

# Requirements for Brittle Crack Arrest Steels

## Amended Rules and Guidance

Rules for the Survey and Construction of Steel Ships Parts K and M

Guidance for the Survey and Construction of Steel Ships Parts K and M

Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use

## Reason for Amendment

IACS Unified Requirement (UR) W31(Rev.1) specifies requirements related to standard values, manufacturing process approval and welding, etc. for YP47 steels (steels with a specified minimum yield point of 460 N/mm<sup>2</sup>) used for longitudinal structural members in the upper deck regions of container carriers as well as requirements related to the standard values of the brittle crack arrest properties for brittle crack arrest steels used to prevent large scale fractures due to brittle cracking in container carriers.

There are, however, no unified requirements related to the standard values of the brittle crack arrest properties for steels with thicknesses exceeding 80 mm used as brittle crack arrest steels; such requirements are, therefore, left to discretion of each classification society.

NK, in cooperation with the Japan Welding Engineering Society, conducted a study on the brittle crack arrest properties required for brittle crack arrest steels with thicknesses exceeding 80 mm, and proposed standard values based upon its research to IACS.

As a result, IACS held discussions and adopted a revised version of UR W31 as UR W31(Rev.2) in December 2019. This revised version not only incorporates the standards proposed by NK but also reflects the results of a review of other requirements for brittle crack arrest steels, such as welding requirements.

Accordingly, all relevant requirements were amended based upon UR W31(Rev.2).

## Outline of Amendment

- (1) Specified requirements related to chemical composition for YP47 steels (KE47).
- (2) Amended requirements related to standard values, manufacturing process approval and welding procedure approval, etc.
- (3) Specified requirements related to CAT evaluation tests as an evaluation test method for brittle crack arrest properties.

## Amended Requirements

Rule for the survey and construction of steel ships

Part K: Table K3.33, Table K3.34, 3.12, 3.13.2, Table K3.40

Part M: 4.1.4, Table M4.12, Table M6.6, Table M6.8, Table M6.18, Table M6.25, Table M6.27, Table M6.34

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Part K: K3.12.2

Annex K3.12.2-1: 1.1.1, Table 2, 1.2.8, 1.2.9, 1.2.11

Annex K3.12.3-2 (new)

Part M: M2.2.1, M2.2.2, Table M2.4.3-1

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1.2.2, 1.4.1, 1.4.3, Table 1.1-2, Table 1.1-3, Table 1.1-8, Fig. 1.1-2, 1.5.3