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Economic and Monetary Affairs

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Industry, Research and Energy

Internal Market and
Consumer Protection

Design Categories of Watercrafts

NOTE



DIRECTORATE GENERAL FOR INTERNAL POLICIES
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

Design Categories of Watercrafts

BRIEFING NOTE

Abstract

Design categories of watercrafts are one of the essential safety requirements which should be met and assigned through conformity assessment procedure required before placing watercrafts on the market. The briefing note analyses if amending the design categories for recreational crafts and watercrafts can contribute to more precise and more appropriate criteria for design categories, while reflecting the terms used in the relevant international harmonised standards.

This document was requested by the European Parliament's Committee on the Internal Market and Consumer Protection.

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LIST OF ABBREVIATIONS

- EN** European Standard
- CEN** European Committee for standardisation
- ISO** International Standard Organisation

EXECUTIVE SUMMARY

In relation to the ongoing revision of the Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994, on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft¹, and the discussions within the European Parliament, questions on the existing boat design categories have been raised, as it is claimed, that the existing criteria for a boat design category (intended use according to geographical location (e.i. off-shore or sheltered waters)), are misleading and create problems in regards to both marketing and safety.

In the Parliament's Committee on Internal Market and Consumer Affairs, amendments have been proposed, which would remove the existing link between design category and the intended use according to geographical location, and instead link boat design category with wind strength and wave heights as main parameters.

Based on an evaluation of the legal context and an elaboration of the problems following the existing provisions on boat design categories, the briefing paper concludes, that removing of the existing link between design category and the intended use according to geographical location, and instead link boat design category with wind strength and wave heights as main parameters, can contribute to more precise and more appropriate criteria for design categories, while also reflecting the terms used in the relevant international harmonised standards.

In the light of their clarity and positive impact, such amendments should be introduced as soon as possible, as there is no reason to postpone them for a revision at a later date.

However, the total amount of problems still existing requires a deeper revision of the design categories. This should lead to the addition of one or more new design categories and/or to a modification of the distribution of the existing 4 design categories.

Such modifications would have a greater impact for consumers, particularly in the range of smaller boats (design categories C and D), where the different types of use and capacities of the boats would be addressed in a more precise manner. These benefits would be the same for builders, with an improvement of the definition of their responsibility for smaller boats built under design categories C and D.

A separate study and impact assessment would be needed to present in a detailed manner what the economic impact of a deeper revision of the design categories would be. At this stage, it appears quite certain that such a revision would have the following consequences:

- boat's production: likely to remain unchanged;
- re-evaluation of the boat models still produced: once the new design categories enter in force, the boats still in production would need to be re-evaluated for assignation with one of these new design categories;
- conformity assessment procedures: likely to be revised and/or adapted to meet the new design categories, not necessarily meaning an increase of the procedure's cost but an adaptation of the way the evaluation would be conducted;

¹ Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994, on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft (OJ L 164, 30.6.1994, p. 15-38). Also see Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003, amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational crafts (OJ L 214, 26.8.2003, p. 18-35).

- harmonised standards: the harmonised standards based on the design categories such as the stability, scantling, cockpit, window standards to name but a few would need to be adapted to the new design categories.

Given the technical nature of such revision, it would be crucial that relevant experts (e.g. ISO working group 22 on stability) participate in the discussion and the preparatory work for this deeper revision of the design categories, along the traditional representatives of the consumers, the industry and the notified bodies.

INTRODUCTION

In relation to the ongoing revision of Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994, on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft (further referred to as "Directive 94/25/EC" or the "Directive")², and the discussions within the European Parliament, questions on the existing boat design categories have been raised, as it is claimed, that the existing criteria for a boat design category (intended use according to geographical location (e.g. off-shore or sheltered waters)), are misleading and create problems in regards to both marketing and safety.

In the Parliament's Committee on Internal Market and Consumer Affairs (hereafter referred to as "IMCO"), amendments have been proposed, which would remove the existing link between design category and the intended use according to geographical location, and instead link boat design category with wind strength and wave heights as main parameters.

² Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994, on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft (OJ L 164, 30.6.1994, p. 15-38).

1. CONSEQUENCES OF REMOVING EXISTING LINK BETWEEN DESIGN CATEGORY AND INTENDED USE ACCORDING TO GEOGRAPHICAL LOCATION, AND USING WIND STRENGTH AND WAVE HEIGHTS AS THE MAIN TWO PARAMETERS.

1.1. Historical background

Before the adoption of the Directive 94/25/EC back in 1994, the national regulations on recreational craft were extremely limited, if existing at all. Less than half of the Member States had such regulations in place at national level.

Existing national regulations in Member States were based on:

- a governmental accreditation, which is a radically different process from the self-certification procedure largely put forward by the New Approach Directive; the validation by a public authority created for the builder a feeling that his responsibility was reduced or at least shared with the validating public authority;
- a unique set of technical references, most of the time covering only some aspects of safety, with requirements that were limited and simple to apply and check.

Finally, in the majority of Member States, there was nearly no regulation for recreational craft.

1.2. The novelties introduced by Directive 94/25/EC

The adoption of Directive 94/25/EC changed radically the situation described above and introduced a number of new principles and solutions such as:

- clear definition of responsibilities for various actors (these principles were so far defined in national consumer laws and codes, but not in the recreational craft regulations);
- self-certification principle (the accreditation, when required by the national regulation (when existing), was made by State authorities and based on the boat's inspection and/or a technical file prepared by the builder);
- creation and use of notified bodies (notified bodies were unknown in the recreational boating field, even if some Member States involved Classification Societies in their applicable national regulations);
- essential requirements principle;
- demonstration of conformity based on open approaches;
- preferred referential (harmonised standards)(most of the time, existing national regulations were based on technical content and requirements, with no alternative possible; the Directive was completely changing this approach by setting essential requirements which required a demonstration of conformity, but accepting many ways to demonstrate the conformity; when national standards were existing, like in Scandinavian countries, very few were used as mandatory and their number was also much lower than the current 60+ existing harmonised standards).
- owner's manual (that was the real new item, unknown in all existing national regulations).

- design categories (even if France and Italy were using boat's categories, these were based on the area of navigation, using the distance from the shore; the Directive 94/25/EC introduced design categories that were based on the wind and waves conditions, as such it was a real novelty).

Because of this large number of novelties, the adoption of the Directive 94/25/EC created a real upheaval in most Member States. This also explains why fifteen years after its adoption and transposition, its application and understanding are not yet fully satisfactory.

1.3. Directive's existing definition of design categories

The Directive 94/25/EC (as amended by EU directive 2003/44/EC³) contains all necessary measures to ensure that the products may be placed on the market and put into service for use in accordance with their intended purpose only if they do not endanger the safety and health of persons, property or the environment when correctly constructed and maintained.

To obtain it, the products shall meet essential requirements for safety, health, environmental and consumer protection.

In first place of the Directive's essential safety requirements for the design and the construction of craft are boat design categories, defined this way⁴:

A. OCEAN: *Designed for extended voyages where conditions may exceed wind force 8 (Beaufort scale) and significant wave heights of 4 m and above but excluding abnormal conditions, and vessels largely self-sufficient.*

B. OFFSHORE: *Designed for offshore voyages where conditions up to, and including, wind force 8 and significant wave heights up to, and including, 4 m may be experienced.*

C. INSHORE: *Designed for voyages in coastal waters, large bays, estuaries, lakes and rivers where conditions up to, and including, wind force 6 and significant wave heights up to, and including, 2 m may be experienced.*

D. SHELTERED WATERS: *Designed for voyages on sheltered coastal waters, small bays, small lakes, rivers and canals when conditions up to, and including, wind force 4 and significant wave heights up to, and including, 0,3 m may be experienced, with occasional waves of 0,5 m maximum height, for example from passing vessels.*

³ Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003, amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational crafts (OJ L 214, 26.8.2003, p. 18-35).

⁴ Section A. of Annex I of Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003, amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational crafts (OJ L 214, 26.8.2003, p. 18-35).

1.3.1. Meaning of the Directive's existing definition

These four design categories are all defined the same way, which is: a boat given a certain design category is designed for "a type of voyage" where "conditions" include or exceed "wind force" and "significant wave height".

They are then defined on three criteria:

- 1) type of voyage (intended use);
- 2) wind force;
- 3) significant wave height.

The intended use, first criterion, is defined by the capacity of a boat to:

- face safely environmental conditions (wind and waves) of the concerned design category;
- offer a protection and a shelter for the crew, which is adapted to the type of navigation and allows people onboard to sleep, rest, warm up, change clothes, have a hot meal;
- have energy autonomy to make the intended navigation: e.g. sufficient amount of fuel for the main engine on motor boats but also for generators producing electricity, sufficient amount of electrical batteries, aero or hydro generators, desalination system, etc.;
- have fresh water and consumables autonomy for the total time of the voyage (e.g. tank capacity for fresh water, food storage capacity, etc).

The second and third criteria, respectively wind force and significant wave height, are linked. The wave height is mainly a function of the wind, depending on:

- wind force: the stronger the wind, the bigger the waves;
- duration of the wind: the longer the time, the bigger the waves;
- fetch size, which is the distance of sea on which the wind blows: the longer the fetch, the bigger the waves;
- and depth of water: the shallower the depth, the bigger the waves.

So, the capacity of a boat to safely face wind and waves depends on the following parameters, which are:

- essentially **stability characteristics**; the boat's stability is linked to its dimension, shape, tightness, degree of protection, weight, height of centre of gravity, windage area, etc.; it is these characteristics that will allow the boat to resist to flooding and capsize or knock-down and make it able to progress in such conditions, but also;
- scantling and construction which guarantee that the hull, deck, internal structure, mast and appendages will resist to such conditions.

1.3.2. Problems created by the existing definition

a) Confusing link between weather conditions and location

Wind force and waves heights are not linked with the type of voyage or the geographical location, but are essentially a result of meteorological conditions (wind is the consequence of low pressure). Severe conditions can occur everywhere, not only in the middle of an ocean, and wind forces and wave heights defined by the weather conditions referred to in design categories A or B can also be encountered in coastal waters, or near the shore. The way design categories are defined in the current Directive makes people think that the farthest they are from shore, the more severe conditions they will meet. This is a nonsense, which is potentially dangerous for the consumer (especially beginners).

b) Confusing mix of very different boat capacities

The current definition of boat design categories also mixes up the intended use with the stability requirements for given meteorological conditions. These are two completely different matters requiring very different specificities of the boat's design and construction.

To be self sufficient (as required for instance under category A), a boat requires a minimum volume, cargo capacity, energy storage or production and technical systems to operate them. To offer sufficient comfort and protection for the crew for its intended use, it requires being sufficiently habitable, fitted with berths for the total crew, kitchen, chart house, etc.

To be able to face wind and waves, it requires stability capacities, flooding protection and scantling strength.

Under the present directive, the definition does not allow any nuance in the characterisation. As a result, boats that offer more ability for one or two of the three above characteristics required for their assigned design category are considered equivalent to boats that are less capable in these points, because they do not fulfil the whole definition of the said design category.

For instance, a boat designed to face wind and wave corresponding to design category B, but which is not fitted for offshore voyages because of its lack of fuel autonomy, will be assigned the same design category as a boat built for coastal voyages and wind and waves of design category C, since the current Directive's categorisation is not allowing for a differentiation.

The same goes for a large habitable boat with large fuel autonomy and consumables capacities and designed for wind and wave of category C, which will be assigned the same design category as a small open boat built for day use under category C weather conditions.

The result is that today only a part of the boats found on the market are matching the design categories in a correct and precise manner as described by the Directive. These are the boats which have their intended use and wind and waves capacities in line with one of the four design categories. For all the others, the current definition reduces their capacity to the lowest of the three criteria. Today, the design categories do not fulfil their intended purpose which was to help the consumer understand clearly the real capacities of each recreational craft put on the market.

c) The phenomenon of over categorisation

Another consequence, much more dangerous, is that a non negligible part of the boats found on the EU market is over categorised by boatbuilders and importers.

Here are some examples. Design category A boat exactly in line with the definition, must:

- i) be able to face wind forces exceeding force 8 and significant wave heights of 4m and above;
- ii) offer a good protection and adapted accommodations for the total crew for severe conditions and long voyages;
- iii) be largely self sufficient (energy, fuels, fresh waters, consumables) for extended voyages (of oceanic type).

A lot of the large motor yachts of the European market, fulfilling easily the above requirements i) and ii), do not have the fuel capacity and autonomy for an ocean crossing voyage, which is only achievable by slower displacement boats with very large fuel tanks. Nevertheless, boatbuilders and importers of such boats, pointing to the fact that their boats have the capacity to face design category A weather conditions, and undergoing the market competition, choose to assign A category to their product, even if the full compliance with the Directive's definition is not met.

The same happens with many open motor boats and rigid inflatable boats (RIBs), to which design category B is assigned. Such boats have a real capacity to face wind forces up to and including force 8 and significant wave heights up to and including 4m, but provide no habitability at all, and thus offer a very poor protection for the total crew for offshore voyages, with no possibility to rest, sleep, warm, dry, change clothes or cook. The very low fuel autonomy is another common additional inconformity to the exact definition of the Directive. Boatbuilders and importers often assign design category B to such boats, as soon as they have the required sailing abilities in bad weather. It has to be noticed that this type of boat is effectively used as lifeboat by many sea rescuing societies and agencies in Europe.

d) Difference between general understanding and exact wording

Fifteen years after the first introduction of the Directive 94/25/EC, for most of people concerned by this regulation (yacht designers, boatbuilders, importers and obviously, consumers), the understanding of design categories is largely different from the directive's exact wording.

There are many reasons for that:

- the lack of nuance and flexibility of the Directive has resulted in having compromises made over the boat's categorisation, with boats meeting only one of the 2 parameters (intended use or wind force / wave height) being given the highest category;
- the definition mixes up types of voyages with weather conditions, where the two subjects are separated in real life; it creates confusion for consumers and does not help them understand clearly what the exact meaning of the design categories is, nor what the boat's potential use should be;

- the design categories (as described in Annex I of the Directive) consist of a table and a text which can be confusing too; the text establishes clearly that the design category is a type of voyage, where certain weather conditions may be encountered; on the other hand, the table displays 3 columns, with only one word for the type of voyage (Ocean, Offshore, Inshore, Sheltered waters), and precise values for wind force and wave height; for the reader, the two columns containing exact values (wind force and wave height) are easy to understand and communicate, while the column with only one interpretable word can be understood only like a title, not a definition.

1.4. Proposed amendments to the definition:

1.4.1. Content of the new definition

As mentioned above, amendments to the provisions of design categories have been proposed by the EP's Committee on Internal Market and Consumer Affairs. These amendments would remove the existing link between design category and the intended use according to geographical location, and instead link boat design category with wind strength and wave heights as main parameters.

The proposed amendments provide a new definition of design categories:

*"A. A recreational craft given **design category A** is considered to be designed for winds that may exceed wind force 8 (Beaufort scale) and significant wave heights of 4m and above but excluding abnormal conditions such as storm, violent storm, hurricane, tornado and extreme sea conditions or rogue waves. (AM 59)*

*B. A recreational craft given **design category B** is considered to be designed for wind force up to, and including, 8 and significant wave heights up to, and including, 4 m. (AM 61)*

*C. A watercraft given **design category C** is considered to be designed for a wind force up to, and including, 6 and significant wave heights up to, and including, 2 m. (AM 62)*

*D. A watercraft given **design category D** is considered to be designed for a wind force up to, and including, 4 and significant wave heights up to, and including, 0,3 m with occasional waves of 0,5 m maximum height. (AM 63)"*

1.4.2. Does this new proposal solve the problems raised?

As a logic consequence, and because of removing text, this proposal solves completely:

a) Confusing link between conditions and location

No more location and type of voyages in the definition.

b) Mixing of very different boat capacities

Only wind force and significant wave height remains.

c) Phenomenon of over categorisation

The boats currently over categorised on the market are in line with wind and wave conditions but not with the type of voyages. The withdrawal of the location and type of voyages solves completely this problem.

d) Difference between general understanding and exact wording

The general understanding was based on wind and waves conditions, which remain unchanged in terms of values by the proposed amendments. The proposal preserves the general understanding and is therefore not bringing fundamental changes to it.

However, there remains an issue of lack of precise limit to the design category A

Among the four design categories definitions, the definition for category A is slightly different from the three others in using wind force and wave height values “exceeding” rather than using values “up to”. This wording raises the question concerning the limit of such strong conditions.

Historically, in the first version of the Directive 94/25/EC, there was no limit at all to the design category A definition, but this was changed with the amendment made by Directive 2003/44/EC which added the words **“but excluding abnormal conditions”**⁵. This was however a very disappointing improvement for all the actors concerned by this directive, because “abnormal conditions” had no precise meaning, and were left to individual (and varying) interpretations.

The amendment proposed by the Committee of Internal Market and Consumer Protection for design category A definition is the following:

[...] but excluding abnormal conditions **“such as storm, violent storm, hurricane, tornado and extreme sea conditions or rogue waves”**⁶.

This is at last a real improvement, because “storm”, “violent storm”, “hurricane” and “tornado” are words precisely defined by the Beaufort scale which is an official document of the World Meteorological Organization: storm is Beaufort wind force 10, violent storm is force 11 and hurricane is force 12.

The meaning of this modification is thus:

- *“excluding wind of force 10 and above”*
- *“excluding waves of extreme sea conditions or rogues waves”*

If the requirement for wind force is precise, and therefore a satisfactory improvement, it is not the case for the significant wave height requirement which is more vague, and much less precise than a maximum value significant wave height. “Extreme sea conditions” and “rogues waves” are not defined words and values. So the only existing limitation for waves is the maximum amount of wind force. Knowing that the wave height and the wind force are linked, this is nevertheless partially satisfactory.

The proposal solves the problem to a significant extent, although not completely.

⁵ Emphasis added.

⁶ Emphasis added.

2. HOW WIND STRENGTH AND WAVE HEIGHTS CRITERIA COULD REFLECT THE TERMS USED IN THE RELEVANT INTERNATIONAL HARMONISED STANDARDS

The ISO working group on stability (Working Group 22) developed three stability standards (EN ISO 12217 parts 1, 2 and 3⁷) mandated by the European Commission through the European Committee for Standardisation (CEN) to provide means of conforming to the essential requirements “3.2 stability and freeboard” and “3.3: buoyancy and flotation” of the Directive 94/25/EC⁸. These standards specify methods for evaluating the stability and buoyancy of intact boats from 2.5 m to 24 m. This evaluation enables assigning a design category to each boat.

It was not (and is not yet) in the scope of this standard to assess other elements but the boat's stability and buoyancy, but the definition of design categories in the Directive's text was including more than stability criteria. Thus the ISO Working Group 22 on stability took the decision to define in these three standards design categories changed from the Directive definition, by removing the reference to type of voyage and geographical location. In this light, the European Parliament's proposed changes to the boat design categories are in line with the approach contained in the EN ISO 12217 standard.

It is worth noting also that the ISO Working Group 22 in charge of the EN ISO 12217 stability standard made another change concerning design category A. In order to perform the assessment of boat's stability, and because the Directive 94/25/EC had not fixed limits to wind and waves conditions for the design category A, the ISO Working Group 22 decided to insert upper limits to that category using a maximum value up to Beaufort wind force 10 and significant wave height up to 7 m.

The ISO 12217 standard containing the 2 changes mentioned above was published in the EU Official Journal as harmonised standard in 2002, becoming EN ISO 12217 standard which is still used today.

It is interesting to note that these two main changes to the definition of the design category compared to the wording of Directive 94/25/EC did not cause any problem for the harmonisation of the standard in 2002.

In 2003, the amending Directive 2003/44/EC introduced an additional change to the definition of design category A by “excluding abnormal conditions”⁹. But this definition was a disappointing improvement because “abnormal” has no precise definition in the meteorological domain, and it would leave it to interpretation to clarify what abnormal conditions are, which is not satisfactory neither for boatbuilders nor for consumers.

⁷ NF EN ISO 12217-1 August 2002 Small craft Stability and buoyancy assessment and categorization - Part 1: Non-sailing boats of hull length greater than or equal to 6 m. AFNOR – CEN - ISO; NF EN ISO 12217-2 August 2002 Small craft Stability and buoyancy assessment and categorization -Part 2: Sailing boats of hull length greater than or equal to 6 m. AFNOR – CEN - ISO; NF EN ISO 12217-3 August 2002 Small craft Stability and buoyancy assessment and categorization - Part 3: Boats of hull length less than 6 m. AFNOR – CEN - ISO.

⁸ Sections 3.2 and 3.3 of Annex I of Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994, on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft (OJ L 164, 30.6.1994, p. 15-38).

⁹ Section A.3. of Annex I of Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003, amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational crafts (OJ L 214, 26.8.2003, p. 18-35).

The European Parliament's amendment 59 brings legal certainty and deletes this ambiguity in including the wording " storm, violent storm, " which correspond to precise international definition (with storm being force 10, violent storm force 11, and so on... (see document in reference). It is also quite in line with the maximum values decided by the ISO Working Group 22, the difference here is based on 10 years of experience showing that extreme conditions for a recreational craft below 24 m begin above Beaufort wind force 9 rather than above wind force 10.

2.1. Design category A

2.1.1. Harmonised standard definition

EN ISO 12217-1 August 2002¹⁰

*A boat given **design category A** is considered to be designed to operate in winds of Beaufort force 10 or less and the associated wave heights (the table indicate significant wave height less than approximately 7 m), and to survive in more severe conditions. Such conditions may be encountered on extended voyages, for example across oceans, or inshore when unsheltered from the wind and waves for several hundred nautical miles. Winds are assumed to gust to 28 m/s.*

2.1.2. Proposed amendment (AM 59)

A. *A recreational craft given design category A is considered to be designed for winds that may exceed wind force 8 (Beaufort scale) and significant wave heights of 4m and above but excluding abnormal conditions such as storm, violent storm, hurricane, tornado and extreme sea conditions or rogue waves.*

¹⁰ NF EN ISO 12217-1 August 2002 Small craft Stability and buoyancy assessment and categorization - Part 1: Non-sailing boats of hull length greater than or equal to 6 m. AFNOR – CEN - ISO.

2.1.3. Comments

Differences	Consequences
"Recreational craft" instead of "boat"	No consequence
"operate" has been deleted,	This term has certainly been deleted to specify that operation is not the adequate action on a recreational craft for conditions exceeding force 8. It does not produce a real difference
"Wind exceeding force 8 but excluding abnormal conditions such as storm, violent storm, hurricane, tornado" instead of "force 10 or less"	The text is not exactly in line, being less stringent because "excluding storm" means "less than Beaufort wind force 10". This slight reduction seems however consistent with leisure navigation where wind of Beaufort force 9 is already a very severe wind to sail a recreational craft below 24 m. It has to be noticed that tornado is not defined in the Beaufort scale but by World Meteorological Organization and corresponds to wind conditions stronger than Beaufort force 12.
"Significant wave heights of 4 m and above but excluding extreme sea conditions or rogue waves" instead of "associated wave heights to force 10 or less (significant wave height less than approximately 7 m)"	The text is far less precise than the harmonised standard, by excluding "extreme sea conditions or rogues waves" that are not at all defined anywhere. Contrary to the text of the standard, there is no correspondence made between significant wave height and wind force, which allows for an imprecision to remain , even if the wind limitation reduces the potential wave height.
"And to survive in more severe conditions" is deleted	This removal is a good improvement , because the indistinct wording "more severe conditions" creates confusion.
"Such conditions may be encountered on extended voyages, for example across oceans, or inshore when unsheltered from the wind and waves for several hundred nautical miles." is deleted from the definition, and moved out of the Annex I to a recital as an additional explanation (see amendment 45).	This part was not a definition, but rather a comment or a note adding interesting information and useful clarification. The proposal to delete it from the definition seems good . The intention of this sentence in the standard was also to explain why the Directive definition was not acceptable, letting believe that wind and waves of category A were only conditions occurring on oceanic voyages, when they can occur inshore as well.
"Winds are assumed to gust to 28 m/s" is deleted	It has to be said that defining a maximum amount of gust is in opposition to the use of the Beaufort force where the wind speed taken into account is an average over a period of ten minutes, with gust varying with type of low pressure, with no theoretical maximum value. Deleting gust speed is more logical .

2.2. Design category B

2.2.1. Harmonised standard definition

EN ISO 12217-1 August 2002¹¹

*Boat given **design category B** is considered to be designed for waves of up to 4 m significant height and a wind of Beaufort force 8 or less. Such conditions may be encountered on offshore voyages of sufficient length or on coasts where shelter may not always be immediately available. These conditions may also be experienced on inland seas of sufficient size for the wave height to be generated. Winds are assumed to gust to 21 m/s.*

2.2.2. Proposed amendment (AM 61)

***B.** A recreational craft given design category B is considered to be designed for wind force up to, and including, 8 and significant wave heights up to, and including, 4 m.*

2.2.3. Comments

Differences	Consequences
"Watercraft" instead of "boat"	no consequence
"These conditions may also be experienced on inland seas of sufficient size for the wave height to be generated." is deleted from the definition, and moved out of the Annex I to a recital as an additional explanation (see amendment 45).	Improvement; see comment for design category A
"Winds are assumed to gust to 21 m/s" is deleted	Improvement; see comment for design category A

2.3. Design category C

2.3.1. Harmonised standard definition

EN ISO 12217-1 August 2002¹²

*A boat given **design category C** is considered to be designed for waves of up to 2 m significant height and a typical steady wind force of Beaufort force 6 or less. Such conditions may be encountered on exposed inland waters, in estuaries, and in coastal waters in moderate weather conditions. Winds are assumed to gust to 17 m/s.*

2.3.2. Proposed amendment (AM 62)

A watercraft given design category C is considered to be designed for a wind force up to, and including, 6 and significant wave heights up to, and including, 2 m

¹¹ *ibid.*

¹² *ibid.*

2.3.3. Comments

Differences	Consequences
"Watercraft" instead of "boat"	no consequence
"Such conditions may be encountered on exposed inland waters, in estuaries, and in coastal waters in moderate weather conditions." is deleted from the definition, and moved out of the Annex I to a recital as a detailed explanation (see amendment 45).	Improvement; see comment for design category A
"Winds are assumed to gust to 17 m/s." is deleted.	Improvement; see comment for design category A

2.4. Design category D

2.4.1. Harmonised standard definition

EN ISO 12217-1 August 2002¹³

*A boat given **design category D** is considered to be designed for occasional waves of 0,5 m height and a typical steady wind force of Beaufort force 4 or less. Such conditions may be encountered on sheltered inland waters, and in coastal waters in fine weather. Winds are assumed to gust to 13 m/s.*

2.4.2. Proposed amendment (AM63)

A watercraft given design category D is considered to be designed for a wind force up to, and including, 4 and significant wave heights up to, and including, 0,3 m with occasional waves of 0,5 m maximum height.

2.4.3. Comments

Differences	Consequences
"Watercraft" instead of "boat"	no consequence
"significant wave heights up to, and including 0,3 m with occasional waves of 0,5 m maximum height" instead of "occasional waves of 0,5 m height"	This is an improvement because it consists in the addition of wave height previous definition of Directive 94/25 + modified definition of 2003/44, and there is not really different but more precise.
"Such conditions may be encountered on sheltered inland waters and in coastal waters in fine weather." is deleted from the definition, and moved out of the Annex I to a recital as an explanation (see amendment 45)..	Improvement; see comment for design category A
"Winds are assumed to gust to 13 m/s" is deleted.	Improvement; see comment for design category A

¹³ ibid.

2.5. Conclusion

It can be said that the proposed amendments reflect well the terms used in the relevant existing standard on stability for defining design category (EN ISO 12217), since the proposed amendments appear to be based on that standard.

Most of the differences are minor, and can be considered as improvements:

- geographic conditions removed from the definition and moved somewhere else as an information,
- gusts values deleted,
- reduction of maximum wind force in design category A.

However, one difference is disappointing: The significant wave height of design category A is still not limited by a precise value but by an interpretable wording.

It has to be noted that the definitions used in the stability standard (EN ISO 12217) for design categories were inserted in other harmonised standards during their revision process.

3. ALTERNATIVE SOLUTION BASED ON A REVISION OF THE DESIGN CATEGORIES AT A LATER DATE.

This chapter is contributed to an assessment if the proposed amendments could be introduced immediately or at a later date and if the European Commission could be called upon, within a period of two years from the date on which the Directive comes into force, to report to the European Parliament and to the Council on the need for and feasibility of a revision of the design categories.

3.1. Preferred date for introduction of the proposed amendments

As explained at length in chapter 1, the existing definition of design categories in current Directive causes many problems, with the following among the most important:

- a) confusing link between conditions and location;
- b) confusing mix of very different boat capacities;
- c) phenomenon of over categorisation;
- d) difference between general understanding and exact wording;
- e) no precise limit of design category A conditions.

As also explained, the proposed amendments (AM 59, 61, 62, 63) solve completely the first four problems listed above, and to significant extent the last one. The proposed amendments introduce minor modifications to the existing wording and as such will not surprise the Directive's users (boatbuilders, importers, consumers). Thus the ratio of problems solved and notions modified is quite optimum.

Therefore, it seems recommendable to introduce these amendments without further delay.

3.2. Additional considerations for revision of design categories at a later date

Even with the adoption of the proposed amendments, there are two other problems which still remain: lack of accuracy of design categories C and D, and extreme conditions foreseen for design categories A and B.

3.2.1. Lack of accuracy of design categories C and D

Design categories C and D, as defined under the existing Directive, do not correctly reflect or reflect enough the way a large number of smaller boats are used on the market.

Many years ago, the United Kingdom and the Scandinavian countries made the comment to European Commission that the design category definition creates many problems among which there were the 5 listed above, plus one concerning the two lowest categories (C and D). Their point of view was that design categories C and D were encompassing a too large part of the market, with a great variety of craft and uses, resulting in the fact that the assigned category was providing too little information to the final consumer. At the time these countries were in favour of a clarification of the existing definitions and seeking in addition the creation of at least another category under the weather conditions for category C limits.

The proposed amendments do not address this issue. What is exactly the problem? As an example, these are the official figures from the French maritime administration concerning

the total number of new recreational crafts registered on maritime and inland waters last year (2011).

The recreational craft registrations are presented by design category and in percentage of the total fleet (personal watercrafts are excluded – see reference):

Boats of design category **A**: **8%**

Boats of design category **B**: **16%**

Boats of design category **C**: **70%**

Boats of design category **D**: **6%**

It is worth noting that most French consumers tend not to register smaller boats (category D boats), even though it is required for all boats longer than 2.5 m. In order to reflect the existing boat fleet, these data should be corrected, by multiplying the number of category D boats by at least two, which would change the repartition per design category as follows:

Boats of design category **A**: **8%**

Boats of design category **B**: **15%**

Boats of design category **C**: **66%**

Boats of design category **D**: **11%**

One can easily notice that **boats under design category D and C represent systematically more than 75% of the total**. Boats given **design category C represent 65% or more** of the registered fleet in France. Knowing that boats below 10m represent the vast majority of boats in all EU Member States, the situation in France is quite representative of the European situation.

It is also in these two design categories that the larger number of differences in types of craft but also in different and specific uses can be found. Even if the proposed amendments were adopted, the information given about the maximum force of wind and height of waves is not sufficient, given the great variety of uses that can be made of such diverse recreational craft. The range of weather conditions for the design categories C and D is too large to be fully satisfactory.

To further explain this point, it is best to look precisely to the Beaufort scale.

Table 1 - Beaufort wind force Scale

Beaufort number	Wind descriptive term	Wind speed	Probable wave height in metres*	Probable maximum wave height in metres*	Sea descriptive terms
0	Calm	< 1 km/h	-	-	Calm (glassy)
1	Light air	1.1 – 5 km/h	0.1	0.1	Calm (rippled)
2	Light breeze	5.6 – 11 km/h	0.2	0.3	Smooth (wavelets)
3	Gentle breeze	12 – 19 km/h	0.6	1.0	Slight.
4	Moderate breeze	20 – 28 km/h	1.0	1.5	Slight - Moderate
5	Fresh breeze	29 – 38 km/h	2.0	2.5	Moderate
6	Strong breeze	39 – 49 km/h	3.0	4.0	Rough
7	High Wind, near gale	50 – 61 km/h	4.0	5.5	Rough – Very rough
8	Gale	62 – 74 km/h	5.5	7.5	Very rough - High
9	Strong gale	75 – 88 km/h	7.0	10.0	High
10	Storm	89 – 102 km/h	9.0	12.5	Very high
11	Violent storm	103 – 117 km/h	11.5	16.0	Very high
12	Hurricane	> 118 km/h	14+	-	Phenomenal

*These wave heights refer to well-developed wind waves of the open sea.

As you can see in this table, the Beaufort scale defines 12 “Beaufort Forces”, which are not real forces, but non dimensional numbers. Each “Force” is defined through a range of wind speed. The wind speed concerned is the average speed measured during a period of ten minutes.

Because of the variable nature of wind, this means that the wind speed will have huge variations around this average value. **Gusts speed will commonly be 40% or 50% stronger.** This last precision is of huge importance, because **physical forces generated by wind** (on sails, hull etc.) **are linked to the square of wind speed.** This means that **when you double the speed, you multiply effort by 4.** The speed increase from one Beaufort force to the following is not linear, but higher at the beginning of the scale and reducing after.

Application:

The mean wind speed of Force 2 is 8,5 km/h, and at this speed the wind apply an effort of 0.4 kg on a flat plate of 1m².

The mean wind speed of Force 4 is 24 km/h, and at this speed the wind apply an effort of 3,3 kg on a flat plate of 1m². **This is 8 times more than force 2 effort.**

When you double the force Beaufort, you multiply by 8 the efforts on sails and boats areas. Thus the range for boats under the design category D concerns physical forces in a ratio of 1 to roughly 8. The wind speed range for design category C is from 29 km/h to 49 km/h, and wind efforts from 1 to 3!

These ranges seem narrow, but they are not.

Another problem of design category D:

The significant wave height of existing design category D is the height created by a wind of force 4 on sheltered waters, that is to say 0.3 m with some occasional waves at 0.5 m. If we look at the Beaufort scale above, we can see that the probable wave height in open sea will be one metre and some waves at 1.5 m.

The ISO Working Group 22 on stability, when defining the design categories in the harmonised EN ISO 12217¹⁴, did not change the existing value of the Directive¹⁵, since such change should be made in the Directive's text.

The design category D is the lowest one but nevertheless encompasses a large range of possible weather conditions, from glassy water to moderate breeze. It would be recommended to consider splitting the current design category D in 2; in order to offer a lower range with Beaufort wind force 0 to 2 (with a maximum wave height of 0.3m which is close to the current design category D) and a higher range with Beaufort wind force 3 to 4 (with a maximum wave height of 1.5m which would correspond to weather conditions found in non-sheltered waters).

3.2.2 Design categories A and B refer to extreme weather conditions

Recreational crafts below 24 m are designed, built and used in weather conditions that are far less than Beaufort wind force 10.

To give an example, the "Joachim" storm was the more severe on the French Atlantic coast this winter. In these very strong wind and waves conditions, there was not a single recreational craft on sea as it was too dangerous. Along the French Atlantic coast, this was not qualified as a "storm" but as a "gale", with a Beaufort wind force of 8.

This underlines 2 realities:

- the Beaufort scale is badly understood by the leisure navigation world;
- the weather conditions used in the current design categories A and B are extremely tough and severe ones.

Bad understanding of the Beaufort scale

As explained earlier, the Beaufort wind speed is "the average speed measured during a period of ten minutes", with **"gusts speed that will commonly be 40% or 50% stronger"**.

If you ask a sailor the weather conditions he met, most of the time he will answer the Beaufort force corresponding to average of the strongest gusts he measured. **This means that the Beaufort force he thinks to be is one or two forces more (difference is growing with wind speed) than the real Beaufort force.**

As a consequence, the Beaufort wind force (the official one, broadcasted by media) corresponds to:

- a wind speed higher by 40 or 50% to the understanding of boaters;
- wind efforts higher by 2 or 2,5 times to the understanding of boaters.

¹⁴ Ibidem.

¹⁵ Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994, on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft (OJ L 164, 30.6.1994, p. 15-38).

The same goes with the understanding of the concept of “significant wave height”, which is the mean height of the third of the biggest waves, but not at all the biggest waves that will be encountered. A significant wave height of 2m (as per the conditions of category C) actually means that the sailor will face some maximum waves of 4m (the double height).

As a consequence, weather conditions expressed in the current design categories are often underestimated by most of the actors, consumers like boatbuilders. This is of huge incidence to the four design categories.

Weather conditions for Design categories A and B are tough and severe

The normal use of recreational craft takes place in weather conditions up to Beaufort wind force 7 to 8 as defined in the previous chapter. In weather conditions above these, recreational crafts below 24 m will survive most of the time. An experienced sailor with Atlantic Ocean crossings will never encounter more than Beaufort wind force 9 in his entire life. This is the reality of the sailing practice.

When the ISO Working Group 22 on stability faced the problem of the very severe conditions attributed to the design categories A and B as per the current Directive's definitions, there was no possibility to modify the existing definitions since these are embedded in the Directive's text. It was then decided to nevertheless adapt them to the most relevant interpretation for a possible assessment, by removing the geographical location and establishing an upper limit for the weather conditions of the design category A. Additionally, a series of requirements were established in order to allow distribution of the existing boats in each category on the basis of the experienced capacities of the boats to cross oceans or to sail offshore, but not based on effort measured on sail in design category A or B weather conditions.

At present, the weather conditions used to define the limits of the design categories A and B are realistically too high. Moreover, the distribution of the weather conditions over the existing four design categories is not satisfactory and should be modified.

3.3. Conclusion

In conclusion, it is crucial to call upon the European Commission, within a period of two years, to report to the European Parliament and to the Council on the need for and feasibility of a revision of the design categories.

4. IMPACTS OF CHANGES IN THE DESIGN CATEGORIES, IN PARTICULAR ON SMES

4.1. Economic impact of proposed amendments

4.1.1. Economic impact on boats of design category A and B

If the amendments proposed by IMCO Members are accepted:

- design category A definition will no more refer to “ocean”, “extended voyages” and “vessels largely self-sufficient”.
- design category B definition will no more refer to “offshore”, “offshore voyages”.

As explained in chapter 1, the compliance to these words of the existing definition leads to fit the boat with:

- an habitable protection for the crew
- energy autonomy for the type of voyage
- water and consumables autonomy for the type of voyage

These elements will no more need to be fitted in boats of design category A and B if the definition is modified.

This means that less expensive boats (in term of production cost, because of the absence of accommodation for crew, large fuel tanks and water tanks...) will be able to be assessed in design category A and B.

These boats were previously:

- assessed in a lower design category, or
- over categorised.

As a consequence, the economic impact of the proposed change is the following:

- a reduction in term of production cost and product's final price of some of the smallest models assessed in design category A or B which are simpler and lighter boats previously assessed in a lower design category, then less costly to produce for the reasons explained above;
- a small reduction in term of production cost and market's price for existing models already assessed in design category A or B which should be modified by boatbuilders to reduce their autonomy; this concerns only products which were precisely adjusted in term of autonomy to their design category type of voyage, and consists essentially in a reduction of tanks size; it's not sure that there are a lot of products so precisely adapted on the European market;
- no economic impact for the rest of the products, which are boats already correctly assessed in design category A or B; on these boats, boatbuilders have no particular reason with this amendment to change anything;
- the resolution of the risk taken by boatbuilders which were overcategorizing their boats; the removing of the reference to type of voyage makes the lack of habitable part, energy autonomy and consumables autonomy no more an inconformity.

This economic impact concerns boatbuilders and consumers in the same way, and is of the same value for SMEs and bigger companies.

As discussed in chapter 1, another modification concerns design category A definition, which is the additional text to clarify the limit of weather conditions of the category.

This modification has no direct economic impact because it creates or justifies no modification on existing models. The only influence concerns boatbuilder's responsibility and is discussed below.

4.1.2. Economic impact on boats of design category C and D

If the criteria of the design categories are changed according to the proposals from Members of the European Parliament as stated above :

- design category C definition will no more refer to "inshore", "voyages in coastal waters, large bays, estuaries, lakes and rivers".
- design category D definition will no more refer to "sheltered waters", "voyages on sheltered coastal waters, small bays, small lakes, rivers and canals".

These types of voyages are not very long in term of distance and time spent, then do not require any specific protection for crew or fuel and water tanks minimum amount of capacity.

As a consequence, these modifications should have no economic impact, because they do not lead to modifications on the boats.

This absence of economic impact is exactly the same for SMEs and bigger companies.

4.2. Safety and legal certainty impact of proposed amendments

4.2.1. Safety impact for consumers

As explained extensively in chapter 1 (section 1.3.2.), existing design categories definition creates many problems which are:

- a) confusing link between weather conditions and location
- b) confusing mix of very different boats capacities
- c) over categorisation
- d) different understanding

As explained in section 1.4.2, the proposals for amendments of the criteria for the design categories solves fully these four problems.

By deleting intended use according to geographical location, weather conditions remain the only one criterion, solving the confusing and following problems. These modifications have great impacts on the information provided to the consumers, with a real improvement of safety through clarification of the definitions of the design categories.

4.2.2. Legal certainty for boatbuilders

In chapter 1, another problem created by the existing definition of design category A was discussed, which is the limit of maximum weather conditions of this category.

The text says: "*but excluding abnormal conditions*" which has no precise meaning and is left to interpretation.

As explained in 1.4.2, the amendments proposed solves to significant extent the problem by adding: "*such as storm, violent storm, hurricane, tornado and extreme sea conditions or rogue waves*" which corresponds to precise value for wind speed, and a little less precise for wave height.

This limitation is a strong benefit for builders in term of responsibility and liability which were dependant on a case to case interpretation if a casualty or an accident occurred.

CONCLUSIONS

The proposed amendments formulated by the Members of Committee on Internal Market and Consumer Protection, concerning the definition of design category constitute an important step in terms of improvement of the existing definition of design category. The proposals to amend design categories can contribute to more precise and more appropriate criteria for design categories, while reflecting the terms used in the relevant international harmonised standards.

In the light of their clarity and positive impact, the proposed amendments could be introduced as soon as possible, as there is no reason to postpone them for a revision at a later date.

However, the total amount of existing problems requires a deeper revision of the design categories. This should lead to the addition of one or more new design categories and/or to a modification of the distribution of the existing 4 design categories.

Such modifications would have a greater impact for consumers, particularly in the range of smaller boats (design categories C and D), where the different types of use and capacities of the boats would be addressed in a more precise manner. These benefits would be the same for builders, with an improvement of the definition of their responsibility for smaller boats built under design categories C and D.

A separate study and impact assessment would be needed to present in a detailed manner what the economic impact of a deeper revision of the design categories would be. At this stage, it appears quite certain that such a revision would have the following consequences:

- boat's production: likely to remain unchanged;
- re-evaluation of the boat models still produced: once the new design categories enter in force, the boats still in production would need to be re-evaluated for assignation with one of these new design categories;
- conformity assessment procedures: likely to be revised and/or adapted to meet the new design categories, not necessarily meaning an increase of the procedure's cost but an adaptation of the way the evaluation would be conducted;
- harmonised standards: the harmonised standards based on the design categories such as the stability, scantling, cockpit, window standards to name but a few would need to be adapted to the new design categories.

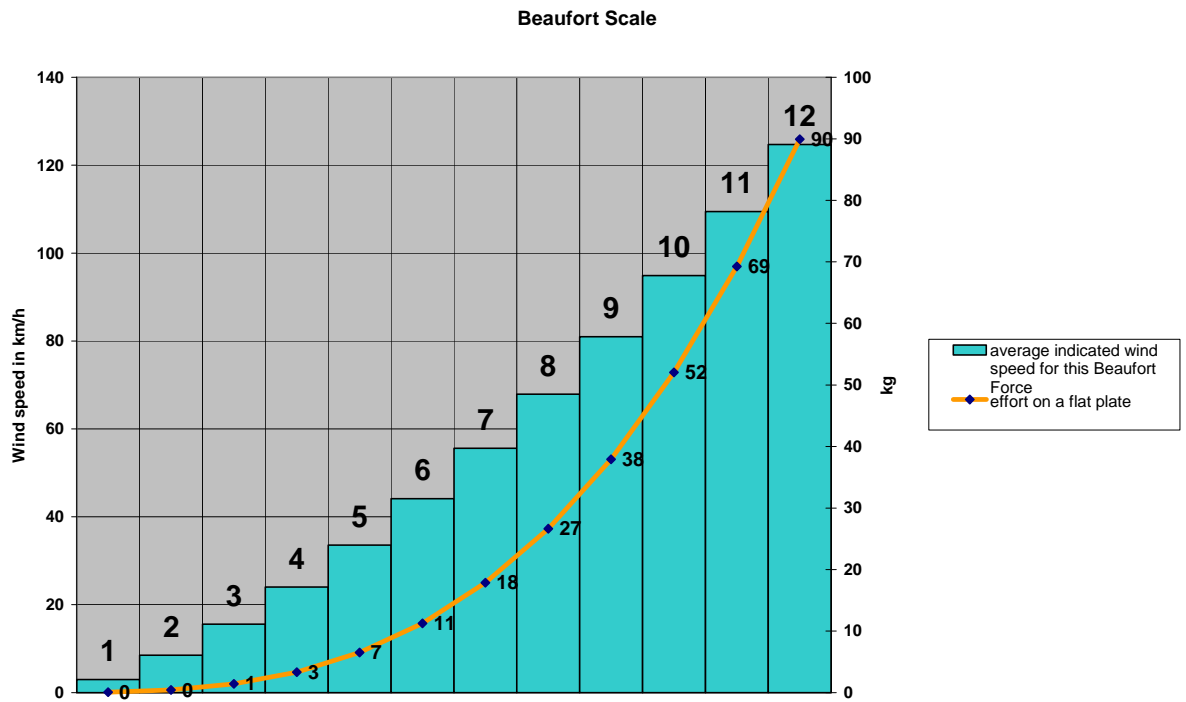
Given the technical nature of such revision, it would be crucial that relevant experts (e.g. ISO working group 22 on stability) participate in the discussion and the preparatory work for this deeper revision of the design categories, along the traditional representatives of the consumers, the industry and the notified bodies.

REFERENCES

- **Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994, on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft (OJ L 164, 30.6.1994, p. 15-38).**
- **Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003, amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational crafts (OJ L 214, 26.8.2003, p. 18-35).**
- **NF EN ISO 12217-1 August 2002 Small craft Stability and buoyancy assessment and categorization**
Part 1: Non-sailing boats of hull length greater than or equal to 6 m
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- **NF EN ISO 12217-2 August 2002 Small craft Stability and buoyancy assessment and categorization**
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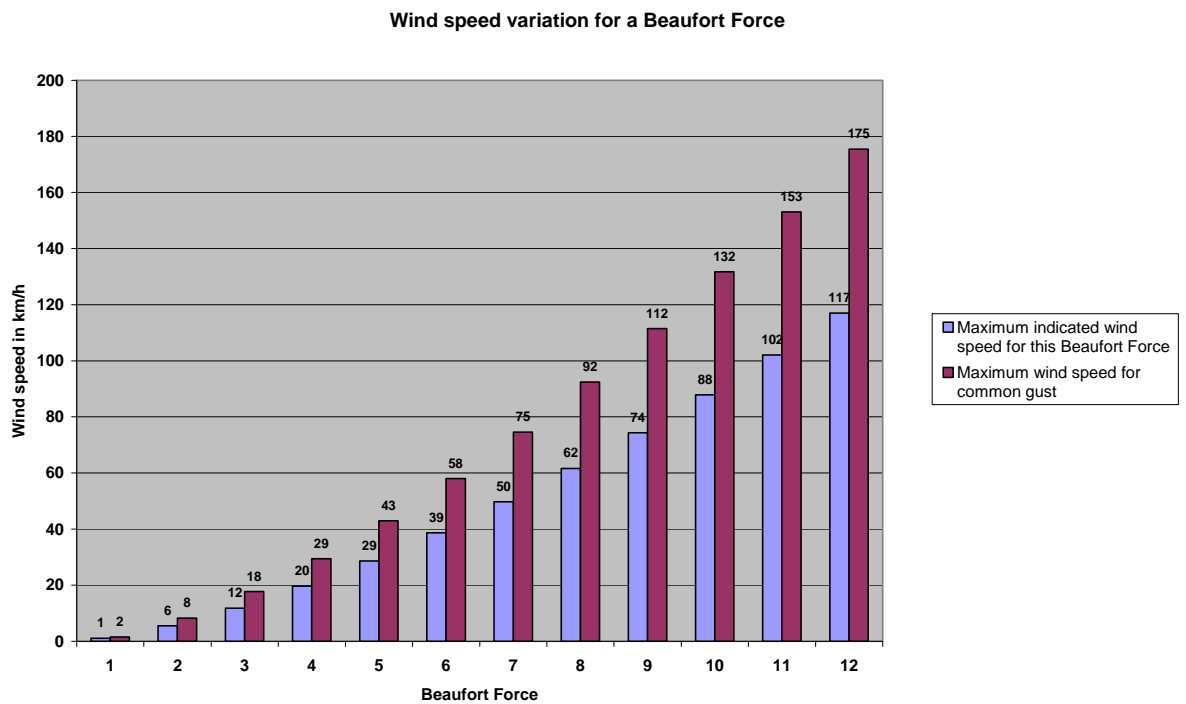
ANNEX

Figure 1 - Beaufort mean wind speed graph with effort on a flat plate



This graph with Beaufort forces average wind speed + a graph of the effort (in kg) induced by wind on a flat plate of a area of 1m²; this reflects the real forces created by wind.

Figure 2 - Beaufort maximum wind speed graph with common maximum gusts



NOTES

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