SVENSK STANDARD
SS-EN ISO 12215-4:2018

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Båtar – Skrovtillverkning och dimensionering – Del 4: Lokaler och tillverkning (ISO 12215-4:2002)

Small craft – Hull construction and scantlings – Part 4: Workshop and manufacturing (ISO 12215-4:2002)

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Europastandarden EN ISO 12215-4:2018 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 12215-4:2018.

Denna standard ersätter SS-EN ISO 12215-4, utgåva 1

The European Standard EN ISO 12215-4:2018 has the status of a Swedish Standard. This document contains the official version of EN ISO 12215-4:2018.

This standard supersedes the SS-EN ISO 12215-4, edition 1

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Fritidsbåtar (under 24 m), SIS/TK 232.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 12215-4

September 2018

ICS 47.080

Supersedes EN ISO 12215-4:2002

English Version

Small craft - Hull construction and scantlings - Part 4: Workshop and manufacturing (ISO 12215-4:2002)

Petits navires - Construction de coques et échantillons - Partie 4: Ateliers de construction et fabrication (ISO 12215-4:2002)

Kleine Wasserfahrzeuge - Rumpfbauweise und Dimensionierung - Teil 4: Werkstatt und Fertigung (ISO 12215-4:2002)

This European Standard was approved by CEN on 16 April 2018.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN ISO 12215-4:2018: E

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European foreword

The text of ISO 12215-4:2002 has been prepared by Technical Committee ISO/TC 188 “Small craft” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 12215-4:2018.

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 March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.

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

This document supersedes EN ISO 12215-4:2002.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2013/53/EU.

For relationship with EU Directive 2013/53/EU, see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 12215-4:2002 has been approved by CEN as EN ISO 12215-4:2018 without any modification.

Small craft — Hull construction and scantlings — Part 4: Workshop and manufacturing

1 Scope

This part of ISO 12215 specifies workshop conditions, material storage and handling, and requirements for the manufacturing of the craft. It applies, to small craft with a (L_H) length according to ISO 8666 of up to 24 m.

This part of ISO 12215 does not cover health and safety requirements.

NOTE The underlying reason for preparing this part of ISO 12215 is that workshop conditions have a significant influence on the mechanical short- and long-term properties of recreational craft and that the scantling determination according to ISO 12215-5 is based on conditions that are appropriate for the material used as well as the manufacturing process applied.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12215. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 12215 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 8666:—[1)], *Small craft — Principal data*

ISO 12215-1:2000, *Small craft — Hull construction and scantlings — Part 1: Materials: Thermosetting resins, glass-fibre reinforcement, reference laminate*

ISO 12215-3:2002, *Small craft — Hull construction and scantlings — Part 3: Materials: Steel, aluminium alloys, wood, other materials*

3 Fibre-reinforced plastics (FRP) boat production

3.1 Workshop conditions

3.1.1 General

The buildings used for production and storage shall be of suitable construction, and equipped to provide the environment specified by the material manufacturer or supplier.

To minimize contamination or impairment of the laminate, the production area shall be separate from the storage area and, wherever practicable, the various manufacturing processes shall be carried out in separate sections.

The workshop and equipment shall be properly maintained and kept in a clean condition, substantially free from debris, surplus material, and equipment that is not essential for the production process.

3.1.2 Temperature and humidity

Where a conventional manual lay-up or spray-up process is used, the moulding shop temperature shall be maintained within the limits specified by the resin manufacturer during lay-up and curing periods.

1) To be published.

Should the temperature vary outside the specified limits, the boat builder shall establish with the resin manufacturer that the resulting laminate will meet the requirements upon which scantlings and design are based.

The relative humidity in the moulding shop shall be maintained within the limit recommended by the material manufacturers.

Materials shall be brought up to the workshop temperature prior to use.

The temperature and humidity shall be monitored in appropriate locations, and records shall be kept.

3.1.3 Ventilation

Adequate ventilation shall be provided in the laminating area, in order to minimize accumulation of monomer fumes in the mould. The ventilation shall not significantly reduce the surface temperature of the mould or laminate.

The design of the ventilation system shall take account of the size of the laminating shop, possible subdivision and the amount of resin under cure.

The ventilation arrangements shall not cause excessive evaporation of the resin monomer. Precautions shall be taken to ensure freedom from draughts.

3.1.4 Dust control

Provisions shall be made to minimize harmful accumulation of dust on moulds and laminates.

3.1.5 Illumination

Provisions shall be made to avoid any harmful effects on the resin cure due to direct sunlight or artificial lighting.

3.2 Material storage and handling

3.2.1 General requirements

Storage areas shall be arranged and equipped in such a way that the material manufacturer’s requirements for storage and handling can be followed.

The procedures for the reception, verification against certificates of conformity, storage and handling of materials shall be detailed in the conformity assurance procedures provided by the boat builder (see clause 10) to ensure that the materials suffer no contamination or degradation and carry adequate identification at all times.

Storage shall be arranged so that wherever possible materials are used in order of receipt.

Structural parts shall be manufactured from materials that have not passed the material manufacturers’ date of expiry.

Materials found to be defective or not in compliance with the specifications of raw-material supplier(s) shall be rejected unless treated in accordance with the conformity assurance procedure, provided by the boat builder.

Unused resin and ancillary materials exposed to the workshop atmosphere shall not be returned to the parent stock or bulk storage.

3.2.2 Resin

Resins shall be stored under controlled conditions in accordance with the resin manufacturer's requirements.

Where a resin contains an ingredient that can settle within the resin system, it is the builder's responsibility to ensure that the resin manufacturer's recommendations for mixing and conditioning are complied with prior to use.

3.2.3 Catalysts and accelerators

Catalysts and accelerators shall be stored according to the material manufacturer's requirements.

3.2.4 Fillers and additives

Fillers and additives used in the moulding process shall be stored in closed containers to protect them from dust and humidity.

3.2.5 Reinforcing and core materials

Reinforcing and core materials shall be stored in clean and dry conditions, in accordance with the material manufacturer's recommendations.

3.3 Moulds

3.3.1 Construction

Moulds shall be constructed of a suitable material and adequately stiffened to maintain their shape and fairness of form.

The materials used in the construction of moulds shall not adversely affect the resin cure.

3.3.2 Preparation

Moulds shall be cleaned, dried and in place so that they stabilize at the workshop temperature before the release agent is applied.

The release agent shall be compatible with the mould surface, the resins applied in the laminating process and with mould release films used previously.

Release agents containing silicon shall not be used.

NOTE Release agents containing silicone oil may interfere with adhesion or secondary bonding when using common resin types.

3.4 Resin preparation

The requirements of the resin manufacturer shall be followed.

Where blended resins are used, test specimen(s) shall be made to ensure that the blended resin is suitable for the laminating process.

Where the boat builder wishes to modify resin with additives outside the resin manufacturer’s specification, the boat builder shall conduct tests to verify compliance with Table 3 of ISO 12215-1:2000.

3.5 Laminating process

3.5.1 Manual lay-up

The material type and unit weight of the first fibre reinforcement layer shall be chosen to provide for adequate penetration of the reinforcement layer by the resin system used and reduce the effect of hydrolytic attack.