

W13 ~~Allowable under thickness tolerances of steel plates and wide flats~~ **Thickness tolerances of steel plates and wide flats**

(1981)
(Rev.1
1989)
(Rev.2
1992)
(Rev.3
1995)
(Rev.4
Oct
2009)

W13.1 Scope

W13.1.1 These requirements apply to the ~~tolerance on allowable under thickness tolerances~~ of steel plates and wide flats (hereinafter referred to as: product or products) with thicknesses of 5 mm and over, covering the following steel grades:

- (i) Normal and higher strength hull structural steels according to W11, ~~W19, W20 and W21.~~
- (ii) High strength quenched and tempered steels for welded structure according to UR W16
- (iii) Steels for machinery structures in accordance with the individual Rules of Classification Societies-

The ~~allowable under thickness tolerances~~ for products thicknesses below 5 mm may be specially agreed.

W13.1.2 These requirements do not apply to products ~~cover plates and wide flats~~ intended for the construction of boilers, pressure vessels and independent tanks, e.g. for the transportation of liquefied gases or chemicals.

NOTE:

Tolerances for length, width, flatness and over thickness may be taken from national or international standards.

W13.1.3 Where Class C of ISO 7452 is applied in lieu of W13.3, the requirements in W13.4 and W13.5 may not be applied.

W13.2 ~~Manufacturers~~ **Responsibility**

W13.2.1 The responsibility for verification and maintenance of the production within maintaining the required tolerances rests with the manufacturer, ~~who is to carry out the necessary measurements. The Surveyor may require to witness some measurements~~ Occasional checking by the Surveyor does not absolve the manufacturer from this responsibility.

W13.2.2 The responsibility for storage and maintenance of the delivered product(s) with acceptable level of surface conditions rests with the shipyard before the products are used in fabrication.

Note:

1. Rev.4 of this UR is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2011 and when the application for certification of steel plates is dated on or after 1 January 2011.
2. The "contracted for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to IACS Procedural Requirement (PR)No. 29.

W13

(cont)

W13.3 Allowable under thickness tolerances

W13.3.1 The maximum permissible under thickness tolerance for hull structural plates and wide flats for both normal and high strength steels is 0,3mm.

Note:

The attention of shipbuilders and shipowners is to be drawn to the fact that when thickness gauging is carried out during the ship's life, estimation of the diminution of hull plating and structure will be based on the nominal thickness, this being the original approved thickness for the item of structure under consideration.

The under thickness tolerance acceptable for Classification is to be considered as the lower limit of a "plus minus" range of thickness tolerance which could be found in the normal production of a conventional rolling mill manufacturing material, on average, to the nominal thickness.

With modern rolling mills, however, it may be possible to produce plates within a narrow range of thickness tolerance thus permitting the consistent production of material having a thickness less than the nominal thickness whilst at the same time satisfying the under thickness tolerance given.

In such cases, the time for the material to reach the maximum allowable diminution may be reduced.

It is therefore a matter for the shipbuilder and shipowner to mutually agree in individual cases as to whether, for commercial reasons, they wish to specify a more stringent under thickness tolerance than that given.

W13.3.1 The tolerances on thickness of a given product are defined as:

- Minus tolerance is the lower limit of the acceptable range below the nominal thickness.
- Plus tolerance is the upper limit of the acceptable range above the nominal thickness.

NOTE:

Nominal thickness is defined by the purchaser at the time of enquiry and order.

W13.3.2 The minus tolerance on thickness of products in accordance with UR W11 and UR W16 is 0.3 mm irrespective of nominal thickness.

W13.3.23 The minus tolerances for products plates and wide flats for machinery structures are to be in accordance with Table 1.

Table 1

Nominal thickness (t) (mm)	Under thickness t Tolerance (mm)
$\geq 5 - 5 \leq t < 8$	-0.4
$\geq 8 - 8 \leq t < 15$	-0.5
$\geq 15 - 15 \leq t < 25$	-0.6
$\geq 25 - 25 \leq t < 40$	-0.8
$t \geq 40$	-1.0

W13
(cont)

W13.3.4 The tolerances on nominal thickness are not applicable to areas repaired by grinding which are to be in accordance with a recognized standard. The IACS recommendation No.12 may be used for this purpose.

W13.3.5 The plus tolerances on nominal thickness are to be in accordance with a recognized national or international standard.

W13.4 Average thickness

W13.4.1 The average thickness of a product or products is defined as the arithmetic mean of the measurements made in accordance with the requirements of W13.5.

W13.4.2 The average thickness of a product or products in accordance with URs W11 or W16 is not to be less than the nominal thickness.

W13.45 Thickness measurements

~~W13.45.1 The thickness is to be measured at random locations of a product or products as defined in Annex, whose distance from a longitudinal edge shall be at least 10mm. Local surface depressions resulting from imperfections and ground areas resulting from the elimination of defects may be disregarded provided the imperfections or grinding is in accordance with national or international standards.~~

W13.5.2 Automated method or manual method is applied to the thickness measurements.

W13.5.3 The procedure and the records of measurements are to be made available to the Surveyor and copies provided on request.

W13
(cont)**ANNEX: Thickness Measuring Locations****A.1 Scope of application**

This Annex applies to the thickness measuring locations for the thickness tolerance and the average thickness of the product.

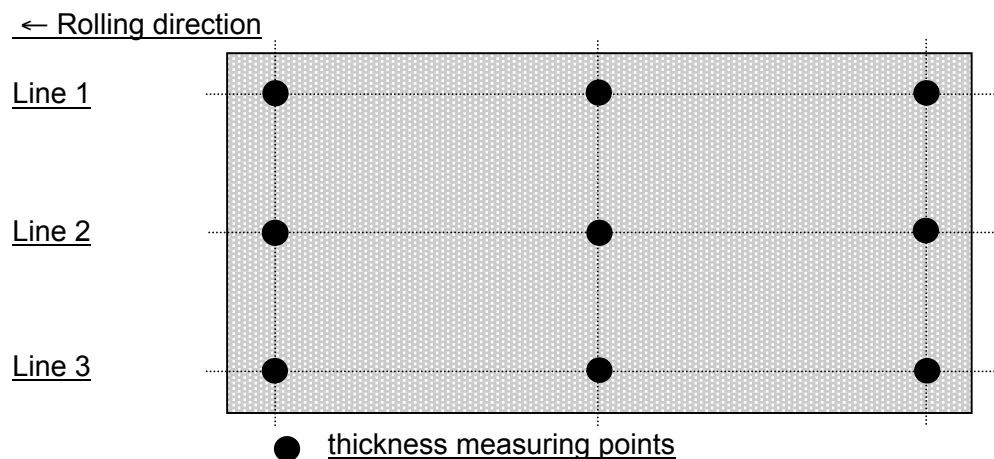
A.2 Measuring locations

At least two lines among Line 1, Line 2 or Line 3 as shown in Figure A.1, are to be selected for the thickness measurements and at least three points on each selected line as shown in Figure A.1 are to be selected for thickness measurement. If more than three points are taken on each line the number of points shall be equal on each line.

For automated methods, the measuring points at sides are to be located not less than 10 mm but not greater than 300 mm from the transverse or longitudinal edges of the product.

For manual methods, the measuring points at sides are to be located not less than 10 mm but not greater than 100 mm from the transverse or longitudinal edges of the product.

Figure A.1 - Locations of Thickness Measuring Points



End of
Document