

KES

Ductile Iron Casting

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1. Scope of Application

This standard determines the import inspection for ductile iron that is used for car.

2. Inspection Items

- (1) Material quality inspection
- (2) External appearance inspection
- (3) Size inspection

3. Inspection Method

The inspection method is as table 1.

Table 1

Inspection items	Inspection method
Constituent Analysis	It shall be done when abnormality is detected as a result of hardness and formation test.
Hardness measurement	1% per lot, more than 2 items at least
Formation test	1% per lot, more than 1 items at least
Tensional Strength	Submit 3 items produced by outside order for each lot.
External appearance inspection	Adapt KS A 3109 general level I AQL 1.0.
Size inspection	3% per lot, more than 2 items at least

4. Inspection Lot

For distinction of lot continuously manufactured product shall be considered as lot 1, and distinction of lot shall be distinctive on the products. (Outside order)

4.1 Lot Indication Method

Indication of lot should be engraved in relief or as an incision.

4.2 Lot Indication Spot

It shall be on appropriate spot in which is not for machine processing part, and you shall follow special inspection standard and casting diagraeme for front processing products.

4.3 Size of Lot Indication

It shall be selected according to the product's size and the lot indication spot and size, and the standard shall follow the inspection standard and casting diagram.

5. Method of Sample Picking

5.1 Sample Size

5.1.1 For start of production

Pick up the sample according to KS A 3151 (Random Sampling Method) with size 1% per lot, and the samples classified by each character are as follow.

(1) Hardness Measurement

It shall be at least more than 2 items, 1% per lot, and when the first sample is not certain, or when it is not easy to decide, pick up the second sample and decide the sample size.

(2) Formation Test

It shall be at least more than 1 item, 1% per lot.

5.1.2 For development

Applying the special inspection level, KS A 3109 (Factor adjustment type sampling method), you shall randomly sample, and the sample size is as follow.

(1) Hardness Measurement

Applying the special inspection level II, KS A 3109, you shall decide the sample size by random sampling.

(2) Formation Test

Applying the special inspection level I, KS A 3109, you shall decide the sample size by random sampling.

(3) Tension Test

You shall submit 3 tension test pieces by separating common testing medicine produced in same pot as the products by outside order as 1st, 2nd, and 3rd, and shall set the 3rd as the test standard. (You could produce tension sample directly from the products considering

the product's function.)

(4) Constituent Analysis

For the case that bad factor is detected among the above procedure, you shall analyze the constituent for the reference.

5.1.3 When lot indication is absent (Except when it is for new and development)

When you can't recognize a lot indication (When lot indication is absent), you shall make it a rule not to test, however if the supply department requests the test you shall submit a official document of test request with a approval of the head, and sampling method and decision shall be as follow.

(1) Sample Size and Picking Method

Applying the special inspection level II, KS A 3109, you shall use random sampling test method.

(2) Test Term

More than 5 days shall be set considering the term that hardness and formation test pieces can be made and test.

(3) If badness and scattering among samples don't satisfy the standard, it is not considered that it is the same lot and it shall be declined.

6.1 Test Method

Follow 6 of KES B-D002 for iron product test.

6.2 Test Standard

Follow 4 of KES-B002 for test standard of iron products.

6.2.1 Micro Formation

(1) Test Piece of Formation

You shall test by cutting the surface of the broken point where the inspection standard indicates.

(2) Calculation of ductile rate

Make 100-time microscopic formation photo for random spot on the sample and draw a 3mm-wide straight line whose centerline is the diagonal line of the picture. From this, for the case that has less than 10 particles of graphite hanging on the both diagonal lines, extend the scope of the diagonal lines so that it can include more than 10 particles and calculate the amount of particles.

In this case you shall not count the particles whose size is less than 2 mm. If you don't get more than 10 particles in spite of the extension of the diagonal lines, make a new formation photo with an appropriate low resolution microscope and calculate as same method as above.

$$\text{Ductile rate of graphite} = \frac{0 \times n_1 + 0.3 \times n_2 + 0.7 \times n_3 + 0.9 \times n_4 + 1.0 \times n_5}{n_1 + n_2 + n_3 + n_4 + n_5} \times 100$$

ni: the amount corresponding to type symbol

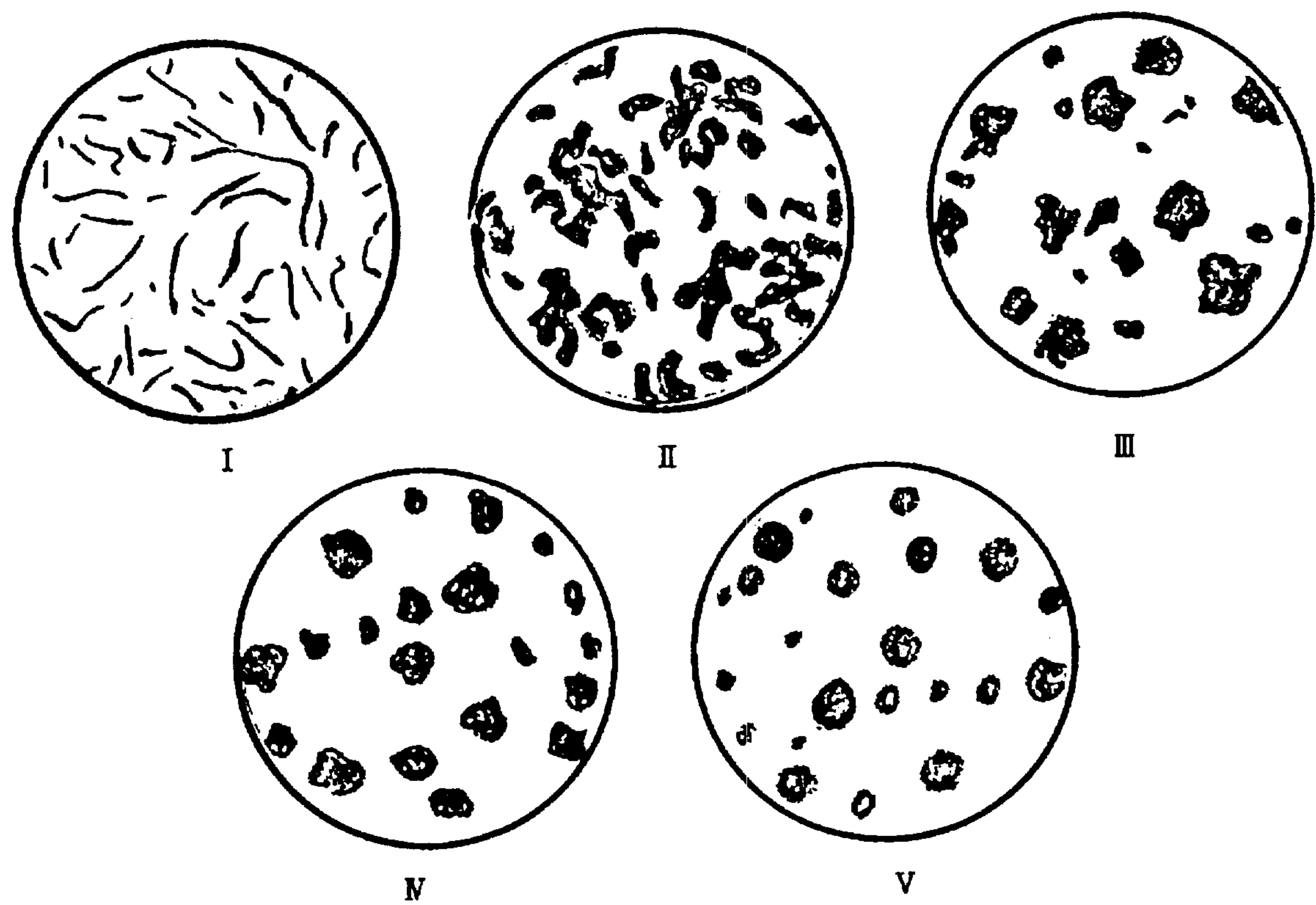


Figure 1 standard type of spheroid and shape coefficient