

Rules for the consist and braking of international freight trains

*Règles de composition et de freinage des trains de marchandises en trafic international
Zugbildungs- und Bremsvorschriften für internationale Güterzüge*



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Summary

This leaflet sets the requirements for the composition and braking of cross border freight trains according to their braking regime and maximum speed, in order to speed up operations at borders and transfer points.

A method for the statistical analysis of the safety level of new train compositions in comparison with the existing safety level, supported by LCF (longitudinal compressive force) software, is described in Appendix B. The goal of this method is to create an harmonised approach for the definition of composition rules across Europe and the corresponding authorisation at a national level.

1 - Common provisions for all freight trains

o 1.1 - Responsibilities

- The Infrastructure Manager (IM) is required to inform the Railway Undertakings (RUs - see List of abbreviations - [page 19](#)) about current operational rules valid on its network.
- The RUs have to ensure that trains adhere to the path specifications and operational rules. When required, the RUs must be able to inform the IM of the composition and the braking mass/percentage of the train.

o 1.2 - Determination of train length

The total length of freight trains is calculated by adding together the length over buffers of all vehicles including the active locomotives. The length of the train is rounded up to the nearest metre. The length of the train without active locomotives shall not exceed 700 m.

o 1.3 - Tightening of the couplers

The couplers must be tightened so that the buffers are slightly compressed.

o 1.4 - Braked weight percentages

The braked weight percentage for a freight train is calculated by dividing the braked weight of all braked vehicles by the total vehicle weight, including the locomotives in both cases.

o 1.5 - Brake on the first and last vehicle

The first and last vehicle of the train must have an operational automatic brake.

R 1.6 - Braking performance in winter conditions

Procedure for brake operation in winter:

1.6.1 - Definition of winter conditions from a braking perspective

- The temperature is below 0 °C and,
- there is windblown snow on the tracks and/or,
- the tracks are snow or ice-covered.

1.6.2 - Measures to guarantee brake performance

- Before moving stabled trains or parts of trains, a full brake application is to be carried out (pressure drop in main brake pipe ~ 1,5 bar).
- In the case of block-braked trains, during the brake test it should be checked that the blocks on both sides of the train are released prior to leaving the departure station.
- If the train is equipped with magnetic rail brakes, it should be verified that these are functioning correctly (free movement of the magnetic brake mechanism).
- The train driver shall be informed if the train is fitted with disc brakes or composite brake blocks. After leaving the departure station, once approximately 50 % of the timetable speed has been attained, the train driver is to check whether braking performance is satisfactory by carrying out a full brake application, without using the dynamic brake of the locomotive if possible.
- If the train decelerates normally, the brake should immediately be released. If the brake is less effective than expected and if this can be ascribed to the prevailing winter conditions, the brake should be released and then fully applied again, so as to warm up the friction components.

o 2 - Train consist and braked weight percentages

2.1 - Trains with a maximum speed of 120 km/h

2.1.1 - Train consist

These trains must be formed exclusively from:

- wagons marked SS, S**/S*** or 100**/100***, for which the mass of the load does not exceed the maximum load specifications shown next to this mark,
- empty wagons marked both S and 120 - 00,0 t,
- empty passenger stock (RIC coaches and luggage vans) marked with a speed equal to at least 120 km/h,
- passive locomotives which are approved for this speed.

Subject to bilateral or multilateral agreement these trains may also include wagons suitable for use at a running speed of 120 km/h, but which do not meet all conditions specified in the General Contract of Use for Wagons (GCU, Appendix 11 - see List of abbreviations - [page 19](#)) for operation in SS traffic. These wagons shall display an additional table showing the maximum load weight for 120 km h.

2.1.2 - Required braked weight percentages

Braked weight percentages must equal a minimum of:

- 90 % for freight trains ≤ 500 m in length (active locomotives not included),
- 95 % for freight trains more than 500 m in length (active locomotives not included).

2.2 - Trains with a maximum speed of 100 km/h

2.2.1 - Train consist

These trains must be formed exclusively from

- wagons, as defined in point [2.1.1](#);
- wagons bearing the S symbol for which the load weight does not exceed the maximum load shown next to this symbol;
- empty passenger stock (RIC coaches and luggage vans);
- passive locomotives which are approved for this speed.

Subject to bilateral or multilateral agreement these trains may also include wagons suitable for use at a running speed of 100 km/h, but which do not meet all conditions specified in the General Contract of Use for Wagons (GCU, Appendix 11) for operation in S traffic. These wagons shall display an additional table showing the maximum load weight for 100 km/h.

2.2.2 - Required braked weight percentages

Braked weight percentages must equal a minimum of:

- 65 % for freight trains ≤ 500 m in length (active locomotives not included),
- 69 % for freight trains with a length > 500 m and ≤ 600 m (active locomotives not included),
- 72 % for freight trains more than 600 m in length (active locomotives not included).

2.3 - Trains with a maximum speed of 90 km/h

2.3.1 - Train consist

These trains shall be formed exclusively from wagons bearing the RIV sign and empty passenger stock (RIC coaches and luggage vans - see List of abbreviations - [page 19](#)).

Wagons running in trains whose maximum speed may reach 90 km/h must be suitable for this speed and bear the corresponding marks.

2.3.2 - Required braked weight percentages

Braked weight percentages must equal a minimum of:

- 50 % for freight trains ≤ 500 m in length (active locomotives not included),
- 53 % for freight trains with a length > 500 m and ≤ 600 m (active locomotives not included),
- 55 % for freight trains more than 600 m in length (active locomotives not included).