

Manufacturing and Sales Management Guidelines for Nonferrous Slag Products

1. Purpose

For nonferrous slag products (the term "nonferrous slags" herein shall refer to ferronickel slag, copper slag, and zinc slag) manufactured and sold by each member of the Slag Committee of the Japan Mining Industry Association (JMIA) and their manufacturing/sales affiliate (hereinafter "each member"), the Guidelines herein provide for requirements to be complied with by manufacturers/distributors to facilitate their transactions and ensure their proper use at the customer (the term "customer" herein shall refer to not only buyers of nonferrous slag products sold by each member but also substantial decision-makers on the usage or work execution method of nonferrous slag products while the term "each member's buyers" herein shall refer to those who purchase nonferrous slag products as per sales and purchase agreements).

"Ferronickel slag" shall refer to byproduct slag obtained when manufacturing ferronickel using nickel ores and other raw materials per the requirements provided for in JIS A 5011-2. "Copper slag" shall refer to byproduct slag obtained when manufacturing copper using refined copper ores and other raw materials per the requirements provided for in JIS A 5011-3. "Zinc slag" shall refer to byproduct slag obtained from zinc manufacturing at zinc smelters. The "substantial decision-makers on the usage or work execution method of nonferrous slag products" refer to owners, contractors, design consultants, and the like.

The term "member" herein shall refer to Nippon Yakin Kogyo Co., Ltd.; Pacific Metals Co., Ltd.; Sumitomo Metal Mining Co., Ltd.; Mitsubishi Materials Corporation; Pan Pacific Copper Co., Ltd.; Mitsui Mining & Smelting Co., Ltd.; and Dowa Metals & Mining Co., Ltd. The manufacturing/sales affiliate and business establishments covered herein are as follows: Oheyama Plant of Nippon Yakin Kogyo Co., Ltd.; Miyazu Sea and Land Transportation Co., Ltd.; Hachinohe Head Office (Manufacturing Works) of Pacific Metals Co., Ltd.; Toyo Smelter & Refinery of Sumitomo Metal Mining Co., Ltd.; Hyuga Smelting Co., Ltd.; Sumiko Logistics Co., Ltd.; Tamano Smelter & Refinery of Hibi Kyodo Smelting Co., Ltd.; Hibi Smelter of Hibi Smelting Co., Ltd.; Saganoseki Smelter & Refinery of JX Advanced Metals Corporation; Onahama Smelting & Refining Co., Ltd.; Naoshima Smelter & Refinery of Mitsubishi Materials Corporation; Hachinohe Smelting Company Ltd.; and Miike Smelting Co., Ltd.

2. Scope of applicability of nonferrous slag products

2-1. Nonferrous slag products

The Guidelines herein apply to all nonferrous slag products manufactured and sold by each member.

- (1) The intended purposes of nonferrous slags shall be limited to those shown in Attachment 1 – Places/Purposes of Use of Nonferrous Slag Products. No use shall be made for any other intended purpose. When the need arises to add any new intended purpose to those stated in Attachment 1, the addition shall be made through a request from each member concerned and consultation with the JMIA.
- (2) Nonferrous slag products shall be classified as follows depending on the manufacturing entity:

- (i) When each member themselves manufactures the product using a nonferrous slag only

When each member themselves manufactures a nonferrous slag product using a nonferrous slag only, it shall be a nonferrous slag product in the Guidelines herein.

- (ii) When each member prepares a mixture with other materials (i.e., when the nonferrous slag is crushed and size-sorted for mixing with other materials to process/manufacture a nonferrous slag product)

When a mixture of nonferrous slag (including those purchased from other members and their manufacturing/sales affiliates) with other materials is prepared by each member and then used as is, the mixed-preparation product shall be a nonferrous slag product in the Guidelines herein.

- (iii) When a third party other than each member prepares a mixture of a nonferrous slag sold to them from each member with other materials

When a third party other than each member prepares a mixture of a nonferrous slag sold to them from each member with other materials, the mixed-preparation product shall fall outside the scope of the definition of nonferrous slag products. However, each member shall present the requirements to be complied with by the third party (e.g., mixing ratio and other conditions of use) at the time of sales and shall exchange written contracts with the third party regarding the content of the requirements.

In addition, it shall be confirmed that the requirements agreed to by the third party at the conclusion of the contract are performed without fail.

- (3) For a nonferrous slag sold as a blasting abrasive by each member, it shall be confirmed that the nonferrous slag is disposed of in compliance with the Waste Management and Public Cleansing Law and other relevant laws and regulations after use.

2-2. Handling of nonferrous slags disposed of as waste

Unless a nonferrous slag meets the quality and/or environmental safety quality standards applicable depending on the place/purpose of use, each member shall not sell it as a nonferrous slag product. Nonferrous slags shall be properly disposed of in accordance with the Waste Management and Public Cleansing Law.

3. Responsibilities of each member and their manufacturing/sales affiliate

Each member shall prepare in-house management manuals relating to nonferrous slag products in accordance with the requirements provided for in the Guidelines herein. When manufacturing and selling a nonferrous slag product, each member shall comply with the Guidelines herein and the in-house manuals concerned.

Each member shall comply with the Guidelines herein and the like to ensure legal compliance and prevent, for example, the possible occurrence of nonferrous slag product quality-related concerns and nonferrous slag product-induced impediments to living environment preservation. At the same time, they shall make efforts to maintain and improve the trust in nonferrous slag products.

Each member shall develop a Manufacturing and Sales Management System for Nonferrous Slag Products. This system shall provide the basis for holding regular slug product manufacturing/sales meetings and the like to deploy activities that integrate manufacturing and sales.

Each member shall include a nonferrous slag management system diagram in their manuals and the like to ensure proper operation of the Guidelines herein. At the same time, the authorities of the manufacturing, quality, and shipping supervisors and individuals in charge shall be stated in the manuals and the like to define organizations and responsible persons. The quality and shipping supervisors should preferably belong to an independent organization separate from the manufacturing department.

When outsourcing sales operations, each member shall conclude an outsourcing contract to ensure compliance with the Guidelines herein. When outsourcing tasks related to generated nonferrous slags, such as crushing, sieving, metal recovery, depot management, and in-premise transportation, they shall similarly conclude an outsourcing contract to ensure compliance with the Guidelines herein.

After concluding an environmental safety agreement or the like with a local government, each member shall check the compliance status therewith.

4. Quality management for nonferrous slag products

4-1. Environmental safety quality to be delivered

- (1) Where any requirement for the environmental safety quality to be delivered by nonferrous slag products is provided for in any law, legally based order, ordinance, or rule, and notice based thereon (hereinafter "laws and regulations"), various JIS, national, and municipal specifications, or the latest outlines/guidelines of academic societies, industry associations, and the like, each member shall comply with the requirement.
- (2) When intending to sell a nonferrous slag product as a product compliant with original certification systems, including a municipal recycling certification system with jurisdiction over the places of use of nonferrous slag products, each member shall comply with the environmental safety quality standards prescribed by the municipality regarding the pertinent certification.
- (3) Where no explicit requirement for environmental safety quality is provided for in laws and regulations, various JIS, national, and municipal specifications, or the latest outlines/guidelines of academic societies, industry associations, and the like, each member shall comply with the standards applicable depending on the place/site or purpose of use of the nonferrous slag product to ensure the conformity thereof with the required environmental safety quality (see Attachment 2 "Environmental Safety Quality Standards in Manufacturing and Sales Management Guidelines for Nonferrous Slag Products").

4-2. Quality standards and the like other than the environmental safety quality in the previous subsection

- (1) Where any standard or the like for the quality to be delivered by nonferrous slag products is provided for in laws and regulations, various JIS, national, and municipal specifications, or the latest

outlines/guidelines of academic societies, industry associations, and the like, each member shall comply accordingly.

- (2) When intending to sell a nonferrous slag product as a product compliant with original certification systems, including a municipal recycling certification system with jurisdiction over the places of use of nonferrous slag products, each member shall comply with the quality standards and the like prescribed by the municipality regarding the pertinent certification.
- (3) Where no explicit quality standards and the like are provided for in laws and regulations, various JIS, national, and municipal specifications, or the latest outlines/guidelines of academic societies, industry associations, and the like, each member and their manufacturing/sales affiliate shall agree with the customer on quality standards and the like and comply therewith accordingly.

4-3. Pre-shipment inspection

Nonferrous slag products shall, in principle, undergo pre-shipment inspection by each member in accordance with relevant JIS standards, the Guidelines herein, or arrangements with the customer. Moreover, regular checks shall be performed for compliance with inspection procedures or arrangements with the customer.

During the above, environmental safety-type and delivery inspections concerning the environmental safety quality of nonferrous slag products shall be performed at the testing frequencies shown in Attachment 2 by a JIS Q 17025-compliant or JIS Q 17050-1 and -2-compliant testing laboratory or an analysis laboratory registered as a provider of certified environmental survey/measurement services. Note, however, that environmental safety delivery inspection may be conducted by in-house analysis, albeit on the condition of a yearly or more frequent analysis by a JIS Q 17025-compliant or JIS Q 17050-1 and -2-compliant testing laboratory or an analysis laboratory registered as a provider of certified environmental survey/measurement services and the verification of in-house analysis results.

The "provider of certified environmental survey/measurement services" in the Guidelines herein shall be a person registered as an operator of a business concerning the concentrations of substances in water or soil in accordance with the classification of measurement certification businesses under the Measurement Law.

Environmental safety quality inspections, including sample preparation, and other quality inspections shall be performed by personnel suitably competent for quality inspection, using testing equipment suitable therefor, under a testing environment suitable therefor.

Moreover, a framework shall be established to identify shipment and manufacturing lots and check manufacturing conditions, raw material conditions, and the like (assurance of traceability). Moreover, regular checks shall be performed to ensure that traceability is maintained.

Furthermore, records concerning the obtained results shall be retained for a predetermined retention period of at least ten years or more.

The manufacturing lots shown in Attachment 2 shall be specified by each member depending on the reality of manufacturing and quality management at each factory.

Each member shall submit records concerning environmental safety quality upon request from their customer.

4-4. Improvement of the reliability of test and inspection data

Each member should preferably undergo environmental safety quality inspection by a reliable inspection body. Inspections other than the environmental safety quality inspection shall be performed by an inspection department staffed with competent inspection personnel. Besides, test and inspection data should preferably be handled through a system with minimal human intervention (automation and other methods). When it cannot be helped but to handle test and inspection data through a system with human intervention, such data handling shall be conducted under the following rules:

- (1) Test and inspection personnel shall be sufficiently trained and regularly evaluated to keep their competence above a certain level.
- (2) Test and inspection data shall be checked by at least two or more persons. This checking shall be facilitated by taking overlook prevention measures, such as preparing a format that contains specified values (standard values).

5. Depot and storage management for nonferrous slag products

Each member shall ensure proper storage management by providing a dedicated slag depot(s) to prevent leakage to the outside of the depot(s) or foreign substance intrusions thereinto and taking measures to avoid negative impacts due to factors such as scattering to the surrounding areas.

Moreover, inventories of nonferrous slag products should preferably be managed by specifying optimal inventory levels. Optimal inventory levels should preferably be specified considering multiple aspects such as shipping lot size, frequency of orders, domestic/export products, depot characteristics, and production/sales trends.

When any temporary depot is in place, proper storage management, including inventory quantity, shall be performed with particular attention to preventing scattering to outside the depot(s) or foreign substance intrusions thereinto.

6. Nonferrous slag product sales management

6-1. Intended purposes specified for nonferrous slag products

Each member shall sell nonferrous slag products only for the intended purposes in Attachment 1 to ensure their proper effective use.

6-2. Screening of customers

Each member shall examine customers for the suitability of the intended purpose and the like and sell nonferrous slag products only to suitable customers. Moreover, the customer shall be examined for the criteria listed below. When the buyer differs from the customer, both shall be examined.

■ Examination criteria

- Any ambiguity in the description of the intended purpose of the product being transacted
- Checks based on the in-house compliance regulations of each member and their manufacturing/sales affiliate
- Any information on the customer's history of receiving administrative punishments (e.g., disqualification as a bidder) (content check required)
- Any problem in the customer's past transaction history
- Any doubtful point in the business content and management information of the customer's company

6-3. Before order acceptance

(1) Explanation of quality characteristics to the customer

When receiving an inquiry for a nonferrous slag product from the customer, each member shall provide the customer with a written explanation of the quality characteristics and precautions for the use of the nonferrous slag product by such a method as providing a pamphlet or technical literature depending on the intended purpose so that the customer can comply with laws and regulations and better understand the environmental loads that may occur due to improper use.

(2) Determination on the need for on-site survey before order acceptance, go/no-go determination on order acceptance, and determination on the need for mid- and post-work execution surveys

When receiving an inquiry for a nonferrous slag product from the customer, each member shall determine the need for an on-site survey of the place of use based on the customer's explanation of the place of use (including, hereinafter, temporary storage sites during transportation and work execution), the use conditions, the content and method of work execution, and the like. An on-site survey shall be conducted if determined necessary. Each member and their manufacturing/sales affiliate shall withhold sales of the product if its sales may lead to legal violations or the occurrence of impediments to living environment preservation despite necessary measures taken during work execution (including temporary storage sites) and after work execution as a result of prior consultation between the parties concerned based on the on-site survey concerned. Moreover, for products determined sellable, each member and their manufacturing/sales affiliate shall determine the need for a mid-/post-work execution survey and shall conduct a mid-/post-work execution survey if determined necessary. Even if on-site surveys before order acceptance and during/after work execution are determined unnecessary, each member shall keep records of reasons for such determinations. A storage period of at least two years shall be specified to retain such records of reasons for negative determination on the need.

The on-site survey items for the place of use shall be predetermined by each member.

For products determined sellable based on an on-site survey before order acceptance, each member shall explain to the customer the points to note during and after work execution and shall have prior consultation with the administration and local residents as necessary.

- (3) Practice standards for on-site survey before order acceptance, judgment criteria for acceptable orders, and practice standards for mid- and post-work execution surveys

Each member and their manufacturing/sales affiliate shall predetermine the (i) practice standards for on-site surveys of the place of use before order acceptance, (ii) judgment criteria for acceptable orders based on the results of on-site surveys before order acceptance, and (iii) practice standards for on-site surveys during and after work execution. Note that for cases of at least 3,000 tons or more, each member and their manufacturing/sales affiliate shall conduct an on-site survey before order acceptance.

- (4) Points to note for sellers

- (i) Each member shall sell buyers nonferrous slag products for value.

Where the transportation cost paid by each member and their manufacturing/sales affiliate may equal or exceed the sales price amount, each member and their manufacturing/sales affiliate shall select a third party other than the buyer and contractor as the freighter.

- (ii) Where the transportation cost may equal or exceed the sales price amount due to the relative locations of the places of shipment and use, each member shall verify the reasonability of the transportation cost by a method of obtaining price quotes from multiple freighters in advance.

- (iii) Each member shall, in principle, prohibit the resale/diversion of use of the nonferrous slag product they sell. When the buyer intends its resale/diversion of use, it shall be ensured that the buyer is notified in writing of the need to obtain prior consent from the seller.

- (5) Recording of on-site surveys before order acceptance, interviews with the customer, and the like

Using their predetermined forms, each member shall record such facts as on-site surveys before order acceptance, interviews with the customer, and explanations to the customer about the quality characteristics and precautions for the use of nonferrous slag products, specify a retention period of at least ten years or more from the completion of delivery, and retain such records accordingly. Moreover, quality standards and the like agreed upon with the customer shall be submitted in writing by each member to the customer.

<<Survey items>>

- (i) Survey date, (ii) Work name, (iii) Work execution site, (iv) Owner name, (v) Contractor name, (vi) Intended purpose (state a specific intended purpose), (vii) Standard, type of nonferrous slag product, (viii) Delivery date/work period, (ix) Quantity, (x) Possibility of concurrent use with other recycled materials, (xi) Work execution site conditions, (xii) Storage sites during work execution, and (xiii) Transportation method and temporary storage sites during transportation

<<Decision items>>

- (i) The need for a status survey during work execution
(ii) The need for a follow-up survey after work execution

- (6) In-house approval of new delivery cases

Based on pre-obtained information, on-site survey results, and the like, each member shall subject

new delivery cases, regardless of the volume, to their own specified or their manufacturing/sales affiliate's specified examination/approval procedure. The examination results shall be filled in the appropriate spaces of the form for circulation among the parties concerned and storage for a predetermined retention period.

The phrase "new delivery case" herein shall refer to a case of using slag for a purpose new to the customer or that of using a civil engineering work material in a new construction area.

6-4. Order acceptance/delivery

- (1) When deciding to accept an order and deliver a nonferrous slag product, each member shall submit a test results table in accordance with the terms and conditions of the contract with the customer.
- (2) Each member shall show the customer the environmental safety quality standards applicable depending on the place of use of the nonferrous slag product and the conformity therewith by means of a written contract or other instrument. For copper slag fine aggregate for concrete and asphalt mixtures, an environmental safety-type inspection results table shall be submitted with the upper limit for the quantity of material per unit volume. An upper limit for the quantity of material per unit volume shall also be specified for copper or zinc slag aggregate used as a design material for secondary products. In such a case, the quantity of material per unit volume shall be evaluated for the secondary product as a whole.
- (3) When delivering a nonferrous slag product, each member and their manufacturing/sales affiliate shall issue the customer a safety data sheet under the applicable laws.

6-5. Transportation of nonferrous slag products

For the transportation of a nonferrous slag product, each member shall check the payment receipt, transportation slip, or the like to ensure that the nonferrous slag product has undoubtedly been delivered to the customer. Moreover, the delivery slip and the like shall contain the manufacturer's and distributor's member names to enable the customer to check their identity.

6-6. Mid-work execution survey

- (1) Each member shall conduct a survey of the work execution site (including transportation and temporary storage) as necessary. For use as a raw material for cement, it may suffice to check the conditions of raw material use. It is of particular importance to check dust prevention measures when conducting a survey of a work execution site.

For cases of 3,000 tons or more, each member and their manufacturing/sales affiliate shall always conduct a mid-work execution survey.

Each member shall record the mid-work execution survey results, specify a retention period of at least ten years or more, and retain such records accordingly.

- (2) When the status survey results have identified any nonconformity in the handling of nonferrous slag products during transportation, storage, or work execution, each member shall always call the

customer's attention to the correct handling method, record such facts, specify a retention period of at least ten years or more, and retain such records accordingly. Moreover, consultations with administrative agencies shall be held as necessary. Such consultations shall be recorded for storage for a predetermined retention period of at least ten years or more.

For nonferrous slag products temporarily stored outside manufacturing business establishments by each member and the customer, especially during work execution, each member and their manufacturing/sales affiliate shall do a regular walk-around survey to investigate, check, and record the implementation status of dust prevention measures and the like. The reference upper limit for inventory at each member and the customer shall be three months' worth of consumption to prevent open-air storage due to excess inventory during temporary storage by each member and the customer. For any nonferrous slag product left unused for a long period of three months or more, each member shall immediately instruct the responsible person to solve the problem. If the instruction is not followed, each member shall have a consultation with administrative agencies and take swift measures, including removal.

- (3) Even for a case judged before order acceptance in accordance with 6-3 (2) to require no mid-work execution survey, each member shall conduct a survey if any problem may occur.

7. Post-work execution survey

- (1) Each member shall specify the criteria for determining the period and frequency of post-work execution survey depending on the work execution site, intended use, and other characteristics. Moreover, each member shall extend the survey period or review the survey frequency depending on the work execution site conditions after work execution. Note that for cases of at least 3,000 tons or more, each member shall conduct a post-work execution survey.
- (2) When a prior on-site survey finds that a post-work execution survey is necessary, each member shall have a consultation with the customer, conduct a post-work execution survey at a required frequency for a required period, record the survey results, specify a retention period of at least ten years or more, and retain such records accordingly.
- (3) When the post-work execution survey results have identified any environmental impact risk of the place of use after work execution, each member shall immediately have a consultation with the customer. If the cause is the quality of the nonferrous slag product, each member shall take the necessary actions. If the cause is the use by the customer, each member shall issue necessary alerts to the customer. In these cases, each member shall have a consultation with administrative agencies as necessary. Each member shall record such consultations, specify a retention period of at least ten years or more, and retain such records accordingly.
- (4) Even for a case determined to require no post-work execution survey, each member shall act pursuant to the previous paragraph if any anomaly is identified in the place of use.

8. Handling of comments, complaints, and the like received from administrative agencies, residents, and the like and concerns over their occurrence

When comments, complaints, and the like are or may be received from administrative agencies, residents, and the like during transportation of nonferrous slag products, temporary storage thereof, and the whole series of mid- and post-work execution processes, each member shall cooperate with the customer and swiftly identify the cause, regardless of whether the cause is a nonferrous slag product or not. If the nonferrous slag product is the cause, each member shall have a consultation with the customer and, if necessary, administrative agencies, residents, and the like and take appropriate measures. On the other hand, if the cause is the act of the customer or any other party concerned, each member shall issue an alert to the parties concerned as necessary and have a consultation with administrative agencies as necessary.

Moreover, regardless of whether the nonferrous slag product is the cause or not, each member shall respond appropriately and swiftly to prevent damage to the trust in and reputation of nonferrous slag products. Such response shall be led by each member with mutual cooperation with vendors. Actions taken under this provision shall be recorded for storage for a predetermined retention period of at least ten years or more.

Serious comments, complaints, and the like received from administrative agencies, residents, and the like shall be reported to the JMIA.

9. Preparation and operational compliance check of manuals and corrective actions

Each member shall organize the requirements provided for in the Guidelines herein into in-house manuals relating to nonferrous slag products.

Each member shall provide regular in-house training on the Guidelines and manuals and perform an operational compliance check of the manuals at least once a year or more frequently regarding whether operations are compliant with the provisions of the in-house manuals, whether records to be retained are retained as should be, and the like. Corrective actions shall be taken for inappropriate operations, if any. This check shall be separate from the audit by a third-party body in 10 (2).

When the Guidelines herein are amended, each member shall provide in-house training to ensure that compliance requirements are communicated company wide.

The abovementioned training/checks and the resulting corrective actions shall be recorded for storage for a predetermined retention period of at least ten years or more.

Moreover, each member shall explain the Guidelines and manuals to customers (including vendors and distributors) as well and ensure that compliance requirements concerning the manufacturing and sales of nonferrous slag products are communicated to them. When the Guidelines herein are amended, the Guidelines and manuals shall be explained to customers (including vendors and distributors) as well to ensure that compliance requirements concerning the manufacturing and sales of nonferrous slag products are communicated to them. Such explanations shall be recorded for storage for a predetermined retention period of at least ten years or more.

10. Reports to the JMIA and checks

- (1) Each member shall report their activities based on the Guidelines to the JMIA once every half a year.
- (2) Each member shall undergo a regular audit by a third-party body once a year to check their operations based on their in-house operation manuals.
- (3) The JMIA shall review the semi-annual report submitted by each company and their annual report on audit by a third-party body while consulting with experts.

11. Regular checks/maintenance of the Guidelines

The Guidelines herein shall be checked at least once a year while consulting with experts and amended by the JMIA as necessary.

(Dates of the establishment and amendments of the Guidelines herein)

Established on September 30, 2005

Amended on February 1, 2008

Amended on September 30, 2015

Amended on February 25, 2016

Amended on September 30, 2017

Amended on March 29, 2019

Amended on September 17, 2020

Amended on April 25, 2023

Amended on July 7, 2023

Places/Purposes of Use of Nonferrous Slag Products

Usable:	○
Unusable:	-

Intended purpose			Nonferrous slag		
Large category	Medium category	Small category	Ferronickel slag	Copper slag	Zinc slag
Concrete work	General purpose	Fine aggregate	○	○	-
		Coarse aggregate	○	-	-
		Polymer concrete admixture	○	-	-
	Port and harbor purposes	Fine aggregate	○	○	-
		Coarse aggregate	○	-	-
Concrete secondary product		Fine aggregate	○	○	○
Pavement work	Asphalt mixture	Aggregate for asphalt mixtures	○	○	-
			Base course material	Aggregate for base course materials	○
	Subgrade material	Base course material		○	-
		Aggregate for subgrade materials	○	-	-
		Subgrade material	○	-	-
Earthwork	General purpose	Fill material, earth cover material, and surcharge fill material	○	-	-
		Land development material/backfilling material	○	-	-
		Ground improvement material	○	-	-
		Others	○	-	-
	Port and harbor purposes	Caisson infilling material	○	○	○
		Ground improvement material	○	○	-
		Backfill material	○	○	-
		Sand capping material for seaweed beds, shallow bottoms, and mudflats	○	-	-
		Reclamation material/reclamation backfill material	○	-	-
Building purpose	Raw material for building materials		○	○	○
	Building material		○	-	-
Blasting abrasive		Sandblasting abrasive	○	○	○
Raw material	Casting sand		○	-	-
	Raw material for cement		○	○	○
	Fertilizer material		○	-	-
	Slag making material		○	○	-
	Iron source for steelmaking		-	○	-
	Welding flux		○	-	-
	Refractories		○	-	-

Environmental Safety Quality Standards in Manufacturing and Sales Management Guidelines for Nonferrous Slag Products

Intended purpose		Sample type	Judgment reference value			Test method	Analysis items	Testing frequency	Source documents	
Large category	Medium category		Small category	Ferronickel slag	Copper slag					Zinc slag
Concrete work	General purpose	Fine aggregate	<Environmental Safety-Type Inspection> Slag aggregate samples or use-simulated samples <Environmental Safety Delivery Inspection> Slag aggregate samples	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	JIS A 5011-2 and -3	<Environmental Safety-Type Inspection> FNS/FNG/CUS: 8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B) <Environmental Safety Delivery Inspection> FNS/FNG: 1 item (F) CUS: 3 items (Cd, Pb, and As)	<Environmental Safety-Type Inspection> Once within 3 years <Environmental Safety Delivery Inspection> Once per manufacturing lot	FNS/FNG: JIS A 5011-2 CUS: JIS A 5011-3	
		Coarse aggregate		<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)					
		Polymer concrete admixture		<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)					
	Port and harbor purposes	Fine aggregate (for export)	<Environmental Safety-Type Inspection> Slag aggregate samples or use-simulated samples <Environmental Safety Delivery Inspection> Slag aggregate samples	Compliant with the laws of the exporting country and <Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	Compliant with the laws of the exporting country and <Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	JIS A 5011-2 and -3	<Environmental Safety-Type Inspection> FNS/FNG/CUS: 8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B) <Environmental Safety Delivery Inspection> FNS/FNG: 1 item (F) CUS: 3 items (Cd, Pb, and As)	<Environmental Safety-Type Inspection> Once within 3 years <Environmental Safety Delivery Inspection> Once per manufacturing lot	FNS/FNG: JIS A 5011-2 CUS: JIS A 5011-3	
		Fine aggregate	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Elution standards for ports and harbors)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Elution standards for ports and harbors)						
		Coarse aggregate	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Elution standards for ports and harbors)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Elution standards for ports and harbors)						
Concrete secondary product	Fine aggregate	<Environmental Safety-Type Inspection> Slag aggregate samples or use-simulated samples ^{*2)} <Environmental Safety Delivery Inspection> Slag aggregate samples	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	JIS A 5011-2 and -3	<Environmental Safety-Type Inspection> FNS/FNG/CUS: 8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B) ZNS: 1 item (Pb) <Environmental Safety Delivery Inspection> FNS/FNG: 1 item (F) CUS: 3 items (Cd, Pb, and As) ZNS: 1 item (Pb)	<Environmental Safety-Type Inspection> Once within 3 years <Environmental Safety Delivery Inspection> Once per manufacturing lot	FNS/FNG: JIS A 5011-2 CUS: JIS A 5011-3 ZNS: JIS A 5011-3-compliant		
			<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Elution standards for ports and harbors)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Elution standards for ports and harbors)						
Pavement work	Asphalt mixture	Aggregate for asphalt mixtures	<Environmental Safety-Type Inspection> Slag aggregate samples or use-simulated samples <Environmental Safety Delivery Inspection> Slag aggregate samples	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	JIS A 5011-2 and -3	<Environmental Safety-Type Inspection> FNS/FNG/CUS: 8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B) <Environmental Safety Delivery Inspection> FNS/FNG: 1 item (F) CUS: 3 items (Cd, Pb, and As)	<Environmental Safety-Type Inspection> Once within 3 years <Environmental Safety Delivery Inspection> Once per manufacturing lot	Soil Environmental Standards Guidelines for Introducing Environmental Aspects into Construction Sector Standards Annex II Guidelines for Introducing the Environmental Safety Quality Standards for Slag for Roads and the Inspection Method Thereof (tentatively applied)	
		Aggregate for base course materials	<Environmental Safety-Type Inspection> Slag aggregate samples or use-simulated samples <Environmental Safety Delivery Inspection> Slag aggregate samples	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)					
	Base course material	Base course material	<Environmental Safety-Type Inspection> Use-simulated samples <Environmental Safety Delivery Inspection> Nonferrous slag samples	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	JIS K 0058-1 and -2	<Environmental Safety-Type Inspection> FNS/FNG: 8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B) <Environmental Safety Delivery Inspection> FNS/FNG: 1 item (F)	<Environmental Safety-Type Inspection> Once within 3 years <Environmental Safety Delivery Inspection> Once per manufacturing lot	Soil Environmental Standards Guidelines for Introducing Environmental Aspects into Construction Sector Standards Annex II Guidelines for Introducing the Environmental Safety Quality Standards for Slag for Roads and the Inspection Method Thereof (tentatively applied)	
		Subgrade material	<Environmental Safety-Type Inspection> Slag aggregate samples or use-simulated samples <Environmental Safety Delivery Inspection> Slag aggregate samples	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)	<Environmental Safety-Type Inspection> Environmental Safety Quality Standards (Soil Environmental Standards)					
	Earthwork	General purpose	Fill material, earth cover material, and surcharge fill material	Nonferrous slag samples	Soil Contamination Countermeasures Law/Soil Environmental Standards		Env. Ministry Notice Nos. 18 and 19	8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B)	Once per manufacturing lot	Soil Contamination Countermeasures Law/Soil Environmental Standards
			Land development material/backfilling material							
Ground improvement material										
Port and harbor purposes		Caisson infilling material	Nonferrous slag samples	Elution standards for ports and harbors	Elution standards for ports and harbors	JIS K 0058-1	8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B)	Once per manufacturing lot	Standards for ports and harbors Comprehensive Report for Introducing Environmental Aspects into Construction Sector Standards (tentatively applied)	
		Ground improvement material		Elution standards for ports and harbors	Elution standards for ports and harbors	JIS K 0058-1				
Reclamation material	Backfill/reclamation backfill material	Soil Contamination Countermeasures Law/Soil Environmental Standards (Elution standards for ports and harbors*1)	Soil Contamination Countermeasures Law/Soil Environmental Standards (Elution standards for ports and harbors *1)	Soil Contamination Countermeasures Law/Soil Environmental Standards (Elution standards for ports and harbors *1)	Env. Ministry Notice Nos. 18 and 19 (JIS K 0058-1 and -2)	8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B)	Once per manufacturing lot	Soil Contamination Countermeasures Law/Soil Environmental Standards		
	Sand capping material for seaweed beds, shallow bottoms, and mudflats	Standards for port and harbor purposes/Soil Contamination Countermeasures Law (Content)	—	—	JIS K 0058-1 Env. Ministry Notice No. 19					
Raw material	Reclamation material	Soil Contamination Countermeasures Law/Soil Environmental Standards	—	—	Env. Ministry Notice Nos. 18 and 19	8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B)	Once per manufacturing lot	Soil Contamination Countermeasures Law/Soil Environmental Standards		
Building purpose	Raw material for building materials	Nonferrous slag samples	To be delivered as a raw material. To be decided upon by consultation.							
	Building material	Nonferrous slag samples	Soil Contamination Countermeasures Law/Soil Environmental Standards			Env. Ministry Notice Nos. 18 and 19	8 items (Cd, Pb, Cr(VI), As, Hg, Se, F, and B)	Once per manufacturing lot	Soil Contamination Countermeasures Law/Soil Environmental Standards	
Blasting abrasive	Sandblasting abrasive	Nonferrous slag samples	To be decided upon by consultation with the user.			■ The Waste Management and Public Cleansing Law and other standards shall be complied with after use.				
Raw material	Casting sand	Nonferrous slag samples	To be delivered as a raw material. To be decided upon by consultation.							
	Raw material for cement	Nonferrous slag samples	To be delivered as a raw material. To be decided upon by consultation.							
	Fertilizer material	Nonferrous slag samples	To be delivered as a raw material. To be decided upon by consultation. *4)							
	Slag making material	Nonferrous slag samples	To be delivered as a raw material. To be decided upon by consultation.							
	Iron source for steelmaking	Nonferrous slag samples	To be delivered as a raw material. To be decided upon by consultation.							
	Welding flux	Nonferrous slag samples	To be delivered as a raw material. To be decided upon by consultation.							
Refractories	Nonferrous slag samples	To be delivered as a raw material. To be decided upon by consultation.								

*1) Where distinction from elution into soil is required, the elution standards for ports and harbors shall apply.

*2) Copper/zinc slag fine aggregate shall undergo type inspection judgment to be evaluated as a secondary product.

*3) In Attachment 2, FNS refers to "ferronickel slag fine aggregate," FNG to "ferronickel slag coarse aggregate," CUS to "copper slag fine aggregate," and "ZNS" to "zinc slag fine aggregate," respectively.

*4) Also applicable to those used with a nonferrous slag product content of 100%, albeit on the condition of permission by the Ministry of Agriculture, Forestry and Fisheries and the competent prefectural governor.