

International Superyacht Rule

An informational website to service the super yacht racing community

Rule Description

INTERNATIONAL SUPER YACHT RULE (ISYR)

OVERVIEW

Handicapping superyacht racing is an exceedingly challenging task given the diverse nature of the yachts participating in a variety of locales with quite different weather patterns. The widely disparate fleets feature performance hulls with the very latest in racing technology competing against heavy, luxury yachts designed and built for the sole purpose of cruising. Inherent in the design of luxury cruising is some degree of compromise to racing efficiency.

The International Super Yacht Rule (ISYR), formerly known as the 'Bucket Rule', is an inclusive handicapping system permitting a wide variety of superyacht designs to compete against one another with no specific yacht type experiencing an advantage. It is not a grand prix rule that rewards the most recent racing-oriented design. It does reward those crews who prepare their yachts and equipment, and sail well. The rule authority is committed to using a blend of scientific method and observed speed, coupled with a commitment to fairness, to produce handicaps that enable any well sailed yacht to have a reasonable chance at a podium finish in every race.

Ratings/handicaps – The ISYR uses polar tables, boat speed predictions at each combination of wind speed and wind angle. These are initially derived from velocity prediction software (VPP), utilizing boat measurement data declared by captains ([form posted here](#)) and supplemented with information from design offices. The compromises to performance due to the emphasis on luxury cruising can be difficult, even impossible, to predict via measurement and calculation. Therefore, each yacht's polar table is adjusted based on declared performance compromises and then refined over several regattas, as required, through observation of actual sailing.

Those polar tables are also dependent on regatta-specific environmental conditions, specifically the sea state. Some venues have relatively calm water even in high winds. Others have ocean swells that can persist even if the wind goes light. These waves can affect yachts differently, depending on their design features such as draft, weight and sail area. To meet the goal that any well sailed yacht should be able to win any race it is necessary to factor in the effects of local conditions.

Rating Changes – Unlike what was common practice with the 'Bucket Rule', the ISYR ratings are not adjusted after every race. ISYR has established a series of procedures for management of ratings:

Existing Yachts –

- The ISYR's philosophy and intent is to minimize handicap adjustments at a regatta between races.
- It is preferable to conduct a thorough review and evaluation following every regatta and provide any handicap adjustments (if deemed necessary) between regattas.
- The ISYR, with input from a designated Regatta Handicap Panel defined below, may adjust handicaps between races at a regatta for the following three reasons:
 1. When it is revealed that there is an error with the yacht's measurement data (used by ISYR in handicapping the yacht)
 2. For gross anomalies (the observed speeds demonstrate that the assigned handicap is far from accurate or fair).
 3. For yachts new to the rule, which have been issued a 'Provisional Certificate' when the observed speeds demonstrate that the assigned handicap is far from accurate or fair. The ISYR's philosophy and intent is to minimize handicap adjustments at a regatta between races.

- In the case of 2 and 3 above, the handicap will be adjusted when there is a high level of confidence that the adjusted handicap will more accurately reflect the speed potential of the yacht.
- The ISYR, in collaboration with Organizing Authorities and the Superyacht Racing Association (SYRA) may provide an on-site 'Regatta Handicap Panel' ([Link to RHP overview](#)). The panel shall be composed of between three and five individuals including an ISYR representative, highly experienced superyacht sailors, and industry professionals from a pool maintained by the SYRA.
- The purpose of the panel is to provide a forum for questions regarding the ISYR policy and assigned handicaps. If a yacht has questions about ISYR or its ratings, they can address their questions or concerns to this panel. If the panel feels that an adjustment is warranted, in accordance with ISYR criteria outlined in the preceding bullet point, then a rating adjustment will be made by the ISYR prior to the next race.
- All competitors shall be informed of any adjustments to handicaps prior to the next race.

Yachts new to ISYR –

In collaboration with SYRA and Event Organizers, the ISYR has adopted the following policies for yachts new to the rule.

- Initial polar tables will be derived as explained above.
- Because there is an empirical/observational component of ISYR required to assess the degree of compromise to performance inherent in any Superyacht design, it can be difficult to fairly incorporate into the existing fleet yachts new to the rule. To preserve the competitiveness of that existing fleet, ISYR treats such new yachts with “conservative” ratings. The intent of this policy is to reduce the likelihood that a yacht new to the rule, well prepared and sailed, competing in her first superyacht regatta will finish near the top of her class and fleet in her first race. When the rule authority has observed the yacht's speed relative to other superyachts, the handicap may be adjusted.
- New yachts will be issued Provisional Certificates for their first event. The word “PROVISIONAL” will be displayed prominently on the certificate.
- Ratings for new yachts may be adjusted, following procedures outlined above, as actual racing performance is observed. Rating tables will be adjusted incrementally over time.
- A yacht's provisional certificate will become official when the ISYR has observed the yacht in conditions such that it can handicap the yacht fairly with a high level of confidence. A yacht's certificate will carry the provisional status for a maximum of two regattas.
- A yacht with a Provisional Certificate can request a hearing with the Regatta Handicap Panel for consideration as stated in the paragraph above. In collaboration with SYRA and Event Organizers, the ISYR has adopted the following policies for yachts new to the rule:

Scoring — The ISYR provides Regatta Organizers with the flexibility of offering several scoring options and racing formats. Underlying this flexibility is the polar table for each yacht.

Single number time-on-time scoring uses a Time Correction Factor (TCF). This scoring method computes a “corrected time” for each yacht by multiplying her elapsed time by her TCF. The yacht with the lowest corrected time is the winner. The ISYR certificate publishes TCFs for three wind conditions: light, medium and heavy. Built into each TCF is the assumption that the yacht sails equal distances at all wind angles, the equivalent of sailing in a circle. This TCF is commonly known as “Circular Random” and is best used when there is no knowledge of where the wind will come from.

TCFs can also be generated for a specific race using the Constructed Course method. A prediction of wind speed and direction, coupled with actual course composition, is used with ISYR's polar table for each yacht to estimate elapsed time around the course. A more detailed explanation of the Constructed Course option is at the end of this document. TCFs are generally used in what is known as the Staggered Start Format.

Because the Constructed Course option provides a predicted elapsed time for each yacht, these elapsed times can also be used to generate a start sequence for the Pursuit Racing Format where the slowest yacht starts first and the first yacht to finish wins.

PURSUIT RACING FORMAT:

- The table of boat speed polars is used to predict elapsed time around the course, leg by leg, using predicted wind speed and direction. (This is the Constructed Course option.) The differences in the predicted total elapsed times define the start sequence;
- Slowest boat starts first / fastest boat starts last;

- The first boat to finish wins the race. No post-race calculations required;
- Classes can even sail different courses to reduce congestion on the water in the interest of safety and to provide more sailing time to the faster boats. Those faster boats are typically given a longer race enabling them to be sailing for a time duration more similar to that of the slower boats. This provides greater similarity in weather conditions for all boats and therefore greater fairness, especially in the cases of building and dying breezes. The first finisher in fleet is still the winner. This is achieved by using the Constructed Course option for each course. The boats that sail on the longer course are given a credit on their start time to make up the predicted elapsed time difference between that course and the shorter one.
- Changes in the starting sequence from race to race are due to changes in wind speed, wind direction and course content;
- Note that the TCFs printed on ISYR certificates are not used in the Pursuit Racing Format.

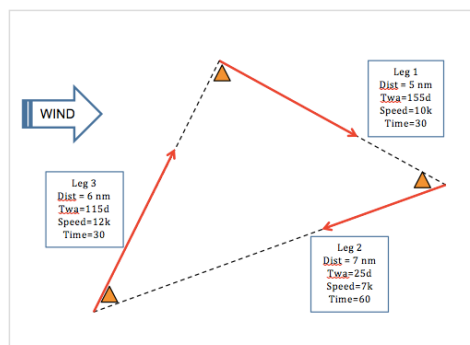
STAGGERED START FORMAT (with Single Number Time-On-Time Scoring):

- Time on time scoring uses a Time Correction Factor (TCF). Slower yachts have a small TCF, faster yachts have larger ones.
- TCFs provide the ratios of predicted relative speed. (E.g. a boat with a TCF of 1.1 is predicted to be 10% faster than one with a TCF of 1.0);
- Time-on-time scoring is quite simple – each boat's elapsed time is multiplied by its TCF to calculate a corrected time;
- Yachts will start at regular time intervals, their elapsed times recorded, and corrected times calculated to determine places;
- The ISYR certificate provides three TCF's for light, medium and heavy wind ranges. This is critical for scoring Superyacht fleets where a yacht's performance routinely changes significantly in different conditions, especially wind speeds, and when relative performance compared to other Superyachts varies greatly;
- Event Organizers can make their wind range selection before the day's racing begins, based on expected wind strength.
- Alternatively, the Organizer can use the Constructed Course option to generate a TCF customized to the specific layout of a course and to a specific wind speed and direction. The speed and direction used can be determined from weather forecasts and pre-race observations or be derived from specific measurements of the wind during the race using Organizer resources.

With the recent introduction of these scoring options, ISYR is demonstrating the ability to provide customized scoring solutions that best meet the needs of regatta organizers.

ISYR CONSTRUCTED COURSE

- A constructed course is a set of legs defined by marks and a wind direction and speed.
- For each course leg, the distance between the marks and the angle to the wind are determined.
- For each boat, and for each leg, the polar table is evaluated for a predicted boat speed at that leg's wind angle and wind speed.
- That predicted boat speed is converted to a leg time using the leg distance.
- The total time around the course is the sum of the leg times. That total elapsed time can be used to create a start sequence for the Pursuit Race Format.
- Alternatively, dividing that time by the total course length results in an average seconds/mile which can be converted to a time correction factor, TCF, for use in the Staggered Start Format.
- Using either race format this results in **a rating that is unique to the course layout, the wind speed and the wind direction.** And that rating is applicable to wind speeds moderately higher or lower than the measured wind. This procedure provides greater accuracy and fairness in handicapping a race.
- The sample diagram below shows a triangular course, with the wind coming down from the left; leg 1 is 5 nm at a true wind angle of 155d (starboard jibe); leg 2 is 7 nm at an angle of 25d (long starboard tack, short port); and leg 3 is 6 nm at an angle of 115d (broad reach.) Total predicted elapsed time is 120 minutes which, for this 18 mile race, converts to 400 sec/mile, which can then be used to create a start sequence or be converted to a TCF rating.



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