

# UIC Code

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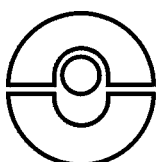
2nd edition, September 2001

*Translation*

**Special provisions concerning fire precautions and fire-fighting measures on motive power units and driving trailers in international traffic**

*Dispositions particulières relatives à la protection et à la lutte contre l'incendie sur les engins moteurs et voitures-pilote en service international*

*Besondere Bestimmungen über Brandverhütung und Feuerbekämpfung für die im internationalen Verkehr eingesetzten Triebfahrzeuge und Steuerwagen*



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

**UIC**

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## Leaflet to be classified in Sections :

IV - Operating

VI - Traction

## Application :

With effect from 1 September 2001

All members of the International Union of Railways

These provisions shall be :

- obligatory with effect from 01.01.1983 for vehicles to be built, likely to be used in international traffic,
- recommandatory for other vehicles,
- obligatory for existing vehicles used in international traffic as regards the stipulations in point 2.

## Record of updates

**1st edition, January 1983**      First issue

**2nd edition, September 2001**      Addition of point 6.

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



## Warning

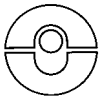
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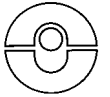
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# Contents

<b>Summary</b> .....	<b>1</b>
<b>1 - Provisions common to motive power units and driving trailers</b> .....	<b>2</b>
1.1 - General guidance, fire resistance of materials and component parts.....	2
1.2 - Installation instructions .....	2
1.3 - Design of the vehicle body.....	3
1.4 - Electrical equipment .....	3
<b>2 - Fire-extinguishers</b> .....	<b>5</b>
<b>3 - Provisions peculiar to combustion-engined motive power units</b> .....	<b>6</b>
3.1 - Electrical equipment .....	6
3.2 - Fire alarm device .....	6
3.3 - Fixed fire-extinguishers.....	6
3.4 - Portable fire-extinguishers .....	6
<b>4 - Provisions peculiar to electric motive power units - portable fire-extinguishers</b> .....	<b>7</b>
<b>5 - Provisions peculiar to driving trailers</b> .....	<b>8</b>
5.1 - Portable fire-extinguishers .....	8
5.2 - Other provisions.....	8
<b>6 - Provisions peculiar to electric motive power units</b> .....	<b>9</b>
<b>Bibliography</b> .....	<b>10</b>



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## Summary

This leaflet shall apply to electric and combustion-engined motive power units and driving trailers used in international traffic.

The present leaflet sets the rules concerning fire precautions and therefore refers in several instances to the provisions of *UIC Leaflet 564-2*.

Points 1 and 3 to 5 are of a recommendatory nature for vehicles built before 1 January 1983.



# o 1 - Provisions common to motive power units and driving trailers

## 1.1 - General guidance, fire resistance of materials and component parts

It is advisable to follow the guidance given in *UIC Leaflet 564-2, paragraphs 2 and 3* as regards general guidance and choosing materials for use in the construction of powered stock and component parts.

In cases where liquefied gas is used, the provisions set out in *UIC Leaflet 564-2, point 4.12* shall apply.

## 1.2 - Installation instructions

**1.2.1.** - The component parts of the motive power unit which give off heat or are exposed to high temperatures (electrical equipment, exhaust pipes, boilers, steam piping, etc.) must be so arranged, lined and insulated that :

1. no accumulation of heat occurs, particularly when powered vehicles are stationary,
2. they are not fouled by oil or fuel, if a pipe breaks or leaks,
3. the lining material in those vehicle sections occupied by passengers, staff and baggage does not attain a temperature exceeding 50°C.
4. the temperature of components situated in the vicinity does not exceed 80°C or 80 % of the ignition temperature (°C.).

**1.2.2.** - Fuel and oil leakages must be avoided. To this end, the number of connections in the supply piping of these products must be as few as possible and the connections used must be leak-proof.

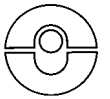
The pipes must be linked to the different parts by screwed connections which are perfectly tight or by means of welding or brazing, except those having a low melting point.

**1.2.3.** - Transmission gear cases must be completely oil-tight in order to avoid leakage of oil under the body and onto the bogies.

**1.2.4.** - Oil or fuel, etc. which may escape from leaks must be collected in easily-emptied receptacles.

Care must be taken to avoid fuel or oil, etc.:

- falling on revolving parts because of consequent atomisation,
- being drawn into any device in suction (e.g. ventilators, condensers, etc.),
- coming into contact with hot components or electrical equipment,
- infiltrating the heat and noise insulation layers of the floor, walls and ceiling,



- fouling the components located underneath the floor (underframe, bogies, etc.). Moreover, the number of instances in which pipes cross the partitions and the floor must be limited and they must be designed to be leak-proof.

### **1.3 - Design of the vehicle body**

**1.3.1.** - The floor and the pipes and cables passing through the floor must not only be designed in such a manner as to impede completely the infiltration of oil or fuel beneath the floor, but must also provide an efficient protection against fire propagation, if a fire occurs underneath the body (underframe or bogies), by the installation for instance of a suitable false floor.

**1.3.2.** - The floor, in the areas located above shoe brakes, disc brakes, etc. must be sufficiently impervious to prevent any incandescent particle from penetrating inside the body.

**NB :** The protection against sparks must be ensured also as regards the cabling system under the body (see *point 1.4.3*).

**1.3.3.** - The underside of the floor and bogies, including the equipment which it incorporates, must be arranged in a way permitting cleaning.

The owning railway's approval of the method used for cleaning the fouled parts is required.

**1.3.4.** - When designing the vehicles, care must be taken to avoid:

- inaccessible corners,
- recesses closing downwards,
- small cavities, etc.

Tubing located above the floor must be placed at a sufficient height to allow for thorough cleaning, particularly in corners.

**1.3.5.** - Special receptacles must be provided for used and oil-impregnated rags.

**1.3.6.** - Non-partitioned areas beneath the roof of vehicles must be divided by means of air-tight partitions preventing fire propagations.

### **1.4 - Electrical equipment**

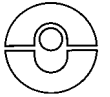
**1.4.1.** - As regards cables, the criteria set out in *UIC Leaflet 895, point 2.4.4.3* must be observed.

Cable junctions must be carried out in such a way that, in service, no unacceptable temperature rise occurs at the junction points.

**1.4.2.** - The protection of cables must be ensured by tubes or conduits made of appropriate materials, unless it is already ensured by their own constitution or by their location.

**1.4.3.** - Electric cables must not be placed in the path of sparks caused by braking, unless they are protected by tubes or sheaths made of suitable materials.

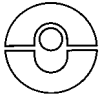
**1.4.4.** - Electric cables must be kept well away from components subjected to high temperatures.



**1.4.5.** - Electric cables placed inside air pipes must be as few as possible and, in any case, must have appropriate characteristics or be efficiently sheathed.

**1.4.6.** - The infiltration or presence of fuel, oil or water in the sheathing of cables, distribution boxes, and boxes housing the terminals of electric generators, must be prevented. To this end, siphons, water outlets, etc. must be provided.





## o 2 - Fire-extinguishers

### Portable fire-extinguishers

- 2.1. - Any driver's cab (of a motive power unit or driving trailer) must be equipped with a portable fire-extinguisher, the capacity of which must comply with points 3.4 - page 6, 4 - page 7 and 5.1 - page 8.
- 2.2. - Portable extinguishers must be painted red, placed in driver's cabs or in service compartments which are directly communicating with them, in places which are easily visible and readily accessible in cases of emergency.
- 2.3. - The extinguishers must be positioned in such a way that they are not subjected to temperatures in excess of the permissible level. They must remain operative down to a temperature of - 20°C.
- 2.4. - It must be possible to start or to stop the extinguishers, at will, by hand, during fire fighting operations and to set them into operation without having to turn them upside down.
- 2.5. - All extinguishers must be of a type approved for fighting fires in electrical installations.



## **3 - Provisions peculiar to combustion-engined motive power units**

### **o 3.1 - Electrical equipment**

The electrical equipment must be housed in places sealed off by means of partitions made of non-inflammable or flameproof materials, unless the casing of equipment is in one of these materials.

### **o 3.2 - Fire alarm device**

**3.2.1.** - The places where the engines are housed must be fitted with devices that are set off automatically when the temperature inside the engine room becomes excessive.

**3.2.2.** - The devices, on starting, shall set off an alarm signal in the occupied cab.

**3.2.3.** - The alarm device, on starting, must not cause the traction effort to stop; failing this, agreements must be entered into between the various railways concerned.

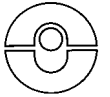
**3.2.4.** - It must be possible for the driver to block the fuel inflow himself and stop the diesel engine without having to enter the engine room.

### **R 3.3 - Fixed fire-extinguishers**

Isolated engine rooms may be fitted with a fixed fire-extinguisher, operable without it being necessary to enter the engine room, for use in putting out fire inside the engine room (for example by filling the engine room with an inert gas or foam).

### **o 3.4 - Portable fire-extinguishers**

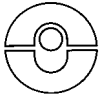
The fire-extinguishers defined in point 2 - page 5, which are positioned in both driver's cabs, must have a total capacity of at least 14 kg per motive power unit.



## o 4 - Provisions peculiar to electric motive power units - portable fire-extinguishers

The fire-extinguishers defined in point 2 - page 5 must represent, in each driver's cab, a capacity of at least 5 kg, either in one single unit or, preferably, in two units, e.g. one large capacity fire-extinguisher and one small capacity extinguisher (1 kg).

The total capacity shall, however, be raised to 10 kg if the driver's cab is or may be the only one in the motive power unit.



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## o 5 - Provisions peculiar to driving trailers

### 5.1 - Portable fire-extinguishers

A fire-extinguisher with a capacity of at least 4 kg must be available in the driver's cab or in a directly-adjointing service compartment (e.g. baggage compartment).

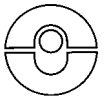
### 5.2 - Other provisions

The regulations laid down in *UIC Leaflet 564-2* shall apply for other compartments.



## 6 - Provisions peculiar to electric motive power units

- **6.1.** - Fully-enclosed compartments for electrical equipment and for motive power units controlled remotely, such as unit power plant, high and medium high voltage rooms, etc. must be fitted with devices capable of detecting fire.
- **6.2.** - Should the detection system be triggered, this must be signalled in all the driver's cabs occupied in the train by activation of an optic and acoustic signal.
- **6.3.** - The device must prompt a shut-down of the systems ventilating and supplying electricity to the equipment concerned (without impinging upon the train's residual capacity for traction).
- 6.4.** - If the operating conditions demand the installation of an extinction system (for example in long tunnels, etc.), the system must comply with the rules in the following points **6.5 - page 9** to **6.11 - page 10**.
- 6.5.** - If an extinction system is in place, activation of the detection system must also be signalled in the service corridors of the vehicle struck by fire by means of an optic and acoustic signal.
- 6.6.** - Extinction systems may be of the semi-automatic type, in line with point **3.3 - page 6**, or of the automatic type.
- 6.7.** - It is recommended that automatic extinction systems be used on rolling stock with more than one motive power unit.
- 6.8.** - If the extinction system is of the semi-automatic type, it must be possible to control it from the manned motive power unit and from the remote-controlled motive power unit.  
  
Should the remote control system fail, the extinction installation on a remote-controlled motive power unit must still function automatically on detection of a fire.
- 6.9.** - With a view to ensuring that the extinction installation will work in all instances, it is recommended that an operating control also be located on the outside of each side of the motive power unit in a position which is accessible for staff on the ballast.
- 6.10.** - It must be possible to switch off the detection and extinction installations on motive power units simultaneously and individually from each motive power unit.  
  
It must still be possible to control the extinction installation on the remote-controlled motive power unit when the extinction installation on the motive power unit being used for driving has been switched off.
- 6.11.** - The product used for fire extinction must have a low impact on the environment and should not have noxious effects on staff who might accidentally come in contact with it. The extinction product should not damage the equipment with which it comes in contact.



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