Model Yachting Association

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To IOMICA Technical Chairman, Robert Grubisa
From IOM NCA for GBR, technical secretary, Roger Stollery

Dear Robert,
This is a formal **Request for Interpretation** on the question of hull construction that keeps reappearing from time to time. This is in two parts, firstly where wooden construction is combined with glass fibre reinforced plastic (GRP) and secondly in the construction of the GRP itself.

RFI for composite GRP/wooden hull construction

It is not uncommon for wooden boats to be covered on either or both of the inside and outside surfaces with glass cloth and resin (GRP). Either or both surfaces may be painted with clear or coloured resin or paint/varnish.
It is assumed that all the materials used in the construction are permitted by IOM CR D.2.1(a). In GRP construction, painting the inside with coloured paint or resin is contrary only to D.2.1(b)(5), because the fibres are coated and cannot be seen. However with some combinations it is unclear as to whether or not they meet this class rule, D.2.1(b)(5).

Questions:

1 Assuming the OUTSIDE was coated with opaque or translucent paint and the inside of the wooden shell is covered with glass cloth (GRP), which is then painted with clear varnish or resin, does the construction comply with the class rule D.2.1(b)(5)?

2 Assuming the INSIDE of the wooden shell was coated with opaque or translucent paint and the outside is covered with glass cloth (GRP), which is then painted with clear varnish or resin, does the construction comply with the class rule D.2.1(b)(5)?

3 If both INSIDE and OUTSIDE are covered with glass cloth (GRP), which is then painted with clear varnish or resin, does the construction comply with the class rule D.2.1(b)(5)?

4 Assuming the INSIDE of the wooden shell is coated with opaque or translucent paint and the OUTSIDE is covered with glass cloth (GRP), which is then painted with coloured varnish or resin does the construction comply with the class rule D.2.1(b)(5)?

5 If the OUTSIDE is covered with glass cloth which is then painted with coloured varnish or resin and the INSIDE is covered with glass cloth and then painted with clear varnish or resin, does the construction comply with the class rule D.2.1(b)(5)?

Relevant IOM CR

D.2.1 MATERIALS

(a) Subject to (b) and (c), the **hull**, excluding fittings and remote control equipment but including any supports and containers for such items, shall be made of and joined using one or more of the following materials:

(1)metal,

(2)wood; wood based products containing only permitted materials,

(3)glass fibre reinforced plastic,

(4)adhesive,

(5)varnish; paint,

(6)film covering materials which may be fibre reinforced,

(7)elastomeric material,

(8)thermoplastic, which may be moulded, containing only permitted materials.

(b) In glass fibre reinforced plastic:

(1) an external gel coat is optional and may be pigmented,

(2) an external paint coating is optional,

(3) the laminating resin shall be unpigmented,

(4) the reinforcement shall be glass fibre in any of the following forms: roving, tape, chopped strand mat and woven cloth,

(5) the interior shall be un-coated to permit non-destructive examination for verification of the material content.

Discussion

The original concept for the construction of the hull was that the rule should have a generous hull weight allowance so that it could be made easily by amateurs and economically by professionals, without the use of 'supposedly expensive' materials like carbon, kevlar etc. With this generous weight limit it doesn't matter what material the hull is made of, because it will be adequately strong whether in balsa or GRP etc and so there is no performance difference, whatever the construction marterial.

There have been many nit-picking arguments over materials over many years but now at least the materials are reasonably clearly specified. However in D.2.1(b)(5), rather than a specification, there is an 'intention', a requirement of inspection that causes the problem of conformity questioned in the RFI above, despite the materials themselves complying.

Since 2002 there has been more than necessary control of the GRP, because of the introduction of the Owner's Declaration in the boat MF, as well as the fibre inspection requirement. There is the Owner's Declaration in the rig MF on the grades of aluminium and wall thickness of spars and in the boat MF on the ballast density, as well as ensuring that the materials comply with D.2.1. If the Owner's Declaration is sufficient for ballast and spars why not for hull material also?

The rules were first drafted with the requirement to inspect the fibres, but no owner's hull material declaration. Didn't this become redundant once the Owner's Declaration confirmed the hull construction? The MYA tec team consider that some of the questioned constructions may not comply with D.2.1(b)(5) despite the construction materials themselves complying and giving no performance gain.

RFI for wet gel coat GRP construction

Discussion

We have recently investigated a moulded hull construction technique, which followed the West Epoxy System recommendation with a pigmented gel coat and a un-pigmented laminating resin, but with the hull fibres laid up whilst the gel coat was still wet. Technically this still complies with the rule, but the appearance of the finished moulding did not allow the fibres to be seen from the INSIDE as D.2.1(B)(5) requires. However the fibres were quite clearly visible from the OUTSIDE, pigmented gel coat side.

Question 6

Does a construction that complies with D.2.1 as described above, with the exception that the fibres are visible from the outside rather than the inside, comply with D.2.1(b)(5)?

Discussion

Since the IOM CR was drafted other fibres like Dyneema with a 'white' appearance are available for laminating, so even if there are no 'image expensive' black fibres visible they may not be glass, so how is the measurer to check just by visual inspection?

The MYA tec team consider that it is time to remove the fibre inspection requirement and just rely on the Owner's Declaration. This would then be a consistent approach for things that are difficult/impossible for Official Measurers to measure.

This would allow all the constructions queried above to comply, allow compliance of for example early Robbe Windstars, etc and add to the total fleet of IOMs. More importantly it would allow 'normal' GRP construction with pigment in both gel and layup, which would make construction quicker, easier and cheaper. The real cost of these boats is in the labour not the materials and anything to reduce this would be a benefit to the class.

We are aware of manufacturers of light coloured boats using 2 gel coats before the layup to get an even colour. This proposal would reduce the need to use 2 gel coats and would reduce the number of 'layer operations' by 33% and give a better outer layer, less likely to crack and to look better once scratched. Without actually changing the 'construction' materials rules at all, it would be a real benefit to the class.

We await your interpretations.

A proposal to remove the fibre inspection requirement

IOM NCA for GBR propose the following IOM CR change:

Omit D.2.1(b) and add D.2.1 (b) as follows:

(b) In glass fibre reinforced plastic:

(1) resin may be pigmented

(2) an external gel coat is optional,

(3) the reinforcement shall be glass fibre in any of the following forms: roving, tape, chopped strand mat and woven cloth.

Yours sincerely,
Roger Stollery, IOM NCA for GBR technical secretary