
**Visual examination of the surface
condition of investment castings — Steel,
nickel alloys and cobalt alloys**

*Examen visuel de l'état de surface des pièces moulées par le procédé
dit «à la cire perdue» — Acier, alliages de nickel et alliages de cobalt*



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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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Visual examination of the surface condition of investment castings — Steel, nickel alloys and cobalt alloys

1 Scope

This International Standard specifies the acceptance criteria for the surface inspection of steel, nickel alloy and cobalt alloy investment castings by visual examination.

NOTE Criteria for special applications such as aerospace are defined in other International Standards.

2 Normative references

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

ISO 3059:2001, *Non-destructive testing — Penetrant testing and magnetic particle testing — Viewing conditions*

ISO 9712:2005, *Non-destructive testing — Qualification and certification of personnel*

3 Ordering information

The enquiry and order shall specify

- the extent of the surface to be examined,
- the number of castings to be examined,
- the acceptance level required (different acceptance levels may be specified for different surfaces of the same casting; if no acceptance level is specified, level IV applies), and
- any surface conditions that are unacceptable.

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1

surface pit

depression on the surface of the casting, the length of the depression being less than three times its width

4.2

linear discontinuity

depression on the surface of the casting, the length of the depression being equal to, or greater than, three times its width

4.3

positive metal

raised metal on the casting surface

4.4

surface roughness

measure of the surface condition

NOTE The surface roughness is normally determined by the use of a visual/tactile comparator.

4.5

parting line

surface condition resulting from joints in the tool or die

NOTE Parting lines are not linear discontinuities.

4.6

ejector-pin mark

a surface condition caused by pins used to remove the pattern from the die

4.7

gate stub

positive metal resulting from the removal of the gate used to direct molten metal into the mould

5 Method of inspection

5.1 Qualification of operators

Inspection shall be performed by personnel, qualified in accordance with ISO 9712, or by a certification scheme which is considered to be equivalent. The qualification level of the personnel shall be agreed between the manufacturer and the purchaser at the time of acceptance of the order.

5.2 Conditions of inspection

The inspection shall be carried out with the naked eye or at a maximum magnification of $\times 3$, and the viewing conditions shall be in conformity with ISO 3059.

6 Acceptance criteria

6.1 Levels of acceptance for visual examination are given in Table 1.

6.2 Castings shall not exhibit linear discontinuities. Surface conditions that are less than 0,25 mm are non-relevant.