

79

International Standard



5190

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

**Anodizing of aluminium and its alloys —  
Evaluation of uniformity of appearance of  
architectural anodic finishes — Determination  
of diffuse reflectance and specular gloss**

*Anodisation de l'aluminium et de ses alliages — Contrôle de l'homogénéité d'aspect des couches anodiques colorées —  
Mesurage de la diffusance et de la réflectance*

First edition — 1984-01-15

To be withdrawn  
1990-12-20

UDC 669.718.915 : 535.361.2

Ref. No. ISO 5190-1984 (E)

Descriptors : aluminium, aluminium alloys, surface treatment, anodic coating, tests, determination, reflectance factor.

Price based on 4 pages

## 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.

International Standard ISO 5190 was developed by Technical Committee ISO/TC 79, *Light metals and their alloys*, and was circulated to the member bodies in March 1983.

It has been approved by the member bodies of the following countries:

Australia	Hungary	Spain
Austria	India	Sweden
Bulgaria	Italy	Switzerland
Canada	Japan	United Kingdom
China	Nigeria	USA
Czechoslovakia	Poland	USSR
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The member bodies of the following countries expressed disapproval of the document on technical grounds:

Germany, F.R.  
Netherlands

# Anodizing of aluminium and its alloys — Evaluation of uniformity of appearance of architectural anodic finishes — Determination of diffuse reflectance and specular gloss

## 1 Scope and field of application

This International Standard specifies a method of determining the diffuse reflectance and specular gloss of architectural anodic finishes on aluminium and its alloys in order to evaluate their uniformity of appearance. The method is intended for use as a rapid in-plant technique.

It is suitable for most finishes, including those produced by integral colour anodizing, those having electrolytically impregnated colours, as well as coloured anodic oxide coatings produced using organic or inorganic dyes.

## 2 References

ISO 2813, *Paints and varnishes — Measurement of specular gloss of non-metallic paint films at 20°, 60° and 85°.*

ISO 7668, *Anodic oxidation of aluminium and its alloys — Measurement of specular reflectivity at angles of 20°, 45°, 60° and 85° with a fixed angle reflectometer.*<sup>1)</sup>

## 3 Principle

Measurement of the diffuse reflectance and specular gloss of test specimens of the architectural anodic finish and comparison with reference standards prepared using the same finishing cycle.

Diffuse reflectance, which is dependent primarily on the overall lightness-darkness of the surface, and specular gloss, which is dependent primarily on the degree of etch, characterize the general appearance of architectural anodic finishes. Therefore, two surfaces with the same diffuse reflectance and specular gloss should, for the same type of anodic finish, produce matching visual appearance.

## 4 Apparatus

The measurements are carried out using a diffuse reflectometer composed of

a) the instrument proper, including the indicator and the controls;

b) the testing assembly (two testers) including a light source for illuminating the sample at a fixed angle and the photocell receiving the reflected light rays:

1) a tester used to measure specular reflectivity at an angle of 60° (according to ISO 2813) or of 45°, (according to ISO 7668); an example of a tester is illustrated in figure 1,

2) a tester used to measure the intensity of the diffuse reflected light under a chosen angle; a device particularly suitable for this measurement is illustrated in figure 2; it includes:

— an optical system to illuminate the sample, composed of a beam of parallel light rays of diameter 18 mm, directed at right angles to the sample surface,

— a ring shaped concentric photocell which is not influenced by the intensity of the specularly reflected light.

## 5 Reference standards

Two reference standards, one for each limit of the allowable range of appearance, shall be used. They shall be finished using the same finishing cycle as used for the production samples.

1) At present at the stage of draft.