

# Sanitary tapware — General specification for electrodeposited coatings of Ni-Cr

The European Standard EN 248:2002 has the status of a  
British Standard

ICS 91.140.70

## National foreword

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The UK participation in its preparation was entrusted by Technical Committee B/504, Water supply, to Subcommittee B/504/8, Terminal fittings, which has the responsibility to:

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### Summary of pages

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## Sanitary tapware - General specification for electrodeposited coatings of Ni-Cr

Robinetterie sanitaire - Spécifications générales des revêtements électrolytiques de Ni-Cr

Sanitärarmaturen - Allgemeine Anordnungen für elektrolytische Ni-Cr-Überzüge

This European Standard was approved by CEN on 2 September 2002.

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## Foreword

This document (EN 248:2002) has been prepared by Technical Committee CEN/TC 164, "Water supply", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2003 and conflicting national standards shall be withdrawn at the latest by April 2003.

This document supersedes EN 248:1989.

In this European Standard Annexes A and B are informative.

This standard complements product standards already published or draft standards being developed by CEN/TC 164/WG 8. (single taps and combination taps thermostatic mixing valves, jet regulators, mechanical mixing valves, waste outlet fittings....) which refer to this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard specifies:

- the condition of the exposed surfaces of tapware ;
- the characteristics (resistance to corrosion, adherence) of the surface coating ;
- the tests for verifying these characteristics.

It applies to all sanitary fittings (supply or waste fittings) which have a metallic Ni-Cr coating, whatever the nature of the substrate material.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 10289:2001, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates - Rating of test specimens and manufactured articles subjected to corrosion tests (ISO 10289:1999)*

ISO 9227, *Corrosion tests in artificial atmospheres - Salt spray tests.*

## 3 Terms and definitions

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

### 3.1 exposed surfaces

outside surfaces of tapware are the surfaces which are visible in use conditions

### 3.2 surfaces not considered as exposed surfaces :

- a) internal surfaces of, for example operating members, caps, knobs, etc. ;
- b) parts usually or always hidden by another component, e.g. linkage of a waste outlet fitting.

## 4 Exposed surfaces

### 4.1 Condition of exposed surfaces

Exposed surfaces shall be protected against corrosion.

## 4.2 Description of possible defects

The different types of defects found on exposed surfaces are as follows :(See table 1)

**Table 1 — Different types of defects**

Yellow colour :	Little or no chrome over the nickel
Stains :	Faults under the nickel plating
Pitting or porosity :	Surface faults in the base metal or emission of gas in treatment baths
Blisters :	Bubbles or raised spots on the plated surface
Wheel marks :	Fine or sharp lines that remain after polishing or buffing
Cracks :	Usually caused by "hot spots" in casting or plated surface flakiness
Splashes :	Lack of "flow" in casting or plastic injection
Dullness :	Lack of full shine
Cuts and scratches :	Scratches due to handling or knocks during transport
Burns :	Roughness and grey appearance of surface
Scaliness :	Lack of "consistent cover" and flakiness of plating
"Orange-peel" effect :	defect in smoothness (similar to peel of an orange)
Roughness – grain	Metallic impurities in nickel baths

## 4.3 Visual examination before tests

The exposed surfaces should be examined with the naked eye, from a distance of about 300 mm for approximately 10 s, without any magnifying device, in a light (diffused and not dazzling) of an intensity of 700 Lux to 1 000 Lux.

## 4.4 Requirements

During examination, the exposed surfaces should not show any of the defects described in Table 1, with the exception of slight yellowish or bluish marks.

## 5 Quality of coating

### 5.1 Corrosion resistance test - test with neutral saline spray

#### 5.1.1 General

The test described is a type test (laboratory test), and not a quality control test carried out during manufacture.

#### 5.1.2 Method

Carry out the test under the conditions described in ISO 9227 specifically for the neutral saline-spray test, in the following way.

Subject the partially-dismantled tapware and its accessories to spraying for 200 h minimum, arranging a rest period of  $(48 \pm 1)$  h halfway through the treatment, ie after the first  $100 \text{ h} \pm 1 \text{ h}$  of spraying. During the rest period, maintain the heat of the tank.

For the duration of the tests, the tank should only be opened to check and maintain the conditions, the maximum rest period in spraying being 30 min per day. The heating should not be interrupted; samples under test should not be handled, washed or checked.

After treatment and before visual examination, rinse the test samples in water to remove any salt residue.

After the test, examine the surfaces with the naked eye, for approximately 10 s, from a distance of about 300 mm, without any magnifying device.

### 5.1.3 Requirements

After completing the salt-spray test, examine the test samples in the conditions specified in EN ISO 10289 in the following way.

Examine the samples in accordance with 4.2 and 4.3.

From this examination, define the area A covered by defects, as a percentage of the total area of the test piece.

This surface area A should be less than or equal to 0,1 % ( $A \leq 0,1 \%$ ). The defects should not exceed a dimension of 0,3 mm. (For an example see annex A an extract from EN ISO 10289:2001 showing a visual representation of the types of fault which correspond to the limit of 0,1 %).

## 5.2 Test for coating adherence - Test for resistance to thermal shock

### 5.2.1 General

The test described is a type test (laboratory test) and not a quality control test carried out during manufacture. It applies only to plastic materials with Ni-Cr coating.

### 5.2.2 Method

The test consists of subjecting samples to a series of thermal shocks, whereby the number of cycles, temperatures and durations are indicated in Table 2. For the defined cycles, the vector for heating and cooling is air. Before the introduction of the samples, all areas of the test environment should be at the set temperature and within the specified tolerance levels.

The test sample shall be subjected to cycles described in Table 2, see also annex B (informative)

**Table 2 — Summary of temperatures of heating and cooling condition times of test pieces**

Temperature to be reached	Air (70 ± 2) °C
Time for heating and stabilisation	30 min.
Return to ambient temperature	Air (15 $\begin{smallmatrix} +5 \\ 0 \end{smallmatrix}$ ) °C
Cooling time to ambient temperature	15 min.
Cooling temperature	Air (-30 $\begin{smallmatrix} +5 \\ 0 \end{smallmatrix}$ ) °C
Cooling time	30 min
Return to ambient temperature	Air (15 $\begin{smallmatrix} +5 \\ 0 \end{smallmatrix}$ ) °C
Time to re-heat to ambient temperature	15 min
Number of cycles	5



### 5.2.3 Visual examination after tests

The exposed surfaces shall be examined with the naked eye, from a distance of about 300 mm for approximately 10 s, without any magnifying device, in a light (diffused and not dazzling) of an intensity of 700 Lux to 1 000 Lux.

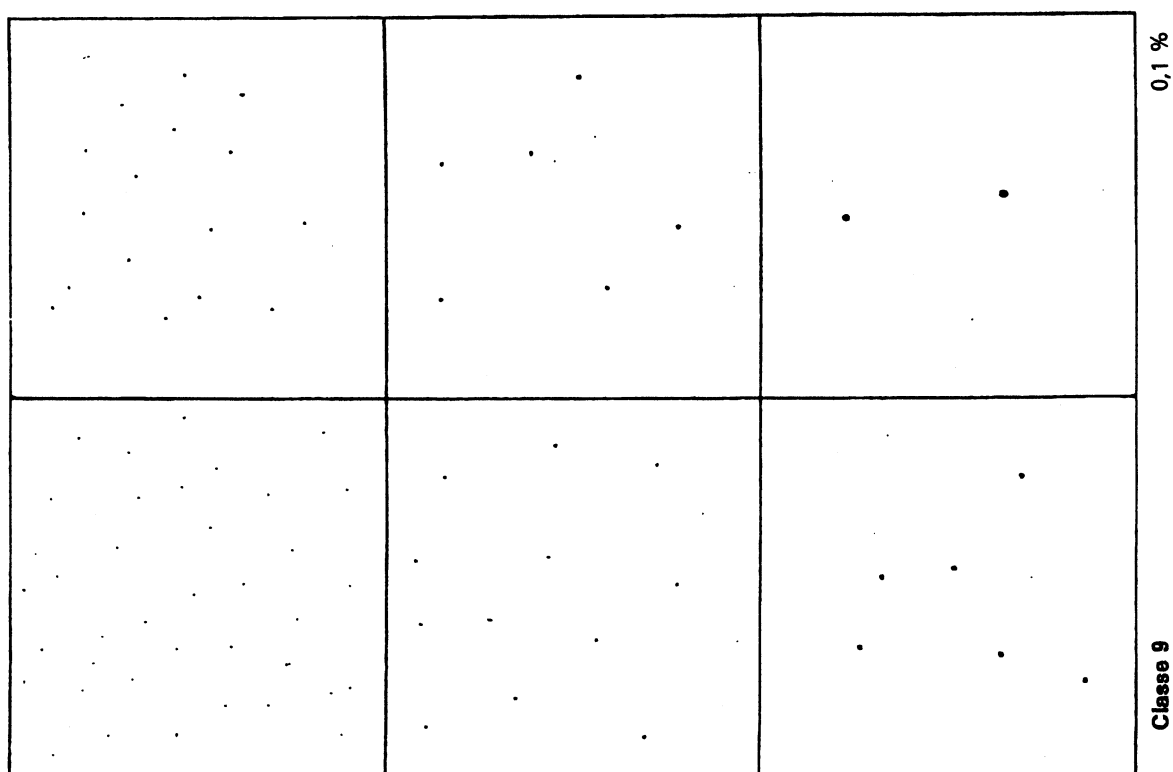
### 5.2.4 Requirements

After testing, no cracks, blisters nor loosening of the coating shall be recorded. (The areas used for marking shall be excluded from the test requirements).

**Annex A**  
(informative)

**Image type extract from EN ISO 10289:2001**

Examples of surfaces with defects representing 0,1 % of the total area of the test sample.



## Annex B (informative)

### Test temperature tolerances in relation to test duration

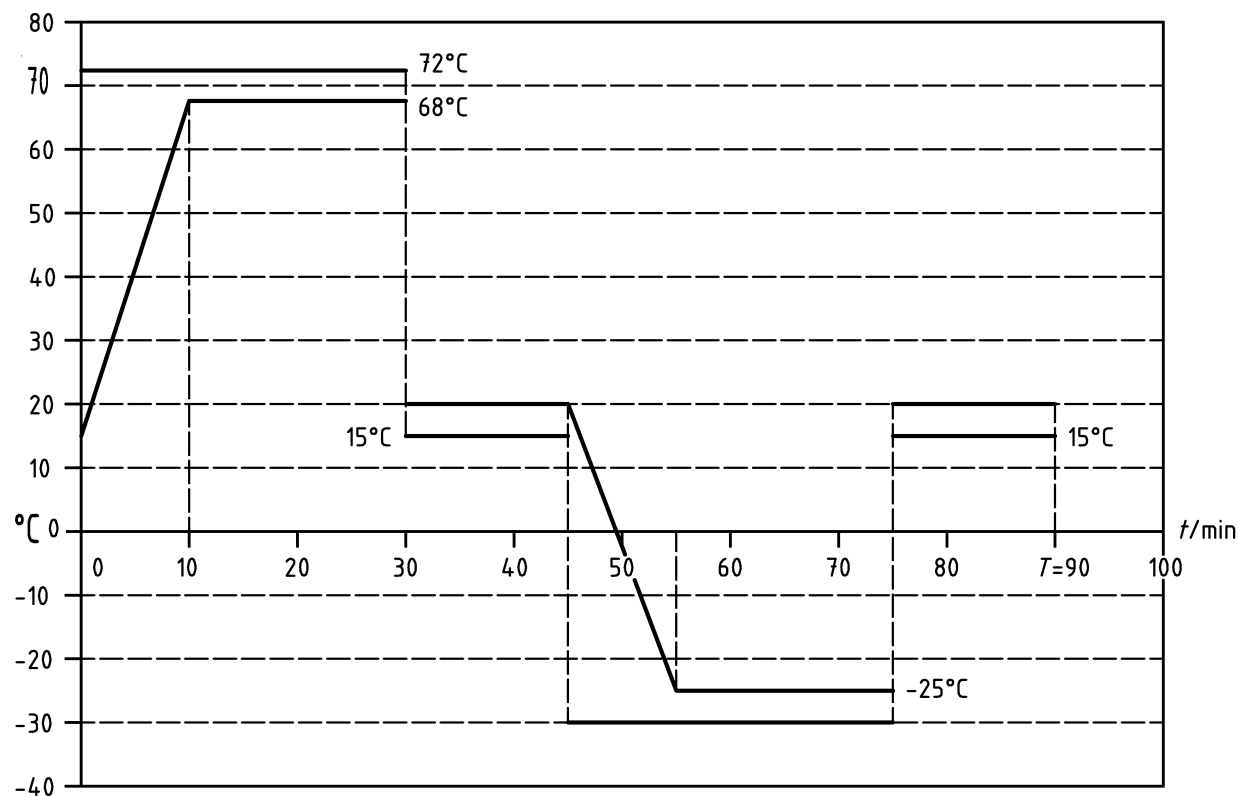


Figure B.1 — Test temperature tolerances in relation to test duration

The tests at high and low temperatures are conducted in circulated, dry air.

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