid sulfur, including flowers of sulfur (sulfur flower), must be packaged in conformance with § 173.510 in packagings as follows:

- (1) Metal barrel or drum;
- (2) Wooden barrel or keg;
- (3) Wooden or fiberboard box;
- (4) Sift-proof multi-wall paper bag;
- (5) Sift-proof paper-lined burlap bag;
- (6) Sift-proof rail car; or
- (7) Sift-proof or lined freight container.

(b) *Molten sulfur.* Packagings for molten sulfur must—

- (1) Conform to the requirements of § 173.510; and
- (2) For bulk packagings, be marked "MOLTEN SULFUR" in the manner prescribed in Subpart D of Part 172 of this subchapter.

**PART 174—CARRIAGE BY RAIL**

6. The authority citation for Part 174 continues to read as follows:

Authority: 49 U.S.C. 1803, 1804, 1805, 1808; 49 CFR Part 1, unless otherwise noted.

7. In § 174.24, paragraph (b) is revised to read as follows:

§ 174.24 Shipping papers.

(b) This subpart does not apply to a material that is excepted from shipping paper requirements as specified in § 172.200 of this subchapter.

**PART 177—CARRIAGE BY PUBLIC HIGHWAY**

8. The authority citation for Part 177 continues to read as follows:

Authority: 49 App. U.S.C. 1803, 1804, 1805; 49 CFR Part 1, unless otherwise noted.

9. In § 177.817, paragraph (d) is revised to read as follows:

§ 177.817 Shipping papers.

(d) This subpart does not apply to a material that is excepted from shipping paper requirements as specified in § 172.200 of this subchapter.

Issued in Washington, DC, on May 10, 1988, under authority delegated in 49 CFR Part 1.

M. Cynthia Douglass,

Administrator, Research and Special Programs Administration.

[FR Doc. 88-10802 Filed 5-12-88; 8:45 am]

BILLING CODE 4910-60-M