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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 32259-2015

**Non-destructive testing of welds -- Visual testing of
fusion-welded joints
(English Translation)**

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Foreword

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

This standard, through the re-drafting method, modifies and adopts the ISO

17637.2003 "Non-destructive testing of welds - Visual testing of fusion-welded joints".

The technical differences between the standard and ISO 17637.2003 and the reasons are as follows.

- In order to meet the technical conditions in China, ADD Chapter 2

"normative references", including GB/T 9445, GB/T 19418, GB/T 22087;

AND in the references, DELETE ISO 5817, ISO 9712, ISO 10042.

This standard shall be under the jurisdiction of the National Welding Standardization Technical Committee (SAC/TC 55).

The drafting organizations of this standard. Shanghai Materials Research Institute, Jinan New Gil Machinery Co., Ltd., Shanghai COSCO Kawasaki Heavy Industries Steel Co., Ltd., Luoyang Bearing Co., Ltd., Harbin Welding Institute.

1 Scope

This standard applies to the visual inspection of fusion-welds of metal materials; AND it is also used for visual inspection of joints before welding.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this Standard.

GB/T 9445 Non-destructive testing - Qualification and certification of NDT personnel (GB/T 9445-2008, ISO 9712:2005, IDT)

GB/T 19418 Arc welded joints in steel - Guidance on quality levels for imperfections (GB/T 19418-2003, ISO 5817:1992, IDT)

GB/T 22087 Arc-welded joints in aluminum and its alloys - Guidance on quality level for imperfection (GB/T 22087-2008, ISO 10042:2005, IDT)

3 Test conditions and equipment

Surface light illuminance shall be at least 350 lx, BUT the recommended light illuminance is 500 lx.

For direct visual inspection, within 600 mm of the surface to be tested, it shall provide adequate viewing inspection space for the human eye, AND the inspection angle shall be not less than 30° (see Figure 1).

The formed weld inspection shall determine whether the weld complies with the application or product standard requirements or other mutually agreed acceptance conditions, such as GB/T 19418 or GB/T 22087. Formed welds shall be inspected at least in accordance with the requirements given in 5.4.2 to 5.4.5.

5.4.2 Cleaning and grinding

It shall inspect the weld, including.

- a) Removal of all slag by manual or mechanical means, in order to avoid concealing any defects;
- b) No tool marks or striking marks;
- c) When it is needed to grind the weld, AVOID the joint overheating caused by grinding, grinding traces or uneven surface;
- d) For the grinding of fillet welds and butt welds, the joints and base metal transition shall be smooth.

If defects are found (due to grinding or other reasons), they shall be reported, in order to take remedial action.

5.4.3 Outline and dimensions

It shall inspect the weld, including.

- a) The shape of the weld and the weld reinforcement are to comply with the acceptance criteria (see 5.4.1);
- b) Weld surface is regular; weld wave shape and spacing show uniform and satisfactory visual performance; if required by WPS, MEASURE the distance between the last layer of weld bead and base metal as well as the location of each weld bead;
- c) The weld width of the whole joint is basically the same, complies with the welding drawings or acceptance criteria (see 5.4.1); for butt welds, it shall inspect the weld groove, in order to ensure that it is fully welded.

5.4.4 Weld root and surface

As for the visible weld parts, such as the single-sided butt weld root and weld surface, it shall inspect them to determine the deviations from the acceptance criteria (see 5.4.1).

It shall inspect the weld, including.

6 Test records

When it is required to inspect the records, the test report shall contain at least the following information.

- a) The name of the component manufacturer;
- b) The name of the party to be tested, if different from item a);
- c) The identification of the test object;
- d) Material;
- e) Joint type;
- f) Material thickness;
- g) Welding process;
- h) Acceptance conditions;
- i) Imperfections beyond the acceptance conditions and their location;
- j) Test range referring to the drawing requirements;
- k) The testing equipment used;
- l) The inspection results referring to the acceptance conditions;
- m) Name and date of inspection.

As for the welds subjected to the inspection AND qualified, it shall make mark or identification at the appropriate location.

If it requires the permanent visual inspection record of the weld to be tested, it is advisable to take photographs OR draw accurate sketches, or both, of any imperfections.

References

- [1] GB/T 20968 Non-destructive testing - Aids to visual inspection - Selection of low-power magnifiers
- [2] ISO 3599 Vernier callipers reading to 0.1 and 0.05 mm
- [3] ISO 17635 Non-destructive testing of welds - General rules for fusion-welds in metallic materials

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