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Ships and marine technology — Large yachts — Measurement and assessment of the visual appearance of coatings

Navires et technologie maritime — Grands yachts — Mesurage et évaluation de l'apparence visuelle des revêtements **iTeh STANDARD PREVIEW**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11347 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 12, *Ships and marine technology — Large yachts*.

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Introduction

This International Standard defines the exterior surface appearance and quality requirements for large yachts. The requirements are described in terms of appearance and colour attributes for above the waterline external areas. The purpose of this International Standard is to ensure that the level of exterior coating finish of the yachts will meet the customer's expectations in term of gloss, colour and appearance.

This International Standard specifically covers the visual characteristics of yacht coatings. It is not the purpose of this International Standard to cover any other aspects of the coating.

In particular, this International Standard does not address the degradation of an accepted coating over time or the assessment of the visual appearance of gelcoat.

NOTE Taking into account work environment conditions that are partially unprotected in which the coating activities occur, conditions that suffer sudden changes in weather and environment, repairs and adjustments are considered an integral part of the process before final acceptance. The partial accidental reinstatements will be regarded as part of the integration process as long as parameters of the project such as environmental conditions, stages and timing of activities, equipment, products, and application are all within the requirements of final acceptance.

The defect of "edge marking", swelling or sweated edges showing in the top coat around feather-edge sanded, old or previous paintwork, is therefore to be regarded as acceptable in its processing, provided that the defect is not greater than 5 % of the total external coated surface.

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Ships and marine technology — Large yachts — Measurement and assessment of the visual appearance of coatings

1 Scope

This International Standard specifies technical requirements for the measurement and assessment of the visual appearance of the superficial coating of large yachts in terms of gloss, colour and any other superficial defects.

This International Standard is applicable to large yachts, of length, $L_{\rm H}$, as defined in ISO 8666, higher than or equal to 24 m, and in use for sport or pleasure and commercial operations.

It describes the technical properties within which the final finish is to be evaluated before its acceptance.

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 2813, Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85° ISO 7724-1, Paints and varnishes — Colorimetry — Part 1: Principles

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ISO 7724-2, Paints and varnishes — Colorimetry — Part 2: Colour measurement

ISO 7724-3, Paints and varnishes — Colorimetry 347Part 3: Calculation of colour differences https://standards.iteh.ai/catalog/standards/sist/fd4d4161-87a2-4026-99b4-4ac1b11e4e10/iso-11347-2012

3 Terms and definitions

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

3.1

abrasion resistance

coating wear resistance property

3.2

blistering

convex deformation in a film, arising from local detachment of one or more of the constituent coats

[ISO 4618:2006, 2.28]

3.3

blooming

formation of a deposit on the surface of a film

NOTE A special form of blooming is an efflorescence.

[ISO 4618:2006, 2.30]

3.4

chalking

appearance of a fine, loosely adherent powder on the surface of a film arising from the degradation of one or more of its constituents

[ISO 4618:2006, 2.39]

chromatic coordinates

parameters identifying the position of a colour in a chromatic three-dimensional space

3.6

coating

continuous layer formed from a single or multiple application of a coating material to a substrate

[ISO 4618:2006, 2.49]

3.7

coating material

product, in liquid, paste or powder form, that, when applied to a substrate, forms a film possessing protective, decorative and/or other specific properties

[ISO 4618:2006, 2.50]

3.8

coating process

process of application of a coating material to a substrate, such as dipping, spraying, roller coating, and/or brushing

[ISO 4618:2006, 2.52]

3.9

coating system

combination of all coats of coating materials which are to be applied or which have been applied to a substrate $\mathbf{\Gamma}_{i}$

NOTE The actual system can be characterized by the number of coats involved.

[ISO 4618:2006, 2.53]

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3.10

ISO 11347:2012 https://standards.iteh.ai/catalog/standards/sist/fd4d4161-87a2-4026-99b4colorimetry fundamental requirements necessary for determining the colour coordinates of paint films and related materials

3.11

colour

sensation resulting from the visual perception of radiation of a given spectral composition

[ISO 4618:2006, 2.57]

3.12

cracking rupturing of a dry film

[ISO 4618:2006, 2.63]

3.13

cratering

formation in a film of small circular depressions that persist after drying

[ISO 4618:2006, 2.64]

3.14

deck house

superstructure on the upper deck of a yacht

3.15

dirt retention

tendency of a dry film to retain soiling material on its surface which cannot be removed by simple cleaning

drying

all the processes by which a film passes from the liquid to the solid state

[ISO 4618:2006, 2.84]

3.17

dry spraying

rough and uneven finish to the surface of the paint film where the particles are insufficiently fluid to flow together

3.18

fairness

particular range of wavelengths of defects from 300 mm to 1 000 mm

3.19

fingerprints

damages of wet film due to accidental contact by operators and/or objects

3.20

fish eyes

presence of craters in a coat each having a small particle of impurity in the centre

[ISO 4618:2006, 2.109]

3.21

flaking detachment of small areas of the coating due to loss of adhesion **CVEW**

[ISO 4618:2006, 2.110]

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3.22

flexibility ability of a dry film to follow without damage the deformations of a substrate to which it is applied

[ISO 4618:2006, 2.116]

3.23

flow property of a coating material that enables levelling

[ISO 4618:2006, 2.120]

3.24

gloss optical property of a surface, characterized by its ability to reflect light specularly

[ISO 4618:2006, 2.128]

3.25

hardness

ability of a dry film to resist indentation or penetration by a solid object

[ISO 4618:2006, 2.133]

3.26

haze milky opalescence in high-gloss or clear coating

[ISO 4618:2006, 2.134]

hiding power

ability of a coating material or a coating to obliterate the colour or the differences in colour of a substrate

[ISO 4618:2006, 2.135]

3.28

high-visibility areas

areas of coated surface that have the greatest impact on visual appearance, due to their location with respect to visibility by yacht users and external observers

EXAMPLE Coated surfaces facing living and entertainment areas of yacht owners and guests, and relevant passageways; stern; hull sides; vertical/slanted sides of superstructure.

NOTE Due to the possible differences in yachts' shape and size, it is recommended that high-visibility areas be clearly identified in the yacht supply contract.

3.29

hull

main body of a yacht which provides flotation

3.30

low-visibility areas

areas of coated surface that have a low impact on visual appearance due to their localization with respect to visibility by yacht users and external observers

EXAMPLE Vertical/slanted sides of superstructure; garage; technical spaces; masts.

NOTE Due to the possible differences in yachts' shape and size, it is recommended that low-visibility areas be clearly identified in the yacht supply contract.

3.31

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orange peel https://standards.iteh.ai/catalog/standards/sist/fd4d4161-87a2-4026-99b4appearance of a film, resembling the texture of the isurface of an orange

[ISO 4618:2006, 2.163]

3.32

overspray

that part of a sprayed coating material that does not reach the surface to be coated

[ISO 4618:2006, 2.166]

3.33

paint

pigmented or non-pigmented coating material which, when applied to a substrate, forms an opaque film having protective, decorative or specific technical properties

NOTE Adapted from ISO 4618:2006, 2.167.

3.34

peeling

detachment of large areas of the coating due to loss of adhesion

[ISO 4618:2006, 2.170]

3.35

pigment colouring material

colouring material, generally in the form of fine particles, which is practically insoluble in the medium and which is used because of its optical, protective and/or decorative properties

NOTE This material can also consist of metal or metallic alloy, shot effects, pearly metallized, or special effects finish colours.

pinholing

presence of small holes in the film resembling those made by a pin

[ISO 4618:2006, 2.177]

3.37

polishing marks

marks from top coat polishing, resulting in low gloss areas

3.38

ropiness

appearance characterized by pronounced brush marks that have not flowed out because of the poor levelling properties of the coating materials

[ISO 4618:2006, 2.196]

3.39

sags

local irregularities in the film thickness caused by the downward movement of a coating material during drying in a vertical or an inclined position

NOTE Small sags can be called runs, tears or droplets; large sags can be called curtains.

[ISO 4618:2006, 2.199]

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sanding marks

raised or indented lines (curved or straight) visible in the top coat as a result of the sanding process under the top coat

3.41

3.40

substrate ISO 11347:2012 surface to which a coating material's applied on stop bill adapting the data of the stop 11247 2012

[ISO 4618:2006, 2.219]

3.42

superstructure

structural part of a yacht above the main deck

3.43

top coat final coat of a coating system

3.44

water marks

spots caused by water drops falling over a wet paint film

3.45

waviness

particular range of wavelengths of defects from 30 mm to 300 mm

3.46

wrinkling

development of ripples in a film of coating material during drying

[ISO 4618:2006, 2.252]

4 General

This International Standard specifies methods for evaluating the appearance of the external coating of large yachts.

Measurement relies on the following parameters, which, even if measured separately, converge to determine the overall assessment of visual appearance:

- gloss (ISO 2813),
- colour difference (ISO 7724-3),
- orange peel,
- fairness,
- sags,
- dirt retention,
- overspray,
- sanding marks,
- blistering,
- water marks,
- polishing marks,
- blooming.

For the above parameters, 5.1 to 5.12 provide descriptions, measurement and test methods.

Other defects, such as wrinkling, flaking, peeling, icracking, fish4eyes, fis

5 Parameters, measurement and test methods

5.1 Gloss

5.1.1 Description

Gloss is a visual impression that is caused when the surface is evaluated. The factors involved in visual evaluation are the surface condition, the illumination and the observer. On a glossy surface, the incident light is directly reflected on the surface and only in the main direction of reflection. The angle of reflection is equal to the angle of incidence. The specular gloss, or specular reflection measurement, is a reading of the amount of reflected light intensity and is compared to the amount of reflected light from a black glass standard with a defined refractive index.

5.1.2 Test method

For the purposes of this International Standard, a 60° specular gloss-meter shall be used as defined in ISO 2813. The gloss-meter measures the specular reflection. The light intensity is registered over a small range of reflection angles.

Gloss measurement requirements shall be fulfilled by the test method outlined in Annex A. For aspects not addressed in Annex A, reference shall be made to the International Standards listed in Clause 2.

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