

# Selective Catalytic Reduction Systems

## Amended Rules

Rules for the Survey and Construction of Steel Ships Part D

## Reason for Amendment

IACS Unified Requirement (UR) M77 specifies requirements related to the storage and use of reductants for selective catalytic reduction (SCR) systems. These requirements have already been incorporated into the NK Rules.

According to amendments (IMO Resolution MEPC.251(66)) made to MARPOL Annex VI, certain yachts intended for recreational purposes which are at the construction stage (based on the date of keel lay) on or after 1 January 2021 are subject to NOx Tier III requirements.

Although some of these yachts have installed SCR systems so as to comply with the NOx Tier III requirements, it is generally not considered practical for the reductant agent tanks of such SCR systems to be made of steel as required by IACS UR M77 in cases where the tanks are arranged as integral tanks and the yachts themselves are constructed out FRP materials because IACS UR M77 is only intended to apply to steel ships. After reviewing matters, IACS adopted UR M77(Rev.3) in September 2021 to clarify the scope of UR M77 to integral tanks.

In addition, some requirements for SCR systems were reviewed as part of a comprehensive review of the ClassNK Rules so as to bring them in line with actual practices.

Accordingly, relevant requirements were amended based upon UR M77(Rev.3) and results of the aforementioned comprehensive review.

## Outline of Amendment

- (1) Clarified the scope of exceptions for the material requirements of reductant agent tanks.
- (2) Clarified the installation position of alarm devices and monitoring devices.
- (3) Deleted low exhaust gas temperature at inlets as an abnormal condition for SCR systems.

“Rules for the survey and construction of steel ships” has been partly amended as follows:

## **Part D                    MACHINERY INSTALLATIONS**

### **Chapter 21   SELECTIVE CATALYTIC REDUCTION SYSTEMS AND ASSOCIATED EQUIPMENT**

#### **21.2      Design**

##### **21.2.2      Material**

Sub-paragraph -1 has been amended as follows.

- 1**      Reductant tanks are to be of steel or other equivalent material with a melting point above 925 °C.  
      (Note)

The wording “to be of steel or other equivalent material” is not applicable for integral tanks on FRP vessels such as those listed below, provided that the integral tanks are coated and/or insulated with a self-extinguishing material.

- (1)    FRP vessels complying with Regulation 17 of SOLAS Chapter II-2 based upon its associated IMO guidelines (MSC.1/Circ.1574), and  
(2)    FRP vessels exempted from the application of SOLAS e.g., yachts, fast patrol, navy vessels, etc., generally of less than 500 gross tonnage, subject to yacht codes or flag regulations.

(-2 to -4 are omitted.)

#### **21.4      Requirements for Construction and Arrangements, etc.**

##### **21.4.5      Safety Devices and Alarm Devices**

Sub-paragraphs -2 and -3 have been amended as follows.

- 1**      (Omitted)  
**2**      Alarm devices, to be activated in the event of any of the abnormal conditions given in **Table D21.1**, are to be provided at control stations of SCR systems.  
**3**      SCR systems are to be fitted with monitoring devices at control stations of SCR systems, and these devices are to be capable of indicating the information listed in the following (1) to (4):  
(1)    Liquid levels in tanks for reductant agent  
(2)    Temperatures in tanks for reductant agent  
(3)    Exhaust gas temperatures at inlets  
(4)    Pressures at inlets or differential pressures across catalyst block  
**4**      (Omitted)

Table D21.1 has been amended as follows.

Table D21.1 Alarm points for SCR system<sup>(1)</sup>

Monitored Variables	
Liquid levels in tank for reductant agent	H L
Temperature in tank for reductant agent	H L
Exhaust gas pressure at inlet <sup>(2)</sup>	H
Exhaust gas temperature at inlet	H L
Exhaust gas temperature at outlet <sup>(3)</sup>	H
Power loss of control, alarm, monitoring or safety devices	○

Notes:

- (1) “H” and “L” mean “high” and “low”. “○” means abnormal condition occurred.
- (2) Differential pressure across catalyst block may be accepted in lieu.
- (3) Alarms may be omitted in cases where means are provided to prevent damage by soot fire.

## 21.8 Tests

### 21.8.1 Tests at Facilities (Shop tests)

Sub-paragraph -4 has been amended as follows.

**4** For reductant agent supply pumps, shop trials are to be carried out according to test procedures deemed appropriate by the Society. Tests carried out in the presence of the Surveyor may be replaced by manufacturer’s tests. In such cases, submission or presentation of test records may be required by the Society.