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Colours of gold alloys — Definition, range of colours and designation

Couleurs des alliages d'or — Définition, gamme de couleurs et désignation

Reference number
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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8654 was prepared by Technical Committee ISO/TC 174, *Jewellery*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Colours of gold alloys — Definition, range of colours and designation

0 Introduction

In the manufacture and sale of articles made of or coated with gold alloy, the colour of the surface of the product is an important characteristic. However, at present, an undue variety of colours of surface finishes is offered to the public. Some of these colours differ only slightly from one another.

The range of colours defined in this International Standard is intended to enable the manufacturer to limit the stock of different colours that he might be obliged to keep. It will also enable the purchaser to define his requirements with precision by referring to the designations given within this International Standard and so avoid the need for purchasing orders to be accompanied by colour samples.

1 Scope and field of application

This International Standard specifies a limited number of colours of gold alloys.

By specifying a range of gold alloy colours, this International Standard enables a corresponding range of polished gold colour slips to be produced for comparison purposes for use in routine transactions between manufacturer and purchaser. It applies to jewellery, and to watch cases and accessories made of gold alloys or watch cases and accessories with gold alloy coverings.

2 References

CIE Publication No. 15, *Colorimetry*.

CIE Publication No. 38, *Radiometric and photometric characteristics of materials and their measurement*.

3 Definition

colour of gold alloy: A three-dimensional colour space represented by the chromaticity co-ordinates x and y and reflectance ϱ, in accordance with CIE Publication No. 15.

NOTE — When necessary for special purposes or in the field of national standardization, the chromaticity co-ordinates may be converted to other internationally or nationally agreed systems (e.g. CIE 1976 $L^*a^*b^*$ colour space or CIE 1976 $L^*u^*v^*$ colour space).

4 Range of colours and designation

The range of colours according to chromaticity co-ordinates are given in table 1.

5 Measurement method

5.1 Preparation of the samples

The samples to be measured shall have a polished surface. The finishing shall be continued until a constant reflectance grade has been achieved.

5.2 Apparatus

5.2.1 Integrating sphere spectrophotometer.

5.2.2 Standard illuminant, comprising a light source yielding the spectral distribution similar to that of the standard light source D 65 (daylight) specified in CIE Publication No. 15.

5.3 Test procedure

Measure the spectral reflectance in accordance with CIE Publication No. 38.

6 Colour slips

For comparison purposes in routine transactions, it is recommended that a range of polished gold alloy colour slips should be used that are prepared so that the colour of the surface of each colour slip accords with the chromaticity co-ordinates given in table 1 when measured in accordance with clause 5.

See the annex for the recommended chemical composition of colour slips.

Table 1

Colour designation	Chromaticity co-ordinates					
	Nominal value			Tolerances		
	x	y	ϱ	x	y	ϱ
0 N (yellow-green)	0,338 3	0,366 2	0,90	0,334 5 0,340 4 0,345 6 0,338 6	0,364 4 0,374 0 0,372 5 0,363 3	$0{,}90\ ^{+0{,}01}_{-0{,}08}$
1 N (pale yellow)	0,352 6	0,370 0	0,82	0,348 6 0,352 7 0,355 7 0,351 3	0,368 5 0,373 0 0,371 7 0,367 4	$0{,}82\ ^{+0{,}01}_{-0{,}08}$
2 N (light yellow)	0,359 0	0,376 6	0,82	0,355 8 0,360 0 0,363 5 0,359 0	0,376 4 0,381 0 0,379 5 0,375 0	$0{,}82\ ^{+0{,}01}_{-0{,}08}$
3 N (yellow)	0,360 1	0,372 9	0,79	0,357 8 0,362 3 0,366 3 0,361 4	0,372 4 0,376 7 0,374 8 0,370 7	$0{,}79\ ^{+0{,}01}_{-0{,}05}$
4 N (pink)	0,361 2	0,365 9	0,76	0,357 7 0,362 6 0,366 3 0,361 0	0,366 0 0,370 1 0,368 2 0,364 4	$0{,}76\ ^{+0{,}01}_{-0{,}05}$
5 N (red)	0,359 1	0,360 4	0,74	0,355 5 0,362 1 0,366 0 0,358 9	0,359 1 0,363 8 0,361 6 0,357 2	$0{,}74\ ^{+0{,}01}_{-0{,}05}$

Annex

Recommended chemical composition of colour slips

(This annex does not form an integral part of the standard.)

For information purposes only, approximate values for the chemical composition of relevant gold alloys which are recommended for preparing the colour slips are given in table 2.

NOTES

1 It is not possible to define the colour of a colour slip by reference to the chemical composition alone of the alloy used because the colour of the surface of a gold alloy is also dependent upon its surface finish and metallurgical condition.

2 In making visual comparisons between samples and reference colour slips, the surfaces should be viewed through translucent paper.

Table 2

Colour designation	Chemical composition ‰		
	Au	Ag	Cu
0 N	585	300 to 340	Balance
1 N	585	240 to 265	
2 N	750	150 to 160	
3 N	750	120 to 130	
4 N	750	85 to 95	
5 N	750	45 to 55	

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