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Committee identification: ISO/TC 008/SC 12

Secretariat: UNI

Large Yachts—Coatings— Measurement and analysis of the visual appearance

[WI 12.02]

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ument type: International standard
ument subtype: if applicable
ument stage: (20) Preparation
ument language: E

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Contents

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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.

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 nnn-n was prepared by Technical Committee ISO/TC 000, *TC title*, Subcommittee SC 0, *SC title*.

This second/third/... edition cancels and replaces the first/second/... edition (ISO nnn-n:19xx), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

ISO nnn consists of the following parts, under the general title *Introductory element — Main element*:

— *Part n: Part title*

— *Part [n+1]: Part title*

— *Part [n+2]: Part title*

The **foreword** shall appear in each document. It shall not contain requirements, recommendations, figures or tables.

It consists of a general part and a specific part. The general part (supplied by the Central Secretariat of ISO) gives information relating to the organization responsible and to International Standards in general, i.e.

a) the designation and name of the committee that prepared the document,

b) information regarding the approval of the document, and

c) information regarding the drafting conventions used, comprising a reference to the ISO/IEC Directives, Part 2.

The specific part (supplied by the committee secretariat) shall give a statement of significant technical changes from any previous edition of the document and as many of the following as are appropriate:

d) an indication of any other international organization that has contributed to the preparation of the document;

e) a statement that the document cancels and replaces other documents in whole or in part;

f) the relationship of the document to other documents.

Introduction

This International Standar defines the surface appearance and quality requirements for LARGE YACHTINGS . The requirements are described int term of appearance and colour attributes for external areas of the hull and superstructures . The purpose of this standard is to ensure thet the level of paint finish of the Yachtings will meet the customers expectations in term of gloss , colour and appearance .

This Standard covers specifically the cosmetical side of the Yachting coatings . It isn't the purpose of this Standard of practice to cover other aspects of the coating as well as thikness , corrosion resistance , abrasion, cracking bending and deformation resistance , scratch and stain resistance , ageing .

Large Yachts — Coatings — Measurement and analysis of the visual appearance

1 Scope

The Intenational Standard specifies technical requirements in order to analyse and to measure the visual appearance of the superficial coating in term of gloss , colour and surface aspect (orange peel effect) of the Large Yachts .

Large Yachts are intended as pleasure vessels having a length of the hull exceeding 24 mt.

This International Standard is intended to be used for Large Pleasure Yachts and for Large Yachts engaged in commercial services .

The Scope of this document is to settle the techcnical parameters within which the final aspect of the coatings can be evalueted in the Shipyard before the acceptance data.

It isn't the scope of this document to fix the degradation ratio of acceptance of the coating after time .

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 :1994 , Paints and varnishes — *Determination of specular gloss of non-metallic paint films at 20°,60°and 85°.*

ISO 3668 :1998 , Paints and varnishes — *Visual Comparison of the colour of paints*

ISO 7724/1:1984, Paints and varnishes — *Colorimetry — Part.1 : Principles*

ISO 7724/2:1984, Paints and varnishes — *Colorimetry — Part.2 : Colour measurement*

ISO 7724/3:1984, Paints and varnishes — *Colorimetry — Part.3 : Calculation of colour differences*

ISO 1512 :1991, Paints and varnishes —*Sampling of products in liquid or paste form.*

ISO 1513 :1992, Paints and varnishes —*Examination and preparation of samples for testing*

ISO 1514 :1993, Paints and varnishes —*Standard Panels for testing*

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
Chalking

Coating superficial deterioration due to the outdoor exposure , provoching a film weakness .

3.3
Chromatic coordinates
Parameters reporting the position of a color in a chromatic tree-dimensional space .

3.4
Coating
Liquid product that , once polymerized , is a continue film with technical and aesthetic caracteristics .

3.5
Colorimetry
Color mearurement system by means of coordinates .

3.6
Colour matching
Whole activities to riproduce a colour as much as possibile the same as the original one.

3.7
Corrosion resistance
Coating property to protect the metallic substrate from the corrosion .

3.8
Cracking
Superficial defects of the coating that interupt the continuity of the film .

3.9
Crosslinking
Chemical phenomenos to get the polimerization of the paint.

3.10
Flexibility
Coating aptitude to follow the flexibility of the substrate in bending .

3.11
Flow
Paint aptitude to be even and levelled.

3.12
Gloss
Coating property to reflect the light .

3.13
Hardness
Coating property to resist at mecanical demages.

3.14
Paint System
Sequence of paint activities according to the technical data sheet of the manufacturer producer .

3.15
Substrate
Material representing the surface to be coated , normally metallic .

3.16
Thickness
Nominal value of the paint dry film .

3.17
Top Coat

Last layer of the paint system .

3.18
Yellowing
Phenomenon of color ch’ange toowards the yellow due to the resin ageing agaist UV ray .

4 Symbols (and abbreviated terms)

5 General requirements

5.1 General

The International Standard gives guidelines for the procedures for testing the appearance of a coating .

In order to test the general external surfaces appearance of the LARGE YACHTINGS , International Standards have established that the following three factors , even if measured separately , seppur misurati singolarmente , converge all together to the general visual appearance .

5.2 Gloss

This method defines the procedure for testing the specular gloss of an organic coating : it is of fundamental importance to the general appearance .

5.3 Colour Difference

This method defines the instrumental determination of colour differences of the top coat : it is of fundamental importance to the general appearance and to get an even colour for all the parts and components .

5.4 Appearance (Orange Peel) - DOI

This method defines the procedure for testing the surface aspect “orange peel” and the “distinctness of the image” of an organic coating : both evaluation types are individually wiighted and contribute to the total appearance perception .

5.5 Fainess : to be defined

5.6 Other superficial defects (runs,pittings,dust enclosure) : to be defined

5.7 Specific Gel-Coat defects : to be defined

5.8 Film thikness : to be defined

6 Gloss

6.1 General

Gloss is a visual impression that is caused when the surface is evaluated . The criteria involving in visual evaluation are the surface condition , illumination and the observer . The incident light is directly reflected on the surface , only in the main direction of reflection The angle of incidence is equal to the angle of reflection . The specular gloss , or specular reflectance, measurement is a reading of the percentage of light reflected back from the paint surface.
International Standard defines the procedures fo testing the gloss value .

6.2 Method

The gloss of the external coatings shall meet the requirement of this International Standard and of the relevant International Standard cited in the normative references clause when their type is covered .
For the scope of this Standard a 60° specular gloss-meter will be used .
The glossmeter measures the specular reflection : the light intensity is registred over a small range of reflection angle .
Gloss requirement is fulfilled according to the following criteria :

- according to an existing ISO standard (see 2. Normative References)
- according to the test method outlined in Annex A

7 Colour difference

7.1 General

Visual colour percption is influenced by different colour sensitive from each person varying environments such as lightness and colour . It is practically impossible to communicate colour and colour differences . Colour perception is depending from three factors : light source , observer and surface condition .
Light souce and observer are defined by CIE (Commission Internationale de l'Eclairage) and their spectral functions are stored in the spectrophotometers for colour measurement . Optical properties of a surface are the only variable to be measured .
To keep a colour in a project , a standard needs to be established and the requirement is done in term of deviation from the standard and not in absolute value .
International Standard defines the procedures fo testing the colour difference .

7.2 Method

The colour of the coatings shall meet the requirement of this International Standard and of the relevant International Standard cited in the normative references clause when their type is covered .
For the scope of this Standard a spectophotometer at 45/0 geometry will be used .
The spectophotometers measures the amount of light reflected by a colored surface : this is done at each wavelenght and is called the spectral data .
Colour difference requirement is fulfilled according to the following criteria :

- according to an existing ISO standard (see 2. Normative References)
- according to the test method outlined in Annex B

8 Appearance (Orange Peel) – DOI

8.1 General

The total appearance and the visibility of structures size , the observing distance and the image forming quality .
Surfaces with different structure sizes will appear visually different . Orange peel can be seen on high gloss surfaces as a wavy pattern of light and dark areas . The waviness of shining coatings can be in the range of approx. 0,1 to 30 mm. wave lenght .Visibility is also dependent on the obverver distance . At a close distance DOI (Distinctness of Image) is influenced by structures up to 0,3 mm. while the “wet effect” is mainly influenced by structures between 1-3 mm.
International Standard defines the procedures fo testing the surfaceappearance value .

8.2 Visual Appearance

The coating will be applied on the surfaces smoothly and it doesn’t include any scratch to the substrate . The coating will be examined at three meters distance with a 60° angle and defects have not to be seen so as bubbole , scratch ,craters , inclusions , etc.
The coating will be harmonious incolour and gloss with a good hiding power .
The visual test will be done at 5 meters distance .

8.3 Method

The appearance value of the external coatings shall meet the requirement of this International Standard and of the relevant International Standard cited in the normative references clause when their type is covered .
For the scope of this Standard a wave-scan DOI , will be used .
“Orange Peel” - DOI requirement is fulfilled according to the following criteria :

- according to an existing ISO standard (see 2. Normative References)
- according to the test method outlined in Annex C

Annex A

Test procedure for gloss measurement for external coating

A.1 Scope

The scope is to establish an experimental method for proof testing the specular gloss of the external surface coated by organic coating .

A.2 Measuring instrument

For the scope of this Standard a 60° specular glossmeter will be used . Accuracy must be to at least 1 decimal place (0.1).
Calibration plates reccomended by the manufacturer of the gloss meter .
The apparatus is calibrated by reading the gloss of the two standard plates . If the reading of the calibration plates is greater than +/- 1.5 units of their reference value , adjustment of the apparatus must be made .
The instrument aperture is then placed over the coated area and its gloss reading noted .

A.3 Test procedure

This test procedure will outline the method appropriate for taking a series of readings and completing a statistical analysis of the results.
The readings will be gathered 15/20 days from the end of the coating activity .
A reading is taken at three different parts of the prescripted coated area within a square decimetre and the specular gloss reported as the average of these readings . In the event that any single reading is anomalous , more than 20% difference, an additional readings will be taken in the same area at 10 cm. distance .

The readings will be taken as follow :
- For Yachts under 30 mt. the prescripted coated area will be every 2,00 mt. in length and every mt. 1,00 in height .

- For Yachts over 30 mt. the prescripted coated area will be every 3,00 mt. in length and every mt. 1,50 in height .

Hull : the readings will be taken beginning from the right corner of the stern and then carrying on with clockwise until to meet again that starting point .

Superstructures : taking into consideration the bending and the geometrical shapes of the design , the readings will be in specific prescripted coated area , identified and reported in the drawings before starting the test : those areas will be flat as much as possible to allow a suitable reading .

A.4 Acceptance criteria and report

All readings are to be in percentage units of reflected light.
The value required by the Internationl Standard requirement will be over 88 % .
The accurancy of the reading must be +/- 2 gloss.

All the readings will be recorded in a file by Yacht section so that a unique result will be come out as an average value of the all readings for each section . The average gloss values gatherd for the hull and for the superstructures will be reported as general values for the whole acceptance of the coating .
The results of these analyses , showing the nominal values and the deviation , will be entered for each section.

A.5 Limitation

This procedure is valid only for bright surfaces , plain color . It isn't valid for pearlescent or matt colours.
The acceptance parameters for metallic colours to be defined .

The readings will be taken in perfectly flat areas , without bend , welding , meccanical damages even not deep .
If the area is too small or unsuitable for the readings , the gloss will be compared visually with reference area already tested .
The area subjected to abrasion like fender , ropes ways , surfaces cleaned with aggressive chemicals , or polished surfaces will be excluded from the gloss test .

Annex B

Test procedure for colour difference measurement for external coating

B.1 Scope

The scope is to establish an experimental method for proof testing the colour difference of the external surface coated by organic coating .

B.2 Measuring instrument

For the scope of this Standard a spettrophotometers 45/0 will be used .
Recommended illuminant is D65 .Accuracy must be at least 1 decimal place (0.1).
Calibration reccomended by the manufacturer of the instrument .
The circular measuring aperture should have a minimum diameter of 15 mm.
The instrument will exclude the specular reflectance .

B.3 Test procedure

This test procedure will outline the method appropriate for taking a series of readings and completing a statistical analysis of the results.
Before beginning the coating activities the colour chosen will be measure and the three cromatic coordinates recorded as Standard.
The readings for the final test , will be gathered 15/20 days from the end of the coating activity .
A reading is taken at two different parts of the prescripted coated area within a square decimeter and the result repoted will be the one closer to the colour difference limit established by the acceptance report (B4-Acceptance Criteria and Report) . In the event that any single reading is anomalous , exceeding the colour difference limit , an additional readings will be taken in the same area at 20 cm. distance .

The readings will be taken as follow :
- For Yachts under 30 mt. the prescripted coated area will be every 2,00 mt. in length and every mt. 1,00 in height .

- For Yachts over 30 mt. the prescripted coated area will be every 3,00 mt. in length and every mt. 1,50 in height .

Hull : the readings will be taken beginning from the right corner of the stern and then carrying on with clockwise until to meet again that starting point .

Superstructures : taking into consideration the bending and the geometrical shapes of the design , the readings will be in specific prescripted coated area , identified and reported in the drawings before starting the test : those areas will be flat as much as possible to allow a suitable reading .

All other Yacht parts or components , decks , roll bar , furnitures etc. , even manufactured in other materials but coated in the same colour , will respect the same prescription in term of coluor difference .

B.4 Acceptance criteria and report

The values of measurement of the readings will be in absolute value
The value required by this Internationl Standard requirement , in term of colour difference , will be $\Delta E \leq 0{,}8$.
All the readings will be recorded in a file by Yacht section so that a unique result will be come out as an average value of the all readings for each section . The average colours difference values gatherd for the hull and for the superstructures will be reported as general values for the whole acceptance of the coating .
The results of these analyses , showing the deviation , will be entered for each section.

B.5 Limitation

This procedure is valid only for plain coluor and it isn't valid for metallic and pearlescent .
The readings will be taken in perfectly flat areas , without bend , welding , meccanical damages even not deep .
If the area is too small or unsuitable for the readings , the nearest area will be considered as prescripted area .
The area subjected to abrasion like fender , ropes ways , surfaces cleaned with aggressive chemicals , or polished surfaces will be excluded from the colour dfference test .

Annex C

Test procedure for appearance of organic coatings

C.1 Scope

The scope is to establish an experimental method for proof testing the appearance of the external surface coated by organic coating .

C.2 Measuring instrument

For the scope of this Standard at a 60° angle wave-scan DOI will be used : its measurement range will be included between 0-100 and the structure spectrum included between 0,1 mm. (dullness) and 30 mm. (long wave).Scan length is 50/100/200 mm. . Accuracy must be to at least 1 decimal place (0.1).
The wave-scan DOI simulates visual perception like human eyes . The instrument optically scans the waves reflected from the wavy light/dark pattern of a coating film . The contemporary survey of the long wave (“orange-peel”) and the short wave (“dullness”) representing the reflected beam simulates the visual assessment .
A laser point light source illuminates the surface a 60° angle and a detector measures the reflected light intensity at the equal but opposite angle .The wave-scan analyzes the surface structure according to their size n order to simulte the umamn eye’s resolution – The measurement is divided into several ranges using mathematical filter functions .
Calibration reccomended by the manufacturer of the instrument .

C.3 Test procedure

This test procedure will outline the method appropriate for taking a series of readings and completing a statistical analysis of the results.
The readings will be gathered 15/20 days from the end of the coating activity .
A reading is taken at three different parts of the prescripted coated area within a square decimetre and the specular gloss reported as the average of these readings . In the event that any single reading is anomalous , more than 20% difference, an additional readings will be taken in the same area at 10 cm. distance .

The readings will be taken as follow :

- For Yachts under 30 mt. the prescripted coated area will be every 2,00 mt. in length and every mt. 1,00 in height .

- For Yachts over 30 mt. the prescripted coated area will be every 3,00 mt. in length and every mt. 1,50 in height .

Hull : the readings will be taken beginning from the right corner of the stern and then carrying on with clockwise until to meet again that starting point .

Superstructures : taking into consideration the bending and the geometrical shapes of the design , the readings will be in specific prescripted coated area , dentified and reported in the drawings before starting the test : those areas will be flat as much as possible to allow a suitable reading .

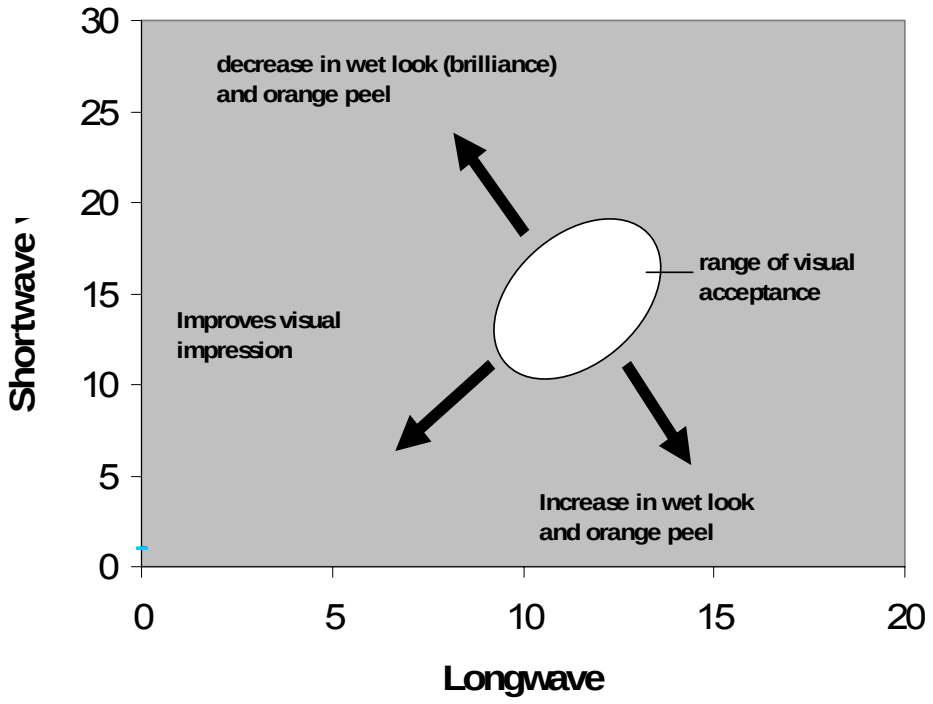
The prescripted testing areas will be identified so as to they will be easily find out on the Yacht , not to interrupt the measurement sequency .
Horizontal surfaces usually show better flow and levelling characteristics so that the reading will be take every 3,00 mt. for Yachts under 30 mt. and every 4,00 mt. for Yachts over 30 mt.

C.4 Acceptance criteria and report

All readings are in absolute value and refer in the chart .
The International Standard defines that the value of the readings included in the ellipse of the following chart , will represent the acceptance ratio to simulate the human visula perception
The acceptable values required by the Internationl Standard requirement will be included in the ellipse showed in the following chart : the more the readings will be near the chart origin point the more the appearance will be good because of a right balance of long and short waves .
The accurancy of the reading will tollerate 20 % maximu of the reading values outside of the ellipse for every Yacht/Section .
The chart with all the readings will be recorded in a file for the general acceptance.

C.5 Limitation

This procedure is valid only for bright surfaces , plain color . It isn't valid for metallic and pearlescent
To be valid this test won't be done on semi-gloss surface or matt ≤ 50 gloss measured at 60° .
The readings will be taken in perfectly flat areas , without bend , welding , meccanical damages even not deep .
If the area is too small or unsuitable for the readings , the nearest area will be considered as prescricpted area .
The area subjected to abrasion like fender , ropes ways , surfaces cleaned with aggressive chemicals , or polished surfaces will be excluded from the appearance test .



RESULT OF VOTING ON NEW WORK ITEM PROPOSAL		
Date **2006-10-02**	**ISO/TC 8 / SC 1**	N 206
Title of TC/SC concerned **SC 1 - Lifesaving and Fire Protection**		

To be completed by the secretariat and sent to the ISO Central Secretariat and to all P- and O-members of the TC or SC concerned, with a copy to the TC secretariat in the case of a subcommittee.

Proposal	ISO/TC **8**/SC **1** N **204**	Circulation **2006-06-07**	Deadline **2006-09-07**

Title (new title if appropriate; French title to be indicated in all cases, even when no French version is envisaged)

English title **Ships and marine technology - Large yachts - Measurement and analysis of the visual appearance of coatings**

French title

Results (the compilation of results is given as an annex)

The following criteria for acceptance have been met:

☒ Average points (y/x) awarded by P-members for market relevance greater than 15

☒ Approval by a simple majority of the voting P-members

☒ 5 or more P-members voting approval have agreed to participate in the development of the project and have nominated an expert **(Note: 4 voting approval, 1 voting disapproval)**

The proposal is therefore:

☒ **Approved** (all approval criteria met)

☐ **Not approved** (one or more approval criteria not met)

Associated draft

☐ no draft was associated with this ballot. A first draft is expected by (give date)

☒ the associated draft is adopted as a working draft (WD)

☐ the associated draft is approved as a Committee draft (CD)

☐ the associated draft is approved as the proposed Draft International Standard (DIS)

Further procedures (attribution to TC/SC/WG, Project Leader, development procedure, meetings, etc.)

☐ The project is to be first registered as a Preliminary Work Item (stage 10.00)

☒ The project is to be immediately registered as an active work item

Other: **New work item to be registered to new TC 8/SC 12**

Experts (give details below, or as a separate annex)

See annex

Documents to be considered (give details below, or as a separate annex)

Target date for submission:	as a CD:	**2007-09-30**	as a FDIS:	**2009-06-30**
	as a DIS:	**2008-09-30**	for publication:	**2009-09-30**

Secretariat	**Secretary**
ANSI	**Kurt J. Heinz, P.E.**

Registration by the Central Secretariat

Date Allocated project number

☒ **Other information, comments, etc. appended**

See comments at Annex.

Compilation of the results of voting on ISO/NP *Ships and marine technology - Large yachts - Measurement and analysis of the visual appearance of coatings*

Member body	Member status	Evaluation	Justification	Vote			Participation	Expert(s) nominated	Approval + Part.+Nomin.	Accepted as CD	Accepted as DIS	Comments enclosed	no reply (optional)
			Q. 2	Q. 3.1			Q. 3.2		3.1+ 3.2	Q. 3.3			
	P/O	Points	Y/N	Yes	No	Abst.	Y/N	Y/N	Y/N	Y/N	Y/N		
JISC/JSTRA – Japan	P	-	-			X							
BIS - India	P	17	Y	X			Y	Y	Y	Y	Y		
ANSI – USA	P	19	Y	X			Y	Y	Y	N	N		
DIN – Germany	P	8	N		X		Y	Y	N	N	N		
BSI – UK	P	20	Y	X			Y	Y	Y	N	N		
DSSU – Ukraine	P	20	Y	X			N	N	N	N	Y		
CSSC – China	P	15	Y	X			N	N	N	N	N		
NEN – Netherlands	P					X							
UNI – Italy	P	25	Y	X			Y	Y	Y	N	N		
Totals (P-members only)		124	6Y	6	1	2	5	5	4	1	2	2	

Abstentions and incomplete votes are not counted

Total number of points awarded by voting P-members (y): 124

Total of P-members voting (x): 7

Average points per P-member voting (y/x): 17.7

ANNEX 1

Nominated experts

Frank.dau@din.de
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1	2	(3)	4	5	(6)	(7)
MB[1]	**Clause No./ Subclause No./ Annex** (e.g. 3.1)	**Paragraph/ Figure/Table/ Note** (e.g. Table 1)	**Type of com-ment**[2]	**Comment (justification for change) by the MB**	**Proposed change by the MB**	**Secretariat observations** on each comment submitted
DE	Title		te	The standard describe the "measurement and assessment" of the paint and not an "analysis".	Please change to assessment.	
DE	Title		te	What is the definition for "Large Yachts"?	Please define "Large Yacht" and add it to 3.	
DE	Introduction	First paragraph	te	What means "paint finish"?	Please define "paint finish" and add it to 3.	
DE	1	First paragraph	te	The standard describe the "measurement and assessment" of the paint and not an "analysis".	Please change to assessment.	
DE		Second paragraph	te	Please use SI units.	metres = m	
DE	1	Third paragraph	te	What is the definition for "Large Pleasure Yachts"?	Please define "Large Pleasure Yacht" and add it to 3.	
DE	2		te	Only the standards that will be needed for the test methods have to reference.	More information could be reference in the last clause "bibliography".	
CN	2		Ed		We suggest that the chapter of "Terms and definitions" should be edited after consulting ISO 4618-1:1998, ISO 4618-2:1999, and ISO 4618-3:1999.	
DE	3		te	Most of the definitions are describe in other standards.	See ISO 4618	
DE	5		te	The definitions of the test methods are describe in other standards.	See	
DE	5		ed		Please describe the sampling, the test panels (for example: substrate, preparation and coating, drying, thickness of the coating)	
DE	5.4		te	What means "both evaluation types are individual wiighted and contribute to the total appearance perception"?	If it is important for the result, please describe exact the algorithm of the calculation.	

1 **MB** = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by **)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.

1	2	(3)	4	5	(6)	(7)
MB[1]	**Clause No./ Subclause No./ Annex** (e.g. 3.1)	**Paragraph/ Figure/Table/ Note** (e.g. Table 1)	**Type of com-ment**[2]	**Comment (justification for change) by the MB**	**Proposed change by the MB**	**Secretariat observations** on each comment submitted
DE	6.1		te	The test method is well describe in ISO 2813.	Please delete the text and do only a reference to ISO 2813.	
DE	6.2 Annex A	First sentence	te	What means "external coating?"	Please define.	
DE	6.2	Second sentence	te	Why a 60 ° specular glossmeter will be used?	To measure high gloss paint (> 70) a specular glossmeter with 20° shall be use.	
DE	7		ed		Please refere to the ISO standards that will be needed for measuring.	
DE	8.2	First sentence	te	What means "applied on the surface smoothly?"	Please define.	
DE	8.2	Second sentence	te	How can controlled the viewing 60° angle?	Please add nearly or the precision.	
DE	8.2	Last sentence	te	First the coating should be examine at three metres and now at 5 metres.	Please clear up this difference.	
DE	8.3	Second sentence	te	The marking "wave-scan DOI" is a registered name.	Please describe the test equipment. The new test equipment is call "wave-scan dual".	
DE	Annex A A.1		ed + te	The scope is to establish an experimental method	The measurement of gloss is not an experimental method.	
DE	A.2		te	For measuring high gloss (> 70) the glossmeter measurements system shall be 20°.	See ISO 2813 clause 1.	
DE	A.2	Second sentence	te	Accuracy must be at least 1 decimal place (0,1).	Please add: the measurement value will in whole numbers.	
DE	A.2	Third paragraph	te	Why is the calibration describe?	See ISO 2813. It is better describe in the original standard.	
DE	A.3	Second sentence	te	What means 15/20 days?	Please describe more exactly when 15 or 20 days.	

1 **MB =** Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by ******)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.

1	2	(3)	4	5	(6)	(7)
MB[1]	**Clause No./ Subclause No./ Annex** (e.g. 3.1)	**Paragraph/ Figure/Table/ Note** (e.g. Table 1)	**Type of com-ment**[2]	**Comment (justification for change) by the MB**	**Proposed change by the MB**	**Secretariat observations** on each comment submitted
DE	A.4	First sentence	te	The value from the glossmeter is **not** in percentage of units of reflected light.	The measured gloss has no unit (see ISO 2813)!	
DE	A.4	Third sentence	te	The accuracy of the reading must be +/- 2 gloss.	The "accuracy" is that what a test equipment has itself. The precision is the value about the test method see ISO 2813.	
DE	C.5	First sentence	te	This procedure is valid only for bright surfaces, plain colour.	Correct definition see ISO 2813.	
DE	C.5	Second sentence	te	To be valid	The right information is given in ISO 2813.	

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