COLLECTION

OF THE RULES FOR CONTAINERS

ND No. 2-090201-014-E

RULE CHANGE NOTICE

ENTERS INTO FORCE:

01.01.2025

St. Petersburg
2024

COLLECTION OF THE RULES FOR CONTAINERS

The present Rule Change Notice to the Collection of the Rules for Containers (hereinafter — RCN) has been approved in accordance with the established approval procedure and contains earlier approved amendments published by the Urgent Rule Change Notices after entering into force of the previous version of the Collection of the Rules for Containers (these amendments are specified in the Revision History and highlighted in yellow).

REVISION HISTORY

GENERAL REGULATIONS FOR THE TECHNICAL SUPERVISION OF CONTAINERS

Item	Applicability	Description	Remarks
Table 2.1.3	Containers Design/manufacture Telematics systems of container in-service monitoring	New code of the nomenclature has been introduced	**Entry-into-force date: 30.07.2024** (Urgent Rule Change Notice № 431-03-2026 от 30.07.2024)

RULES FOR THE MANUFACTURE OF CONTAINERS

Item	Applicability	Description	Remarks
Part I, Para 2.3.5	Containers Design/manufacture	Requirements for dimensions of recesses near the intermediate fittings of 1EEE и 1EE containers have been specified	**Entry-into-force date: 09.07.2024** (Urgent Rule Change Notice № 431-03-2022 от 09.07.2024)
Part I, Para. 2.6.5	Containers Design/manufacture Telematics systems of container in-service monitoring	Requirements for container identification devices have been specified	**Entry-into-force date: 30.07.2024** (Urgent Rule Change Notice № 431-03-2026 от 30.07.2024)

Item	Applicability	Description	Remarks
Part I, Section 6 (new)	Containers Design/manufacture Telematics systems of container in-service monitoring	Requirements for telematics systems have been introduced	**Entry-into-force date: 30.07.2024** (Urgent Rule Change Notice № 431-03-2026 от 30.07.2024)
Part II, Para 3.1.4	Containers Design/manufacture/testing	Requirements for testing order of containers have been specified	**Entry-into-force date: 09.07.2024** (Urgent Rule Change Notice № 431-03-2022 от 09.07.2024)
Part II, Chapter 3.9	Containers Design/manufacture/testing	Requirements for floor testing have been specified	**Entry-into-force date: 09.07.2024** (Urgent Rule Change Notice № 431-03-2022 от 09.07.2024)

RULES FOR THE TECHNICAL SUPERVISION DURING MANUFACTURE OF CONTAINERS, MATERIALS AND PRODUCTS FOR CONTAINERS

Item	Applicability	Description	Remarks
Table 3.2.3	Containers Design/manufacture Telematics systems of container in-service monitoring	Scope of technical supervision during telematics system fabrication has been specified	**Entry-into-force date: 30.07.2024** (Urgent Rule Change Notice № 431-03-2026 от 30.07.2024)

GENERAL REGULATIONS FOR THE TECHNICAL SUPERVISION OF CONTAINERS

2 TECHNICAL SUPERVISION

2.1 GENERAL

Table 2.1.3. A **new code 50022000 "Telematics device"** is introduced after code 50021000 "Supports for NiS material ingot", reading as follows:

"

Code of item of technical supervision	Name of item of technical supervision	Group of item of technical supervision (1 —5)	Branding	Remarks
50022000	Telematics device	2	-	

-".

RULES FOR THE MANUFACTURE OF CONTAINERS

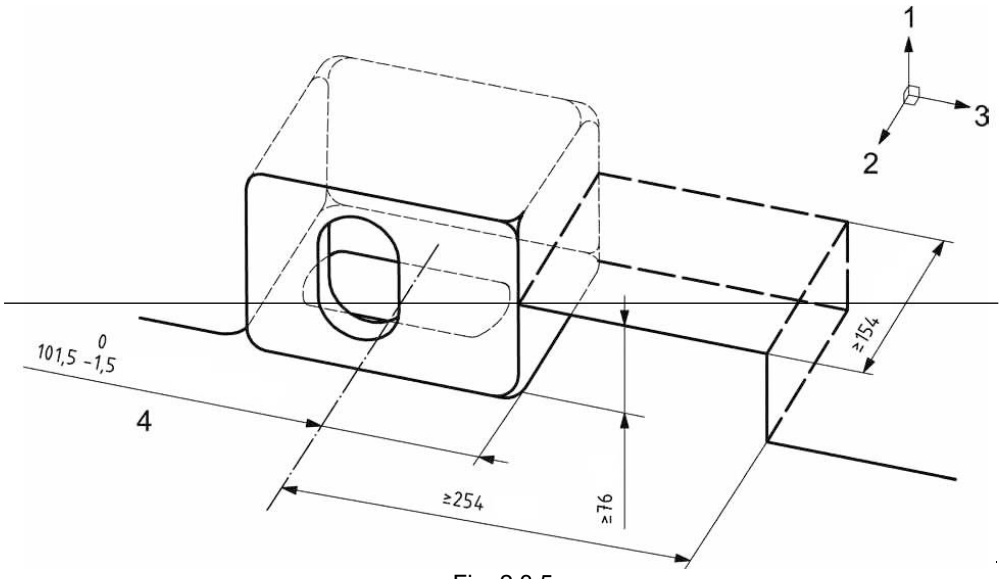
PART I. BASIC REQUIREMENTS

2 GENERAL TECHNICAL DATA

2.3 BASE STRUCTURE

Para 2.3.5 is amended as follows:

"**2.3.5** 1EEE and 1EE containers shall have recesses in the longitudinal members of the base structure directed from intermediate fittings towards corner fittings. These recesses shall extend vertically ~~for not less than 76 mm above the plane of bottom faces of intermediate fittings~~ so as to permit full access to the outboard aperture of the intermediate fitting, shall extend longitudinally for not less than ~~254 mm from the centre of the bottom aperture in intermediate fittings directed towards corner fittings,~~150 mm from the outboard surface in the intermediate fitting and shall extend laterally for not less than 154 mm inboard from the external side face of the intermediate fitting (refer to Fig. 2.3.5).



~~Fig. 2.3.5:~~

~~*1* – top; *2* – outboard; *3* – end of container and corner fitting;~~
~~*4* – axis of symmetry of the intermediate fitting bottom aperture~~

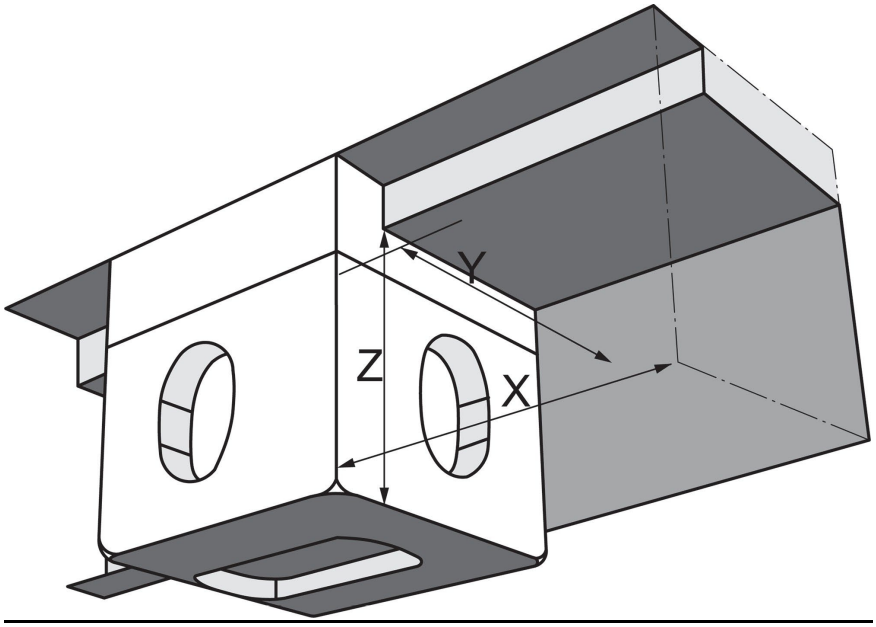


Fig. 2.3.5:

X – longitudinal (≥150 mm); Y – laterally (≥154 mm); Z – vertical (shall allow full access to the outboard aperture of the intermediate fitting)".

2.6 OPTIONAL STRUCTURES

Para 2.6.5 is amended as follows:

"**2.6.5 Container identification equipment.**

2.6.5.1 Automatic electronic identification (AEI) equipment.

In case of a container fitted with automatic electronic identification (AEI) equipment, this equipment shall comply with the requirements of ISO 10374.

2.6.5.2 Telematics device

In case of a container fitted with a telematics device, this equipment shall comply with the requirements of Section 6.".

New Section 6 is introduced reading as follows:

"6 TELEMATICS SYSTEM OF CONTAINER IN-SERVICE MONITORING

6.1 GENERAL

6.1.1 Application.

6.1.1.1 The requirements of this Section apply to telematics devices of the container in-service monitoring system fitted on the containers.

6.1.1.2 Telematics devices of container in-service monitoring system other than those specified in this Section are subject to the separate consideration by RS to assess the compliance with established requirements.

6.1.2 Definitions.

For the purpose of this Section the following additional definitions have been adopted.

Compound casting is a process of applying a compound to protect any electrical device(s) by immersion or pouring methods.

Compound is thermosetting, thermoplastic polymer resin (cold-hardening) and elastomeric materials with or without fillers and/or additives after curing.

Data processing server infrastructure is a hardware and software complex designed for collection, synchronization, storage and visualization of telematics data for its application in a usable format.

Telematics system is a system that collects, processes and exchanges information between different users and elements of the transportation system.

Telematics device is a piece of equipment (device) installed on the container and designed for registration, storage (in case of temporary absence of cellular communication) and transmission of telematics data to the data processing server infrastructure.

Data packet transmission cycle is one sending of telematics data from telematics devices to the data processing server infrastructure.

6.1.3 Technical documentation.

6.1.3.1 The scope of the technical documentation submitted for consideration as well as the forms for confirming the compliance of the technical documentation with the RS requirements, are specified in Table 6.1.3.1 and may be changed (supplemented) upon the agreement with RS.

Table 6.1.3.1

No.	Document name	Review result[1]
1	Technical conditions or Technical specification	A
2	Operation Manual	Ag
3	Test procedure	A
4	Telematics device drawings[2]	A
5	Marking drawing	A

[1] A — approved; Ag — agreed. Documents may be approved and/or agreed subject to RS consideration and implementation of the RS recommendations (if any).

[2] A list of drawings of telematics device – upon the agreement with RS.

Notes: 1. Documents specified in this table may not be provided upon the agreement with RS, if all necessary information is contained in other documents included in the set of technical documentation on telematics devices.

2. Documents shall be submitted up-to-date, taking considering previously made amendments.

6.2 TECHNICAL REQUIREMENTS

6.2.1 General.

6.2.1.1 The telematics device shall ensure data recording of parameters of the container in-service monitoring system and its transmission to the data processing server infrastructure. The monitored parameters (their values) shall be presented in a format suitable for use by the data processing server infrastructure.

6.2.1.2 The telematics device shall be capable of reliable operation at ambient temperatures from –40 °C to +50 °C.

Other ranges of the operating temperatures, depending on the climatic version of construction specified in the design, may be adopted subject to agreement with RS.

6.2.1.3 Design of the telematics device shall provide for a ventilation unit installed in the device casing and designed to equalize pressure in case of rapid temperature drops during operation, as well as to avoid condensate formation in the inner part of the casing.

6.2.1.4 The design of the telematics device shall ensure that all elements of the electronic module are hermetically sealed by immersion or compound casting.

6.2.1.5 The design of the telematics device shall provide for the presence of sealing devices and protective elements in order to prevent unauthorized dismantling of the device and opening of the device casing during service.

6.2.1.6 Independent source of electrical power supply (accumulator battery pack) shall be designed to ensure the performance of the telematics device (the number of cycles of data packet transmission to the data processing server infrastructure as stated in the technical documentation), taking into account the requirements of 6.2.1.2.

6.2.2 Explosion protection.

6.2.2.1 Safe-type design of the telematics device shall be confirmed by a document issued by a competent organization for compliance with the requirements of international standards IEC 60079-0 and IEC 60079-11 or similar (modified in relation to international standards) national standards.

6.2.3 Protection of electrical equipment.

6.2.3.1 The degree of protection of electrical equipment from external exposure provided by the shell (after sealing) shall not be less than IP56.

6.2.4 Materials.

6.2.4.1 The casing of the telematics device shall be made of materials having low flame-spread characteristics, resistant to sea air and oil and fuel vapors, which shall be confirmed by documents (test reports, technical passport, technical specification, quality certificate, etc.) provided by the manufacturer (supplier) of the materials.

6.2.4.2 Telematics system enclosure shall provide for impact resistance when exposed to a load of $1^{+0,01}$ kg falling vertically from a height of at least $0,7^{+0,01}$ m. Impact resistance of the telematics device shall be verified in accordance with 6.3.1.8.

6.2.5 Mounting on the container.

6.2.5.1 The telematics device shall be mounted on containers upon agreement with RS. The telematics device may be installed during manufacture of containers or during their service. The procedure for mounting telematics devices on containers in-service shall be agreed with the operator (owner) of the containers.

6.2.5.2 The telematics device shall be installed in such a way that it does not protrude beyond the planes drawn on the outer edges of the container's corner fittings and shall be located outside the container's service area (ladders, platforms, service equipment, etc.).

6.2.5.3 Mounting of the telematics device on the container (refer to Fig. 6.2.5.3) shall be carried out taking into account the requirements of 2.2.4 of the Rules for the Approval of Containers for the Transportation of Goods Under Customs Seals.

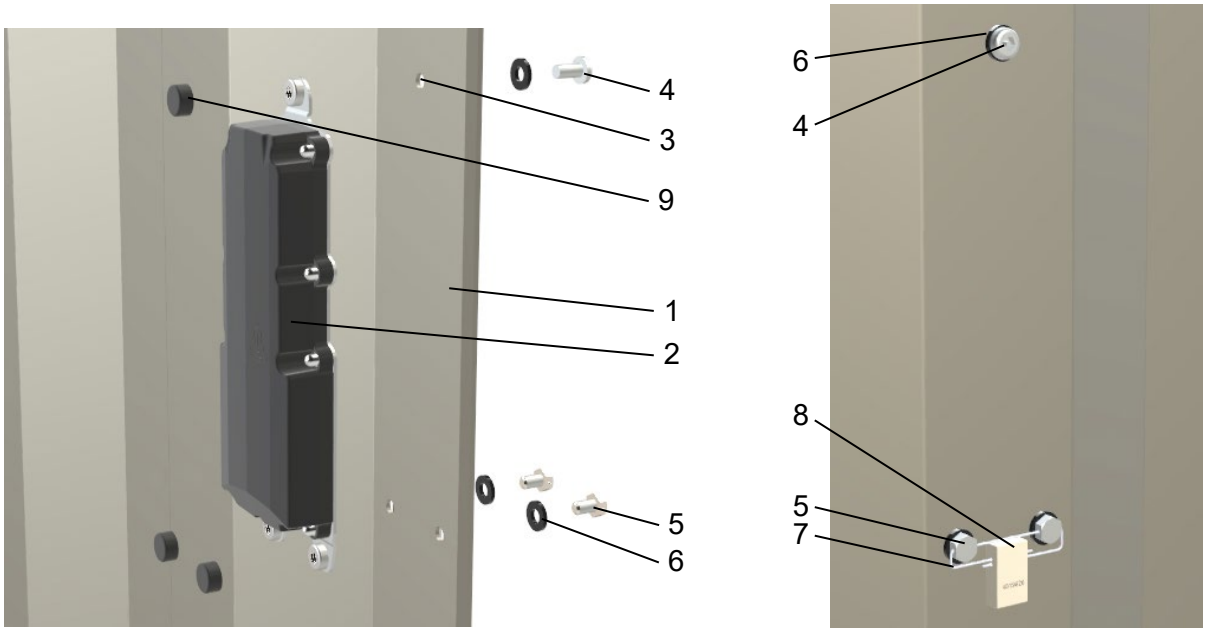


Рис. 6.2.5.3 Example of the telematic device installation on the container:
1 — container end wall profile; *2* — telematics device
(mounting on the outside of the container);
3 — manufacture holes for screws; *4* — anti-vandal screw
(mounting on the inside of the container);
5 — screws with holes for sealing wire
(mounting on the inside of the container);
6 — screw heads spacers; *7* — sealing wire;
8 — numbered seal; *9* — protective caps

6.3 TESTING

6.3.1 General.

6.3.1.1 The list of tests is given in Table 6.3.1.1. The scope of testing for serial production may be changed upon the RS agreement.

Table 6.3.1.1

No	Testing name	Requirements of the RS Rules	Prototype[1]	Serial production[2]
1	Checking geometric dimensions and weights	6.3.1.3	+	+
2	Climatic tests	6.3.1.4	+	–
3	Mechanical environment resilience test	6.3.1.5	+	–
4	Compliance with the degree of protection of electrical equipment against external impact	6.3.1.6	+	–
5	Electromagnetic compatibility	6.3.1.7	+	–

6	Impact resistance test	6.3.1.8	+	+
7	Functional tests	6.3.1.9	+	+
[1] Tests are carried out when products are put into production. [2] Within the framework of type testing (when expanding device versions / modifications range).				

6.3.1.2 The order of tests is not mandatory, except that the functional tests (refer to 6.3.1.9) shall be performed last.

6.3.1.3 Checking geometric dimensions and weights.

6.3.1.3.1 Before and after completion of all tests, the dimensions shall be checked in accordance with the technical documentation approved by RS. The weight check shall be performed before all tests.

6.3.1.3.2 The verification criteria are compliance of the actually measured overall dimensions and weight of the telematics device with those specified in the technical documentation approved by RS.

6.3.1.4 Climatic tests.

6.3.1.4.1 Climatic tests of the telematics device (tests for heat stability and cold endurance, tests for exposure to temperature changes, damp heat tests, tests for exposure to salt (sea) fog shall be performed in accordance with the requirements of IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-11 or similar national standards.

6.3.1.5 Mechanical environment resilience test.

6.3.1.5.1 Confirmation of the resistance of the telematics device design to vibration and single-action mechanical shocks for products of the M25 mechanical design group is carried out in accordance with the international standard IEC 61373 or similar national standard.

6.3.1.6 Compliance with the degree of protection of electrical equipment against external impacts.

6.3.1.6.1 Confirmation of the telematics device design for compliance with the degree of protection of electrical equipment against ingress of solid foreign objects and water (moisture) into the casing (enclosure) shall be carried out in accordance with the international standard IEC 60529 or a similar national standard.

6.3.1.7 Electromagnetic compatibility**.**

6.3.1.7.1 Confirmation of electromagnetic compatibility is carried out in accordance with CISPR 22:2006 or similar national standards.

6.3.1.8 Impact resistance.

6.3.1.8.1 Confirmation of mechanical strength of the telematics device is carried out in compliance with IEC 60079-0 or similar national standard. Tests are carried out when exposed to a load (indenter) weighing $1^{+0,01}$ kg falling vertically from a height of at least $0,7^{+0,01}$ m. The indenter shall be made of quenched steel in the shape of a hemisphere with a diameter of 25 ± 0,5 mm. The impact is made on the upper part of the telematics device casing, which is most often subjected to impact during service. The test is carried out at ambient temperature of 20±5 °C.

6.3.1.8.2 The criteria for assessment of the test results are the absence of residual deformations and/or malfunctions that could lead to the inability to operate the telematics device. The presence of minor surface damage is allowed.

6.3.1.9 Functional tests.

6.3.1.9.1 Functional tests shall include the confirmation of data transmission and registration (geolocation, acceleration, etc.) from the telematics device to the data processing server infrastructure, as well as verification of registration in the cellular network and determination of geolocation (provided that cellular communication is available and there is no interference with the navigation receiver built into the device).

6.3.1.9.2 The criteria for evaluating the test results shall be the conformity of the current location of the telematics device with the coordinates determined by global navigation satellite systems (GLONASS/GPS) signals and specified on the data processing server infrastructure, as well as the fact of transmission of acceleration data from the telematics device to the data processing server infrastructure.

6.4 TECHNICAL CONDITION CHECKS (INSPECTIONS)

6.4.1 Periodical checks/inspections of the technical condition of telematics devices shall be carried out during scheduled maintenance of containers in compliance with the requirements of the operation/instruction manual of the telematics device.

6.5 MARKING

6.5.1 Marking of the telematics device shall be performed in accordance with the requirements and methods specified by the technical documentation. Marking shall be applied on visible places of the telematics device and be resistant to unfavorable environmental conditions.

6.5.2 The telematics device marking shall contain the following data in English (text part):

manufacturer's trademark (logo);

name of the equipment

manufacturing (serial) number;

date of manufacture (DD.MM.YY.);

explosion-proof marking in accordance with the international standard IEC 60079-0 or similar (modified in relation to the international standard) national standard (including the image of the special Ex sign);

IP code;

ambient temperature range under operating conditions;

digital code (QR code) (optional).

Additional marking of telematics devices (additional information) shall be specified in the technical documentation.

6.5.3 The text part of the mandatory and additional marking may be duplicated in the national language.".

PART II. GENERAL FREIGHT CONTAINERS

3. TESTING

3.1 GENERAL

Para 3.1.4 is amended as follows:

"**3.1.4** The order of tests is not mandatory, except that the test of floor strength under 3.9 shall be made first and the test of weathertightness under 3.15 shall be made last ~~and be applied to each container~~.".

Chapter 3.9 is replaced by the following text:

"3.9 FLOOR STRENGTH

3.9.1 This test shall be carried out to prove the ability of a container floor (deck and base structure) to withstand the concentrated dynamic loading during cargo operations involving trucks or similar devices (refer to Fig. 3.9.1).

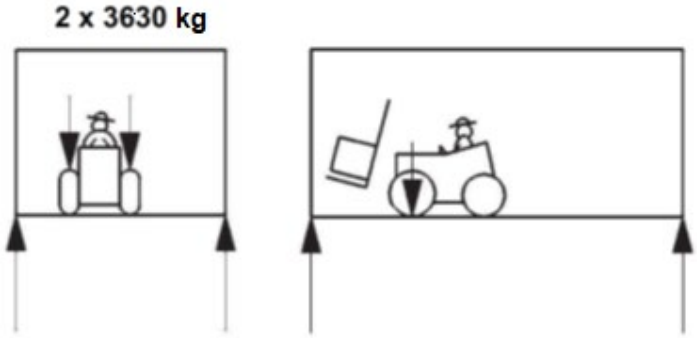


Fig. 3.9.1
Floor strength

3.9.2 The test shall be made with the container resting on four level supports under its four bottom corner fittings, with its base structure free to deflect. Access to the underside is required.

3.9.3 The test shall be performed using a test vehicle:

.1 that is equipped with solid or pneumatic tyres;

.2 that has an axle load of 7 260 kg (i.e. 3 630 kg on each of the two tyres);

.3 where each wheel has a maximum contact area between the tyre and the flat continuous surface of the floor of 142 cm^2;

.4 where each tyre has a width of 180 mm (–0; +5).

.5 where the length of contact with the floor of each tyre in the direction of travel shall not exceed:

.5.1 79 mm for a solid tyre with a flat surface;

.5.2 100 mm for a pneumatic tyre with a tread;

.6 where the distance between wheel centres shall nominally be 760 mm;

.7 where the width of the test load should not protrude beyond the outside faces of the wheels.

N o t e . For the purpose of compliance with the CSC, the axle load of the test vehicle may be assumed as 5460 kg.

3.9.4 The test vehicle shall be maneuvered slowly (at a maximum speed of 152 mm/s), in such a way that the entire floor area is covered. Care should be taken to avoid impact or other dynamic loads by starting, stopping, and rolling the test vehicle gently and slowly.

3.9.5 The test vehicle shall be maneuvered to cover the entire floor area for a total of 5 cycles, but the floor area close to gooseneck tunnel shall be covered for 3 times. One cycle is a complete pass into the container from the door to the front panel and from the front

panel to the door and out of the container. The wheels of the test vehicle shall follow the same path on the inward and outward passes.

3.9.6 The test vehicle shall be repositioned outside the container between cycles to avoid imposing any dynamic loads on the container floor.

3.9.7 As the test vehicle rolls over the floor, the base structure shall be observed to trace any abnormal sounds indicating potential breakage.

3.9.8 Scope of testing.

3.9.8.1 All batches of production shall be tested. The first container of each production batch and one container randomly picked by the RS surveyor out of no more than100 manufactured units shall be tested. The number of containers to be tested for the floor strength may be changed in agreement with the RS.

3.9.8.2 Testing shall continue until all 5 cycles are completed or until a failure is detected in any floor panel. If there are obvious signs of failure such as waves, bulges, or cracks that occur at any time during the test, prior to the completion of the fifth cycle, the container has failed the floor test, and the test shall be stopped.

3.9.9 Floor fail criteria.

3.9.9.1 For composite or laminated flooring, representing the majority of flooring materials to-date, at the end of the fifth cycle the floor shall be tapped using a hammer in search of hollow sounds indicating delamination between floor panel components. In addition, the attention shall be paid to other obvious signs of failure such as waviness and/or bulges on the outer plies, and cracks in the outer (usually lower) plies of the tested boards.

3.9.9.2 If tapping the floorboards produces a hollow sound but there are no obvious signs such as waviness, bulges, or cracks, the area shall be marked for removal and further inspection of the cross section.

3.9.10 Breakage.

3.9.10.1 Any breakage constitutes failure of the floor tested. Breakage is defined as follows:

.**1** any delamination/ply separation resulting from the internal shearing of the veneer or failure of the adhesive including peeling of the surface plies such that the panel no longer acts as a single, composite structure;

.2 any visible cross-grain or transverse cracks;

.3 any mechanical properties alteration or permanent deformation for other materials.

3.9.10.2 In case of breakage detection, a second container from the same batch shall be fully tested for floor strength.

3.9.11 Deformation measurements shall be taken at several points on the base before, during and after the test. Fig. 3.9.11 shows the places for measuring deformations during testing.

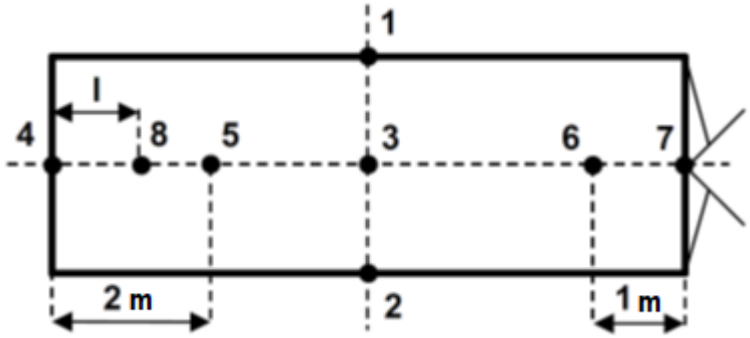


Fig. 3.9.11
Places for measuring deformations
l — 0,7…1,2 m (in the area of a gooseneck tunnel)

Upon completion of the test, the container shall show neither permanent deformation which will render it unsuitable for use nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.".

RULES FOR TECHNICAL SUPERVISION DURING MANUFACTURE OF CONTAINERS, MATERIALS AND PRODUCTS FOR CONTAINERS

3 TECHNICAL SUPERVISION DURING MANUFACTURE OF PRODUCTS

3.2 TECHNICAL SUPERVISION

Table 3.2.3 is supplemented with a **new item 1.18** "Telematics device" reading as follows:

"

No.	Item of technical supervision	Verification of									
		technical documentation	materials and visual examination	machining of parts	welding operations	manufacture of parts and assemblies	assembly of products	control of flow direction	tests	marking	branding
		3.3	3.4	3.5	3.6	3.7		3.8	3.9	3.10	
1.18	telematics device	+	+				+		+	+	

".

Russian Maritime Register of Shipping

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