

UIC Code

571-2

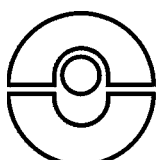
OR

6th edition, February 2001

Translation

**Standard wagons - Ordinary bogie wagons -
Characteristics**

*Wagons unifiés - Wagons à bogies d'usage courant - Caractéristiques
Einheitsgüterwagen - Drehgestellgüterwagen der Regelbauart - Merkmale*



*Union Internationale des Chemins de fer
Internationaler Eisenbahnverband
International Union of Railways*

UIC



Leaflet to be classified in Sections :

IV - Operating

V - Transport stock

Application :

With effect from 1st January 1979 for obligatory provisions (for wagons to be built) except:

- point 1.3 (1.7.91)
- points 1.4 and 1.6 (3rd paragraph) (1.1.96)
- point 1.7 (2nd paragraph) (1.7.93)
- point 3.2.1 (5th and 6th lines) (1.7.89)
- points 4.1, 4.2, 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.7, 4.3.8, 4.3.9, 4.3.9.1, 4.3.9.2, 4.4 (1.7.91)
- points 4.1.1, 4.1.2, 4.2.1, 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.3.9.1, 4.3.9.2 (1.7.93)

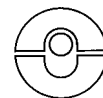
All members of the International Union of Railways

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The person responsible for this leaflet is named in the UIC Code



Warning

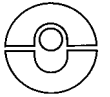
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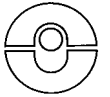
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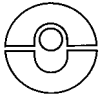
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Summary

Wagons with standard characteristics are easier for customers to use and facilitate railway operations. The wagons of UIC member railways, except those built to meet special needs, are purchased in accordance with the standard characteristics described in this leaflet.



1 - General

- **1.1.** - In order to facilitate the operation of services and the use of wagons by customers, UIC member railways shall undertake to abide by the wagon design standardisation characteristics contained in this leaflet, except in the case of very special requirements.

1.2. - It is recommended that:

- the types of wagons described in this leaflet which are standardised be constructed in accordance with the series of standard drawings managed by ERRI, and
- to improve aerodynamics, the solutions presented in ERRI report B 12/RP 54 be used where economically viable.

A list of standardised and partially standardised wagons as well as all standardised subassemblies and component parts is given in ERRI document DG4.

- **1.3.** - The interchangeable parts listed in *Leaflet 570* shall be used for the construction of wagons.

- **1.4. - Wagons must meet the following operating requirements:**

1.4.1. - Wagons with a 20 tonne axle-load

Wagon strength and running stability must be such that they can be worked at 100 km/h with the maximum load permitted on lines for 20 tonnes per axle (lines in category C). This load is generally distributed over the full length of the wagon;

The braking equipment must allow the wagons to be worked under S running conditions with a 20 tonne axle-load.

NB : Type 1 and 2 covered wagons are the subject of additional provisions (see point 2.4.1 below).

The following wagons defined by this leaflet are suitable for an axle-load of 20 tonnes:

- covered wagons, types 1 and 2,
- open high-sided wagons, type 1,
- flat wagons, types 1 and 2.

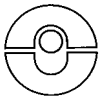
1.4.2. - Wagons with a 22,5 tonne axle-load

Wagon strength and stability must be such that they can be worked at 100 km/h with the maximum load permitted on lines for 22,5 tonnes per axle (lines in category D). This load is generally distributed over the full length of the wagon.

The braking equipment must allow the wagons to be worked under S running conditions with a 22,5 tonne axle-load.

The following wagons defined by this leaflet are suitable for an axle-load of 22,5 tonnes:

- open high-sided wagons, type 2,



- flat wagons, types 1 and 2.

○ **1.5.** - Wagons shall be built:

- with or without crossing facility,
- with or without screw brake,

in accordance with the conditions laid down in *Leaflet 535-3*.

○ **1.6.** - The maximum wagon tare shown in this leaflet is that of wagons fitted with air brakes and:

- in the case of wagons with superstructure, with a crossing gangway complying with the provisions of *Leaflet 535-2* and a screw brake which can be operated from this gangway;
- in the case of wagons without superstructure, with crossing steps complying with the provisions of *Leaflet 535-2* and a screw brake which can be operated from the ground.

The minimum tare (not specified in this leaflet) results from the application of the provisions of *Leaflet 530-2*, irrespective of whether the wagon is fitted with a crossing gangway and screw brake or not.

○ **1.7.** - The length of the underframe (between the buffer fixing planes) laid down in this leaflet refers to wagons without crossing gangway.

In all cases, the length of the underframe must have a positive tolerance (in compliance with the national standard in question) after manufacture.

○ **1.8.** - The uniformly distributed loads shown in this leaflet must be placed symmetrically in relation to the longitudinal and transverse centre-lines of the wagon and take up at least 2,000 m of the floor width.

Loads resting on two supports must be placed symmetrically in relation to the longitudinal and transverse centre-lines of the wagon and the supports must take up at least 2,000 m of the width and 2,000 m of the length of the floor.

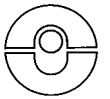
NB : For open high-sided wagon (Eas-Eaos-Eanos) and flat wagons (Rns/Rens/Rmmns/Remmns) this width should be 1,200 m.

○ **1.9.** - Permanent additional loading gear may only be fitted in the wagons with the approval of the UIC, which shall determine whether or not the presence of such gear alters the standard characteristics of the wagon. The application to the UIC shall be accompanied by:

1. a detailed description;
2. presentation of a prototype.

○ **1.10.** - It must be possible to lift the wagons by either end when loaded, the lifting device being placed under the headstock at right angles with the side buffers.

○ **1.11.** - Wagons must be fitted with two 2-axle bogies; the wheelbase of each bogie must be 1,800 m.



2 - Covered wagons

Covered wagons shall be one of the two following types:

- type 1 (Gas/Gass);
- type 2 (Gabs/Gabss);

this type has been standardised.

These wagons must be suitable for the conveyance of all types of traffic normally conveyed on covered wagons, with the exception of the conveyance of livestock.

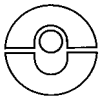
o 2.1 - Main dimensions

2.1.1 - Type 1 (Gas/Gass):

- length over buffers	m	16,520
- length of underframe	m	15,280
- minimum inside length of floor	m	15,200
- minimum inside width of floor	m	2,600
- floor area	m ²	40 approx.
- total capacity	m ³	105 approx.
- distance between bogie pivots	m	11,480

2.1.2 - Type 2 (Gabs/Gabss):

- length over buffers	m	21,700
- length of underframe	m	20,460
- minimum inside length of floor	m	20,410
- minimum inside width of floor	m	2,590
- floor area	m ²	53 approx.
- total capacity	m ³	137 approx.
- distance between bogie pivots	m	16,660
- maximum height of the loading plane above rail level	m	1,200



o 2.2 - Load characteristics

2.2.1. - Maximum tare:

- type 1 23 t,
- type 2 29 t.

2.2.2. - The wagons must be capable of carrying the following uniformly-distributed loads in the central part:

2.2.2.1. - Type 1 wagon

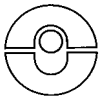
Length of load (m)	Loads resting on 2 supports (in tonnes)
3	16
5	21
11	37

2.2.2.2. - Type 2 wagon

Length of load (m)	Loads resting on 2 supports (in tonnes)
4	22
7	25
10	28
13	33
17	40

2.3 - Equipment

- o 2.3.1. - Covered bogie wagons must be fitted with a wooden floor.
- o 2.3.2. - The side and end walls must be lined either with plywood panels in accordance with *Leaflet 844-3* or with panels made of materials at least equivalent in terms of strength and thermal insulation.
- o 2.3.3. - The inside height of the wagons must be 2,400 m over a width of at least 2,000 m.
- 2.3.4. - Door openings:
 - o 2.3.4.1. - The type 1 wagon shall be built to one of the following two variants:
 - with two door openings 2,150 x 2,500 m on each side, each closed by means of a sliding door which must open from left to right. In this case, the door openings shall be so arranged that, as far as possible, they are situated midway between the centre and the end of the side wall,
 - with one door opening 2,150 m x 4,000 m without centre upright, situated in the centre of each side wall and closed by means of a double sliding door.



- **2.3.4.2.** - The type 2 wagon shall have two door openings measuring 2,150 x 4,000 m without centre upright on each side wall, both of which shall be closed by means of a double sliding door.

The centre-line of each of these openings must be situated approximately midway between the centre and the end of the side wall.

- **2.3.5.** - It must be possible to secure the doors in the maximum open and closed positions. Furthermore, an automatic stopping device for each door leaf must be fitted approximately 0,450 m from the centre-line of the door opening to ensure staff protection in the event of abrupt closing of the door.

2.3.6. - Type 1 wagons may be fitted with end doors.

2.3.7. - Equipment for conveyance of cereals

- **2.3.7.1.** - If the type 1 wagon is intended for the conveyance of cereals in bulk, the following conditions must be met:

- the roof shall be fitted with at least three loading hatches, situated along the centre-line of the wagon. The dimensions of these hatches must be sufficient to encompass an imaginary circle 0,600 m in diameter;
- the floor shall be fitted with hoppers; it must be possible to conceal their upper opening by means of a trap-door. The lower opening of each hopper shall be fitted with an adjustable closing device;
- the design of all openings and their closing devices must ensure the conveyance of cereals in bulk without danger of loss.

2.3.7.2. - As a variant, the sliding doors may be fitted with unloading devices situated at floor level and consisting of two or more sections opening independently of one another. In this case, the wagon need not be provided with trap-doors or hoppers for unloading purposes.

- **2.3.8.** - Ventilation apertures

2.3.8.1. - Type 1 wagons must be fitted with 8 ventilation apertures, 4 on each side wall.

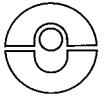
2.3.8.2. - Type 2 wagons must be fitted with 10 ventilation apertures, 5 on each side wall.

2.3.8.3. - The ventilation apertures shall be protected by shutters or fixed gratings and their lower edge shall be at a distance of 1,450 m above the floor level; the total area for the passage of air shall be at least 2 m².

2.3.8.4. - It must be possible to close the ventilation apertures by means of full-boarded shutters which can be operated from the outside of the wagon, sliding vertically and capable of being sealed from outside.

- **2.3.9.** - Type 1 wagons shall be fitted with 16 securing devices (hinged ring or fixed fastening bar) i.e. 8 on each side wall. These devices shall be fixed at a height of 0,350 m above floor level and must not protrude.

- **2.3.10.** - Type 2 wagons shall be fitted with 14 securing devices situated on the side walls, i.e. one at each end of the side walls, one at each door upright and one in the centre of each side wall. These devices shall be situated approximately 1,500 m above floor level. They must be flush with the wall

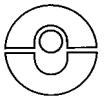


and must be able to withstand a tensile force of 40 kN exerted in a parallel direction to the longitudinal centre-line of the wagon.

o **2.4 - Operating conditions**

2.4.1. - Covered bogie wagons must be capable of running under SS conditions with an axle-load of 20 tonnes. They may be classified in the S category but in this case they must have appropriate technical characteristics so that they can be classified in the SS category simply by adapting the brake.

2.4.2. - It must be possible for the wagons to be worked singly over junction lines with a minimum curve radius of 60 m, irrespective of their load condition.



3 - High-sided open wagons

These wagons shall be one of the following two types:

- type 1 (Eas/Eaos), suitable for a weight on rails of 20 tonnes per axle,
- type 2 (Eanos), suitable for a weight on rails of 22,5 tonnes per axle.

Type 1 and type 2 wagons are standardised.

3.1 - Type 1 wagons (Eas/Eaos)

o 3.1.1 - Main dimensions

- length over buffers	m	14,040
- length of underframe	m	12,800
- minimum inside length of floor	m	12,710
- minimum inside width of floor	m	2,760
- floor area	m ²	35 approx.
- capacity	m ³	71 approx.
- distance between bogie pivots	m	9,00

o 3.1.2 - Load characteristics

3.1.2.1. - Maximum tare: t 22

3.1.2.2. - The wagon must be capable of carrying uniformly-distributed loads and loads resting on two supports, as follows:

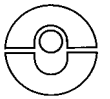
Length of load or distance between supports (m)	Uniformly-distributed loads (in tonnes)	Loads resting on 2 supports (in tonnes)
3	23	26
5	27	30
9	39	80 - tare

3.1.3 - Equipment

o 3.1.3.1. - The floor must be made of wood, of metal or may be composite.

o 3.1.3.2. - The wagon should be built to one of the two following variants:

- two door openings 1,800 m wide on each side wall, each provided with an upper rail,



- three door openings 1,800 m wide on each side wall, each provided with an upper rail.

The doors shall be double doors.

In both these variants, trap-doors in the floor may be provided for the rapid unloading of goods in bulk form.

3.1.3.3. - Each end wall may consist of a movable door pivoting from above to enable the wagon to be unloaded by tipping.

3.1.3.4. - It is recommended that high-sided open wagons be built in such a way as to render them suitable for side tipping at certain installations equipped for this purpose.

- **3.1.3.5.** - No part of the wagon must be more than 3,340 m above rail level.

- **3.1.3.6.** - The following shall be fixed to the outside of the vehicle body:

- 13 securing rings on each side wall,
- 2 securing rings on each end wall.

These should be made of round-bar iron of at least 16 mm diameter and be suitable for sheeting.

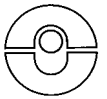
- **3.1.4 - Operating conditions**

It must be possible for the wagon to be worked singly over junction lines with a minimum curve radius of 35 m, irrespective of its load condition.

3.2 - Type 2 wagons (Eanos)

- **3.2.1 - Main dimensions**

- length over buffers	m	15,740
- length of underframe	m	14,500
- minimum inside length of floor	m	14,490
- inside width of floor	m	2,720
- floor area	m ²	39,4 approx.
- capacity	m ³	82,5 approx.
- distance between bogie pivots	m	10,700



o 3.2.2 - Load characteristics

3.2.2.1. - Maximum tare: t 25

3.2.2.2. - The wagon must be capable of carrying uniformly-distributed loads and loads resting on two supports, as follows:

Length of load or distance between supports (m)	Uniformly-distributed loads (in tonnes)	Loads resting on 2 supports (in tonnes)
3	23	26
5	27	30
10,7	39	90 - tare

o 3.2.3 - Equipment

3.2.3.1. - The floor should be made of standard-type sheet steel with a minimum thickness of 6 mm. It must provide water drainage possibilities.

3.2.3.2. - The wagon must comprise two door openings 1,800 m wide on each side wall, incorporating an upper rail and double doors.

3.2.3.3. - It must be possible for the wagon to be side-tipped at purpose-built installations.

3.2.3.4. - No part of the wagon must be more than 3,340 m above rail level.

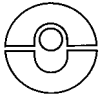
3.2.3.5. - The inside body of the wagon must be fitted with 16 securing devices meeting the following criteria:

- they must be affixed to the walls at a height of approximately 0,200 m above floor level, with 6 devices per side wall and 2 per end wall,
- they must be spaced as regularly as possible,
- they must permit the use of any type of fastening suitable for immobilising the load without having to employ other means,
- they must be able to withstand a tensile force of 40 kN applied at an angle of 45° to the floor surface and 30° to the longitudinal centre-line of the wagon,
- they must be flush with the walls when not in use.

o 3.2.3.6. - The following must be affixed to the outside of the vehicle body:

- 14 securing rings on each side wall,
- 2 securing rings on each end wall.

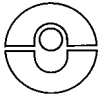
These should be made of round-bar iron at least 16 mm in diameter and be suitable for sheeting. Open-ended hooks must also be fitted underneath the upper rails (8 per side-wall and 2 per end wall).



o 3.2.4 - Operating conditions

It must be possible for the wagon to be worked singly over junction lines with a minimum curve radius of 35 m, irrespective of its load condition.

NB : The possibility of reducing this requirement to 60 m curve radii is being investigated.



4 - Flat wagons

Flat wagons should be one of the following types:

- type 1 (Rs/Res, Rns/Rens),
- type 2 (Rmms/Remms, Rmmns/Remmns).

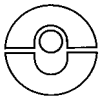
The underframe of these wagons must be designed to allow for the use of a load limit corresponding to a 22,5 t axle-load.

Type 1 and 2 wagons have been standardised.

o 4.1 - Main dimensions

o 4.1.1 - Type 1 wagon

- length over buffers	m	19,900
- length of underframe	m	18,660
- minimum inside length of floor	m	18,500
- minimum inside width of floor:		
• Rs and Rns (without drop sides) at least	m	2,740
• Res and Rens (with drop sides) at least	m	2,640
- floor area	m ²	51 approx.
- height of drop ends	m	0,520
- height of drop sides on Res and Rens wagons	m	0,520
- height above rail level of the loading plane on Res and Rens wagons fitted with drop sides	m	1,235
- distance between bogie pivots	m	14,860



o 4.1.2 - Type 2 wagons

- length over buffers	m	14,040
- length of underframe	m	12,800
- minimum inside length of floor	m	12,640
- minimum inside width of floor on:		
• Rmms and Rmmns wagons without drop sides at least	m	2,900
• Remms and Remmns wagons with drop sides at least	m	2,750
- floor area	m ²	35 approx.
- height of drop ends	m	0,520
- height of drop sides on Remms and Remmns wagons	m	0,520
- distance between bogie pivots	m	9,000

o 4.2 - Load characteristics

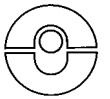
o 4.2.1. - Maximum tare

- type 1 for 20 t axle-loads	t	24
- type 1 for 22,5 t axle-loads	t	25
- type 2 for 20 t axle-loads	t	22,5
- type 2 for 22,5 t axle-loads	t	23

o 4.2.2. - Wagons must be capable of carrying uniformly-distributed loads and loads resting on two supports, as follows:

o 4.2.2.1. - Type 1 wagons for 20 t axle-loads

Length of load or distance between supports (m)	Uniformly-distributed loads (in tonnes)	Loads resting on 2 supports (in tonnes)
2	32	33
5	39	44
9	42	52
15	52	80 - tare
18	80 - tare	28



○ 4.2.2.2. - Type 1 wagon for 22,5 t axle-loads

Length of load or distance between supports (m)	Uniformly-distributed loads (in tonnes)	Loads resting on 2 supports (in tonnes)
2	32	33
5	39	44
9	42	52
15	52	90 - tare
18	90 - tare	28

○ 4.2.2.3. - Type 2 wagon for 20 t axle-loads

Length of load or distance between supports (m)	Uniformly-distributed loads (in tonnes)	Loads resting on 2 supports (in tonnes)
2	35	40
3	41	53
5	49	80 - tare
7	80 - tare	80 - tare
9	80 - tare	80 - tare
12	80 - tare	28

○ 4.2.2.4. - Type 2 wagon for 22,5 t axle-loads

Length of load or distance between supports (m)	Uniformly-distributed loads (in tonnes)	Loads resting on 2 supports (in tonnes)
2	35	40
3	41	53
5	49	64
7	59	64
9	90 - tare	90 - tare
12	90 - tare	28

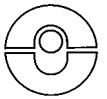
4.3 - Equipment

○ 4.3.1. - Wagons must be fitted with a wooden floor.

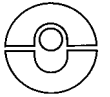
○ 4.3.2. - The floor shall have at least 8 (for type 1) and 6 (for type 2) fold-away bolsters or equivalent devices enabling the wagon to carry both rails and vehicles. For the drop side variant of types 1 and 2, these devices are not obligatory.

○ 4.3.3. - The drop sides and ends, when in the horizontal position, as well as the floor, must be able to withstand a load corresponding to the movement of vehicles over them, under the conditions set out in *Leaflet 577*.

○ 4.3.4. - Each side wall of the wagon should have 8 (for type 1) and 6 (for type 2) pivoting steel stanchions, as shown in Plate 1A of *Leaflet 578*.



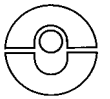
- **4.3.5.** - Each end of the wagon shall have a drop end that opens outwards.
- **4.3.6.** - The side walls may comprise drop sides opening outwards along all or part of the wagon's length.
- **4.3.7.** - When the side walls of wagons are fitted with drop sides, they should under normal circumstances only run with the drop sides raised.
- **4.3.8.** - The wagons shall be fitted with securing devices with the characteristics defined below:
 - rings, made of round-bar iron of at least 16 mm in diameter;
 - fastening bars, made of round-bar iron at least 16 mm in diameter and flush with the inside of each drop side;
 - securing devices in the floor, which must:
 - be evenly distributed along the length of each drop side,
 - permit the use of any type of fastening suitable for immobilising the load without having to employ any other means,
 - be able to withstand a tensile force of 170 kN applied at an angle of 45° to the floor surface and 30° to the longitudinal centre-line of the wagon,
 - not protrude above floor level when not in use;
 - hooks with a cross-section at least equivalent to a diameter of 40 mm and so designed as to avoid loosening of the securing ropes.
- **4.3.9.** - The wagons must be fitted with the securing devices listed below, in accordance with the definitions given under point 4.3.8.
- **4.3.9.1. - Type 1 wagons**
 - Rs and Rns wagons - without drop sides:
 - 36 rings on the side solebars and,
 - 8 rings on the drop ends (outside),
 - 18 hooks on the side solebars.
 - Res and Rens wagons - with drop sides:
 - 36 rings on the side solebars and,
 - 8 rings on the drop ends (outside),
 - 18 fastening bars flush with the inside of the drop sides/ends,
 - 18 securing devices in the floor.
- **4.3.9.2. - Type 2 wagons**
 - Rmms and Rmmns wagons - without drop sides:
 - 24 rings on the side solebars and,
 - 8 rings on the drop ends (outside),
 - 14 hooks on the side solebars.



- Remms and Remmns wagons - with drop sides:
 - 24 rings on the side solebars and,
 - 8 rings on the drop ends (outside),
 - 12 fastening bars flush with the inside of the drop sides/ends,
 - 12 securing devices in the floor.

o **4.4 - Operating conditions**

The wagons must be able to run singly over junction lines with a minimum curve radius of 35 m, irrespective of their load condition.



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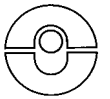
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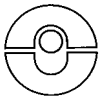
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