

# Nacra F20 Carbon Class rules

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Draft class rules F20 Carbon

# Nacra F20 Carbon Class rules

The Nacra F20 Carbon Class is a restricted class, reserved for sport catamarans with two crew and of amateur or professional construction and destined for racing.

## A ADMINISTRATION OF THE RULE

### 1.0 AUTHORITY

The rules of the Nacra F20 Carbon are established under behalf of the International Nacra Class Association (INCA), which publishes the interpretations and recognizes them as the authorized interpretations and explanations of the rules.

### 2.0 ADMINISTRATION

The Nacra Measurement Committee appointed by the INCA, nominates the measurers.

Nacra F20 Carbon class rules are closed class rules, what is not expressly permitted is prohibited.

### 3.0 INTERPRETATION

After having eventually consulted the Nacra Measurement Committee, the chief measurer shall give an interpretation on all points of the Nacra F20 Carbon.

For the interpretation of the rules, the builders have to consult the chief measurer in writing, which shall give an answer by 30 days.

### 4.0 REFERENCE TEXT

For the interpretation of the rules, the original text in English shall prevail over all translations.

## **5.0 SPIRIT OF THE RULE**

In case of doubt, the intention of the rule makers, which is the spirit, shall take precedence over the letter of the rule.

## **6.0 AMENDMENTS**

The Nacra Measurement Committee will propose amendments to the rule if necessary. Amendments shall be placed on one year's notice unless it is considered essential to act immediately to prohibit or penalize an undesirable feature.

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## **B. MEASUREMENT RULES**

### **GENERAL**

For the construction, only the following materials are authorized: Carbon, polyester or vinylester resin, glass fibres, core of PVC or balsa or felt, the combination of wood-epoxy, injected plastic, steel, extruded aluminum profiles and carbon profiles of constant section, which shall not be altered, other than locally for the fixings and passage of equipment and normal reinforcement.

Every material that is not expressly permitted is prohibited. Epoxy glue is permitted for joining components.

For the trampoline: all types (except netting) of sail maker Performance Sails.

### **1.0 PLATFORM**

#### **1.1 DIMENSIONS**

The maximum overall length measured on the hulls is 6.096m (20 ft).

The maximum overall beam is 3.2 m (10.5 ft).

See drawing B1 – Platform

#### **1.2 FLOTATION**

Each hull shall carry at least 100 liter of flotation, by solid closed cell foam, air bags, sealed air compartments in hulls, and at least one inspection hatch.

#### **1.3 MINIMUM WEIGHT**

The minimum weight of the boat ready to sail is fixed at 165 kg.

A corrector weight of maximum 7 kg may be used to satisfy these two conditions. This corrector weight shall be fixed to the outside of the forward beam on the starboard side and shall be removable for checking.

## **1.4 DAGGERBOARDS AND RUDDERS**

The platform shall be equipped with a pair of rudders and, a pair of dagger boards. The dagger board boxes and the rudders have to be in the vertical plan of the hulls.

The dagger boards and rudders are made of carbon.

### **1.4.1 MINIMUM WEIGHT OF RUDDERS**

The minimum weight of each complete rudder assembly comprising blade, stock and tiller is fixed at 8 kg.

The controlled weight shall be noted on the measurement form and written on the rudder.

### **1.4.2 MAXIMUM WEIGHT OF DAGGER BOARDS**

The maximum weight of dagger boards is fixed at 5 kg. The weight of each dagger board shall be carried on the dagger board and shall be noted on the measurement form.

Distribution of the material of dagger boards shall be homogeneous.

### **1.4.3 LENGTH AND CURVE OF THE DAGGERBOARDS**

The daggerboards has a length of 1800 mm and the arc of the circle (R) is 1800 mm.

Movable and rectable appendages shall be inserted from the top or be capable of being fully rectable into the hull.

## **1.5 BEAMS**

The beams shall be made of extruded aluminum profiles of constant section.

The beams shall not be convex except for the necessary pre-bend to counteract the mast loading. The pre-bend shall be limited to a maximum of 14 mm. *See attachment B.*

The mast pivot on the front beam shall be fixed on the longitudinal axe of the boat. *See attachment.*

## **2 RIGGING**

### **2.1 MAST**

The mast shall be made of a carbon profile of constant section.

The perimeter of the mast section shall be a maximum of 300 mm. *See drawing.*

The maximum distance between the top of the forward crossbeam and the bottom of the upper measurement band of the mainsail shall be 10500 mm. The mast shall be watertight and shall have a minimum weight of 13.5 kg.

### **2.2 BOOM**

A loose-footed mainsail is permitted. If used, the boom shall be made of extruded aluminium profile of constant section.

### **2.3 BOWSPRIT**

The bowsprit shall be made of extruded aluminium profile of constant section.

The length shall not be greater than the distance 4170 mm. The forward end of the bowsprit shall be rounded and blunt.

The bowsprit shall be fixed and approximately on the longitudinal centerline of the boat.

### **2.4 RIGGING AND EQUIPMENT**

The standing rigging shall be constituted at most with: 2 shrouds, 1 forestay, 1 pair of bridle stay, 1 pair of diamonds with a pair of spreaders, 2 pairs of trapeze wires.

The standing rigging shall be of conventional stranded steel wire (1 x 19). Dyform®. Minimum size: 4 mm.

Trapeze wires will have a minimum diameter of 2.5 mm.

### **3 WEIGHT OF CREW**

The combined weight of the two crew members shall be a minimum of 125 kg

#### **3.1 MINIMUM WEIGHT OF CREW**

##### **3.2.1 CREW WEIGHT**

There are three categories of crew weight

- I. Of 125 kg to less than 155 kg
- II. 155 kg to 165 kg
- III. Above 165 kg

##### **3.2.2 CHANGE CREW CATEGORY I**

The crew in the category of 125 kg to less than 155 kg shall carry a weight equal to half of the difference between 155 kg and the actual weight of the crew. The weight shall be fixed to the outside of the forward crossbeam on the port side and shall be removable for control checking.

##### **3.3 CHANGE OF CATEGORY II**

The crew in the category II, 155kg to 165kg may use a corrector weight to complete in the upper category. The corrector weight, equal to half of the difference between 165 kg and the actual weight of the crew shall be fixed to outside of the forward beam on port side and shall be removable for control.

##### **3.4 SPORTIVE RESPONSIBILITY**

The responsibility of the weight declared is the sportive responsibility of the crew, which may be controlled and protested at anytime during the event.

### **4 SAILS**

#### **SAIL PLAN**

The sail plan comprises a mainsail, a jib and a spinnaker. The sails shall be made of any Carbon/Kevlar material for main and jib and of nylon and polyester woven only for spinnakers, CLP is not allowed.

The sail manufacturer is:

- Performance Sails

## **4.1 MAINSAIL**

4.1.1 The mainsail shall have a surface area of maximum 21.00m<sup>2</sup> including the mast.

4.1.2 The aft head point of the mainsail shall have a maximum angle of 7 degrees.

4.1.4 Maximum Top width: 125 mm

## **4.2 JIB**

The leech shall not be convex. The head shall be not more than 50 mm wide.

There shall not be battens on the foot.

4.2.1 Two sail areas of jib are available as a function of the crew weight.

4.2.1.1 Crew categories of 125 till 155 kg the maximum jib sail area is 4.35 m<sup>2</sup>

4.2.1.2 Crew categories of more than 165 kg and crews opting for the over 155 kg changing of category (see 3.2.1) the maximum jib sail area is 5.2 m<sup>2</sup>

4.2.1.3 Crew categories of more than 155 kg and crews opting for the over 155 kg changing of category (see 3.2.1) maximum jib sail area of 4.35 m<sup>2</sup>

4.2.2 The maximum number of jib battens will be 4.

## **4.3 SPINNAKER**

Two sail areas of spinnakers are permitted as a function of crew weight.

Crews of 125 kg to 155 kg:

Maximum surface area for the spinnaker: 25.00m<sup>2</sup>.

Crews of more than 165 kg and crews over 155 kg changing of category (see B.3.3):

Maximum surface area for the spinnaker: 28.00m<sup>2</sup>.

Battens and stiffening devices, except textile leech lines, are not permitted.

Spinnaker retrieving systems, which may be attached to the bowsprit, are allowed.

## **4.4 LIMITED NUMBER OF SAILS**

One single suit of sails can be used for the whole duration of an event.

## 5 MARKING

All sails measured shall have the following details clearly marked close to the tack point of the sail:

- The loft of manufacture
- The cloth type used
- A unique serial number

### 5.1 MARKING OF SAILS

All the sails measured shall be marked near the clew on the starboard side.

The actual measured area shall be marked on a measurement certificate.

The area and the dimensions of the spinnaker (SL1, SL2, SMG, SF) shall be written in an indelible manner near the starboard tack.

### 5.2 IDENTIFICATION

The number of the measurement certificate corresponding with the boat shall be written by the measurer:

- at the stern of the hull, on the inward facing sides ;
- at the bottom of the mast, starboard side ;
- at the starboard tack of each sail.

## **C DEFINITIONS AND MEASUREMENT PROCEDURE**

### **GENERAL**

The method of measurement of sail shall be as defined in the ISAF Equipment Rules of Sailing. The measurements shall be taken and expressed in meters and centimeters, kilograms and hectograms.

### **1 WEIGHT OF THE CREW**

The controlled crew weight is based on the weight of the crew in swimming costume.

### **2 CONTROL OF MINIMUM WEIGHT OF THE BOAT**

#### **2.1 THE PLATFORM:**

2.1.1 This shall be weighed assembled, dry and clean.

2.1.2 It comprises: the hulls, the crossbeams, the trampoline, the dagger boards or centerboards, the steering system, the mainsheet and jib traveller cars, all the equipment normally bolted, screwed or fixed in a permanent manner on the boat and used whilst racing, the re-righting system when existing, and eventually the corrector weights.

#### **2.2 BOAT READY TO SAIL**

The minimum weight of the boat ready to sail shall be the assembled platform conforming to rule 2.1 above and carrying the dry and clean equipment normally used for navigation: mast, boom, bowsprit, mast rigging, halyards, sheets, sails, blocks, except the safety equipment defined by Chapter E rule 2.

### **3 OVERALL LENGTH OF THE HULLS:**

The overall length of the hulls, outside rudder pintles, corresponds with the horizontal distance between the verticals passing through the extremity of the hulls, the boat being leveled on its waterline.

## **4 SAILS**

### **4.1 GENERAL**

The intention is to establish a reliable and simple method of measuring the active surface of the entire sail plan, including the mast.

In the measurement of sail area, the term sail shall be considered as defining the part of the sail outside the mast and including headboard. Cringles which are totally outside the edge of the sail or the bolt rope which is inside the mast shall not be included.

The measures of head point, tack point, aft head point and clew point shall be in accordance with drawing C.4.1.

### **4.2 MAINSAIL AND JIB:**

The battens shall be without tension in their pockets, the sail shall be pinned on a flat surface with tension just sufficient to eliminate creases, then smoothed flat to give the longest dimensions.

Whilst the sail remains pinned, all the measurement necessary shall be taken, the tension should not be adjusted.

### **4.3 MAST MEASUREMENT**

The measurement of the perimeter of the mast shall be considered as the distance, at right angles to the mast axis, measured around and back to the same point. The dimension shall be divided by two to give the value for the half-circumference.

## 4.4 SPINNAKER

### 4.4.1 Definition of a spinnaker

All triangular sails not complying with the definition of a mainsail or a jib are spinnakers, on condition that the girth at mid-height is equal or greater than 75% of that of the foot.

### 4.4.2 Calculation of the spinnaker area CSPI:

$$\text{CSPI} = \text{SF} \times (\text{SL1} + \text{SL2})/4 + [(\text{SMG} - \text{SF}/2) \times 2/3 \times (\text{SL1} + \text{SL2})/2]$$

- where  $\text{SMG} > 75\%$  of  $\text{SF}$  ;
- where  $\text{SF}$  is the length of the foot measured around the edge of the sail between the lowest
  - ✓ points of the luff and the leech ;
  - where  $\text{SL1}$  is the length of the luff of the sail, from the highest point of the sail, to the lowest
- ✓ point of the sail on the luff ;
  - where  $\text{SL2}$  is the length of the leech of the sail measured along the edge of the sail, from the
    - ✓ highest point of the sail, to the lowest point of the sail on the leech.
    - where  $\text{SMG}$  is the width at mid-height, which shall be taken between the mid point of the luff and the mid point of the leech.

## **D CONTROLS**

### **1 MEASUREMENT FORM AND MEASUREMENT CERTIFICATE**

#### **1.1 COMPETENCE**

Only the controls, measurements and calculations made by a measurer recognized by the International Nacra Association, a National Authority or the ISAF are considered valid.

#### **1.2 MEASUREMENT FORM AND MEASUREMENT CERTIFICATE**

The measurement form completed (measurement sheets and calculations) and signed by a measurer is not a measurement certificate. The measurer shall record on the measurement form anything he considers as departing from the concept of the Nacra F20 Carbon rule, he shall send it with detailed explanations on the contentious points to the International Nacra Association for a ruling.

A competitor has an obligation to present with his entry the measurement certificate and measurement form of his boat.

#### **1.3 REGISTRATION**

The measurement form (measurement sheets and calculations) and the measurement certificate are established and registered by the International Nacra Association or a National Authority.

#### **1.4 VALIDITY**

A change of ownership shall invalidate a measurement certificate, a re-registration shall be made by returning to the national authority the initial measurement certificate accompanied by the details of the new owner. The valid certificate and registration will be returned to the new owner. It is not necessary to re-measure the boat.

All modifications or replacements of parts of a significant change, shall be remeasured and notification made on the measurement certificate by a measurer recognized by the International Nacra Association a National Authority or the ISAF.

## **E SAFETY**

### **1 RIGHTING**

The crew shall be able to demonstrate their capability to re-right the boat.

### **2 SAFETY EQUIPMENT**

Minimum mandatory equipment to be on board:

1 re-righting line 4m long and 10mm of diameter minimum,

1 lifejacket a person (conforming to the rules in force).

### **3 BALLAST AND WEIGHT JACKETS**

Ballast on the boat or worn by the crew is not prohibited.

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**F. ATTACHMENTS**

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