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Ammonium molybdate

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(*English Translation*)

GB/T 3460-2017

Replace GB/T 3460-2007

National Standard of the People’s Republic of China

ICS 77.150.99

H 63

Foreword

SAC/TC 243 is in charge of this English translation. In case of any doubt the contents of English translation, the Chinese original shall be considered authoritative.

This standard is drafted in accordance with the rules given in the GB/T 1.1-2009.

This standard replaces GB/T 3460-2007《Ammonium molybdate》

In addition to a number of editorial changes, the following technical deviations have been made with respect to the GB/T 3460-2007:

——Revising the requirements on products classification;

——Modifying the range of Mo content;

——Adding the requirements of Cr, Ti and other elements;

——Adjusting the requirements of Ca, Mg, Na, K, W and other impurity elements;

——Revising the application requirements;

——Modifying the product bulk density;

——Adding the technical requirement on Fisher particle size;

——Revising the product screening requirement;

——Adding the product sampling requirement;

——Modifying the product shelf life requirement.

This standard was proposed by China Nonferrous Metals Industry Association.

This standard was prepared by SAC/TC 243 National Technical Committees of Standardization for Nonferrous Metals.

The previous editions of this standard are as following:

——GB/T 3460-1982, GB/T 3460-2007

Ammonium Molybdate

1 Scope

This standard specifies the requirements, test method, testing rules,marking,packaging, transportation,storage,quality certificate and purchase contract (or order)content of Ammonium Dimolybdate (ADM), Ammonium Tetramolybdate (AQM) and Ammonium Hetamolybdate (AHM).

This standard is applicable to ammonium molybdate produced with various methods.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the editions cited applies. For undated references, the latest edition of the referenced document(includes all amendments) applies.

GB/T 1479.1，*Metallic powders-Determination of apparent density-Part 1: funnel method*

GB/T 3249，*Test method for fisher number of metal powders and related compounds*

GB/T 4325，*(all parts) Methods for chemical analysis of molybdenum*

GB/T 5314，*Powders for powder metallurgical purposes-Sampling*

YS/T 555.1，*Methods for chemical analysis of molybdenum concentrate-Determination of molybdenum content-Lead molybdate gravimetry*

3 Requirements

3.1 Product classification

Ammonium molybdates are classified four designations as MSA-0, MSA-1,MSA-2, MSA-3 according to the difference of chemical composition and application. Two designations are classified according to physical characteristics.

3.2 Chemical composition

The chemical composition of four designations shall conform to table 1.

3.3 Physical properties

Physical performance of products shall comply to table 2

3.4 Appearance

The products present as white loose crystals, no deliquescence, no caking, no visible inclusions.

3.5 Other

The particular requirements shall be settled by negotiation between supplier and buyer.

Table 1 Chemical composition of ammonium molybdates %（wt）

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Designation | | MSA-0 | MSA-1 | MSA-2 | MSA-3 |
| Mo content / ≥ | | ADM 56.45±0.40, AQM≥56.00, AHM 54.35±0.40 | | | |
| Impurity  Content  /  ≤ | K | 0.0060 | 0.0100 | 0.0150 | 0.0180 |
| Na | 0.0005 | 0.0008 | 0.0010 | 0.0015 |
| Fe | 0.0005 | 0.0005 | 0.0006 | 0.0010 |
| Al | 0.0005 | 0.0005 | 0.0006 | 0.0008 |
| Si | 0.0005 | 0.0005 | 0.0005 | 0.0010 |
| Sn | 0.0005 | 0.0005 | 0.0005 | 0.0010 |
| Pb | 0.0003 | 0.0005 | 0.0005 | 0.0005 |
| P | 0.0005 | 0.0005 | 0.0005 | 0.0010 |
| Mg | 0.0003 | 0.0005 | 0.0006 | 0.0010 |
| Ca | 0.0005 | 0.0006 | 0.0010 | 0.0015 |
| Cd | 0.0005 | 0.0005 | 0.0005 | 0.0006 |
| Sb | 0.0005 | 0.0005 | 0.0005 | 0.0006 |
| Bi | 0.0005 | 0.0005 | 0.0005 | 0.0006 |
| Cu | 0.0003 | 0.0004 | 0.0005 | 0.0005 |
| Ni | 0.0003 | 0.0003 | 0.0003 | 0.0005 |
| Mn | 0.0003 | 0.0003 | 0.0003 | 0.0005 |
| Cr | 0.0002 | 0.0002 | 0.0007 | 0.0007 |
| W | 0.0100 | 0.0120 | 0.0150 | —— |
| Ti | 0.0005 | 0.0005 | 0.0005 | 0.0005 |
| As | 0.0005 | 0.0005 | 0.0005 | 0.0005 |

Table 2 Physical performance of ammonium molybdates

|  |  |  |
| --- | --- | --- |
| Physical properties | Designation 1 | Designation 2 |
| Fisher size/μm | Real measurement | Real measurement |
| Bulk density/(g/cm3) | 0.60～1.40 | 1.40～1.75 |
| Screening size/μm | 420 | 841 |

4 Test Methods

4.1 Determination of molybdenum content

The molybdenum content in the product shall be determined according to YS/T 555.1.

4.2 Determination of other impurity elements

The chemical composition of other impurity elements in the product shall be determined in accordance with GB/T 4325.

4.3 Fisher size test

Fisher size test shall be carried out according to GB/T 3249.

4.4 Bulk Density test

Bulk density test shall be carried out according to GB/T 1479

4.5 Screening

Products shall be screened through 420μm or 841μm standard sieves.

4.6 Appearance Inspection

Visual inspection.

5 Conformity with standards

5.1 Inspection and acceptance

5.1.1 The technical supervision department from the supplier will check the products and fill in the quality certificate to insure the quality of the product in accordance with this standard (or order contract).

5.1.2 The purchasers shall check the received products in accordance with this standard. In the event that the unconformity is found between check results and this standard (or the contract), it shall be put forward to supplier in 30 days from the date receiving the products and be settled through negotiation between the supplier and purchaser. If any arbitration is needed, the arbitrated material shall not be less than 60% of this lot of product and arbitration sampling shall be conducted bilaterally on spot of goods deposited.

5.2 Lot

Products shall be submitted for lots acceptance. Each Lot shall be composed of same type, designation, trademark and the weight of each lot shall be decided bilaterally.

5.3 Test items

Chemical composition, exterior appearance and physical performances tests shall be carried out for each lot.

5.4 Sampling

5.4.1 Sampling number

The products sampling number shall be in accordance with GB/T 5314. Sampling number of each lot shall be in accordance with table 3.

Table 3 Sampling Number

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Products number | 1~3 | 4~10 | 11~20 | ≥21 |
| Sampling number | All | 3 | 5 | 7 |

5.4.2 .Sampling location

Be in accordance with GB/T 5314.

5.4.3 Sample preparation

Be in accordance with GB/T 5314.

5.5 Test results judgment

5.5.1 Double sampling is allowed to repeat the test, when the chemical composition test results do not meet the requirements of this standard. If there is still one result of the repeated test disqualify, the lot is judged as unqualified.

5.5.2 If the physical performances are unqualified, double sampling test is allowed and if there is still one result disqualify , the lot is judged as unqualified.

5.5.3 The disqualification of exterior appearance will disqualify the whole lot of products.

6 Marking, packaging, transport and storage

6.1 Product marking

The exterior package of products shall be stamped supplier name, product name and trademark, designation, Lot number, net weight and be marked labels moisture proof”, “anti-counterfeit” and other.

6.2 Packaging

Product shall be packaged in bags or drums. Interior package should be sealed double plastic bags for both. Bags shall be woven bags and the net weight of each bag can be 25kg, 50kg and 1000kg; The net weight shall be 25kg for fiberboard drums, 50kg for iron barrels. The drums shall be lead sealed in products selling.

6.3 Transport and storage

6.3.1 Products shall be put in ventilated and dry places and prevent from moisture, collision and high pressure.

6.3.2 The storage period shall not be more than 6 months.

6.4 Quality certificate

The quality certificate should be attached for each lot products and be noted:

1. Supplier name, address, telephone and telefax;
2. Product name;
3. Designation;
4. Lot number;
5. Net weight and quantity;
6. Various analysis test results and test seal of supplier quality inspection department;
7. Number of this standard;
8. Date of delivery (or packaging date).

7 Contract or ordering information

Contract (or Order list) shall include following:  
a) Product name;

b) Product designation;

c) Requirements;

d) Product Net Weight;

e) Number of this standard.

8 Recommendation on application

8.1 ADM

ADM [(NH4)2Mo2O7] is soluble in water and bases and can be used in catalysts of petroleum refining on hydrogenation, desulfurization and of fertilizer.

8.2 AQM

AQM [(NH4)2Mo4O13·H2O], is a complex mainly consisted of Ammonium Tetramolybdate, slightly dissolved in water, but soluble in bases and aqueous ammonia. It can be used in pure MoO3 production, Mo powder production,catalysts of petroleum refining on hydrogenation, desulfurization and of fertilizer.

8.3 AHM

AHM [(NH4)6Mo7O24·4H2O], is also known as paramolybdate and highly soluble in water. It can be used in catalysts of petrochemicals industry, acrylo-nitrile in particular and in producing of molybdenum fertilizer, MoO3 as well as Mo metal compounds.

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