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**RID : 16<sup>e</sup> session du Groupe de travail permanent de la Commission d'experts du RID**  
(Londres, 20-23 novembre 2023)

**Objet : Modification de la référence à la fiche UIC 472 au 1.4.2.2.7 (Obligation du transporteur d'informer le conducteur de la position des marchandises dangereuses dans le train)**

**Proposition de l'Union internationale des chemins de fer (UIC)**

## Introduction

1. La fiche UIC 472 « Bulletin de freinage, liste de composition pour l'agent de conduite et exigences à respecter pour l'échange des informations nécessaires à la production du fret ferroviaire », à laquelle fait référence le 1.4.2.2.7, a été révisée en 2022 et renommée IRS 40472 « *Braking sheet, consist list for locomotive drivers and requirements for the exchange of data necessary to the operation of freight rail services* » (voir annexe).
2. L'IRS 40472 est entrée en vigueur en septembre 2022 et n'a été publiée par l'UIC qu'en langue anglaise. À un ajout près, elle prévoit les mêmes informations sur les marchandises dangereuses à indiquer obligatoirement dans le bulletin de freinage et la liste de composition du train que la fiche UIC 472, à savoir :

### **Bulletin de freinage [Appendix A: Contents of the braking sheet for an international freight train]**

- Marchandise dangereuse : oui ou non (*Field Number 10*)

### **Liste de composition du train [Appendix B: Contents of the wagon list (wagons and inactive locomotives) for an international freight train]**

- Position du wagon dans le train (*Field Number 45*)
- Numéro de wagon (*Field Number 46*)
- Numéro ONU (*Field Number 54*)
- Numéros des modèles d'étiquette de danger (*Field Number 54*)
- Marchandises dangereuses emballées en quantités limitées de plus de 8 tonnes (*Field Number 54*)

Nouveau :

- Numéro d'identification du danger (*Field Number 54*)

3. Ces mentions et les explications y afférentes figurent également à l'appendice C (**Appendix C: Braking sheet and wagon list template**).

### Proposition

4. Le 1.4.2.2.7 est reformulé comme suit (le texte supprimé est barré et le texte ajouté est en gras) :

« **1.4.2.2.7** Avant le départ, le transporteur doit informer le conducteur du train des marchandises dangereuses chargées et de leur position dans le train.

Il est réputé satisfait aux dispositions du présent paragraphe si les annexes A, ~~et B et C de la fiche UIC 472<sup>21)</sup> (« Bulletin de freinage, liste de composition pour l'agent de conduite et exigences à respecter pour l'échange des informations nécessaires à la production du fret ferroviaire »)~~ **de l'IRS 40472 (« Braking sheet, consist list for locomotive drivers and requirements for the exchange of data necessary to the operation of freight rail services »)** <sup>21)</sup> sont appliquées.

<sup>21)</sup> ~~Édition de la fiche UIC applicable à partir du 1<sup>er</sup> juillet 2015. Édition de l'IRS (*International Railway Solution*) applicable à compter de septembre 2022. »~~

**Justification** (voir document informel INF.5 de la 4<sup>e</sup> session du Groupe de travail permanent de la Commission d'experts du RID – Madrid, 17-20 novembre 2014)

5. Comme celles de la fiche UIC 472, les indications sur les matières dangereuses prévues dans l'IRS 40472 répondent au besoin d'information du personnel de conduite. Celui-ci doit savoir si le train comporte des marchandises dangereuses et à quel endroit. Par ailleurs, en cas d'accident ou d'incident, il devrait pouvoir prendre les mesures nécessaires conformément aux consignes écrites (notamment à l'aide des modèles d'étiquette de danger), sans avoir à se rapprocher des wagons pour lire les plaques-étiquettes et les marquages.
6. Les exigences en matière d'information au sens du 1.4.3.6 b) et les obligations énumérées au 1.4.2.2.5 sont remplies si le numéro ONU et la présence de quantités limitées de plus de 8 tonnes sont indiqués. Dès lors, les renseignements détenus par le personnel de conduite à travers le bulletin de freinage et la liste de composition du train peuvent également, en cas de nécessité, être mis rapidement et sans restriction à la disposition du gestionnaire d'infrastructure (responsable des interventions d'urgence) et/ou des services d'intervention à titre d'information initiale (cf. 5.4.3.4 « Consignes écrites selon le RID », 5<sup>e</sup> tiret).
7. L'obligation de mettre à disposition du gestionnaire de l'infrastructure (responsable des interventions d'urgence) et/ou des services d'intervention les documents de transport éventuellement présents en cabine de conduite et contenant des informations détaillées sur les marchandises dangereuses au sens du chapitre 5.4 du RID ne s'en trouve pas affectée. De même, il reste possible de transmettre ces données par voie électronique (cf. 5.4.3.4 « Consignes écrites selon le RID », 6<sup>e</sup> tiret).

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**Braking sheet, consist list for locomotive drivers and requirements for the exchange of data necessary to the operation of freight rail services**



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## Foreword

An International Railway Solution (IRS) is a document drawn up by consensus and applied on a voluntary basis which aims to facilitate and harmonise railway operation.

IRSs are gradually replacing UIC leaflets.

Members of the International Union of Railways (UIC) participate in the creation of IRSs, of which they benefit in full. Furthermore, marketing to railway stakeholders contributes to the sharing and harmonisation of good practices, in accordance with UIC's primary goal.

While IRSs do not have the force of law, they are created and published in a professional manner and with technical approval on the basis of UIC procedures, and have full technical legitimacy in the railway sector.

The "General application" section constitutes the heart of the IRS and contains the working group's expertise applicable in the broadest manner. The addition of a "Specific application" aims to cover factors specific to a region, a type of service, etc.

Some provisions shall be implemented in all cases to ensure correct application and maintain the system's cohesiveness. Certain operational circumstances require that specific provisions be systematically applied by all users of the document.

For the purposes of understanding, the user acknowledges that the expression of:

- obligation indicates requirements to be respected in order to comply with the expertise expressed in the document (usually "shall");
- recommendation indicates options that are favourable but not essential (usually "should");
- permission indicates options that are recognised but without consequence (usually "may");
- capacity indicates possibilities from a technical standpoint and not permissions or probabilities (usually "can").

Obligation, recommendation and capacity can be expressed in the negative to indicate prohibiting, non-recommendation and incapacity.

If applicable, notably for the purposes of compliance with a UIC approval, passages that are recommended or mandatory for the cohesiveness of the system will be accompanied by the letters "R" and "MCS" respectively.

**This IRS reflects the following UIC working group expertise:**

OSG - Operation Study Group

## Executive summary

The revised *IRS 40472* remains a key part of ensuring interoperability between railway undertakings (RUs), and is thus indispensable in simplifying operating procedures at borders or handover points.

Practice has showed, however, that the IRS needed to be revised and aligned with needs arising from the use of information technology (IT), and with national production requirements. In particular, the new version distinguishes between those requirements governing data transmission via IT interfaces and those governing driver information.

Further, the content of this leaflet could serve as a template for a train formation standard in the shape of an appendix to the Operations TSI (under the heading "Formation of freight trains").



## Field of application

This IRS deals with minimum requirements necessary to be met by the driver's braking sheet and consist list and by the electronic data exchanged between RUs.

This IRS contains template documents for the train's braking characteristics and consist, containing all the necessary information about the train's braking characteristics and speed, as well as the consist list of the hauled vehicles forming the rake, containing as a minimum the information needed by the driver to operate the train safely.

This IRS doesn't deal with all other operational purpose information needed by the Railway Undertaking or the Infrastructure Manager. Such information is to be exchanged electronically, independently of the documents present on the train.

## Reference documents

The following documents are cited in this IRS or strongly support its requirements and recommendations:

### 1. UIC Leaflets

#### International Union of Railways (UIC)

- [1] *UIC Leaflet 404-2: Compendium of the data to be exchanged between Railway Undertakings (RUs) for the purpose of conveying freight traffic*, 5th edition, May 2005
- [2] *UIC Leaflet 419-2: Systematic numbering of international freight trains*, 3rd edition, April 2011

### 2. Miscellaneous

#### International Rail Transport Committee (CIT)

- [3] *Convention concerning International Carriage by Rail (COTIF) - Appendix C - Regulation concerning the International Carriage of Dangerous Goods by Rail (RID)*, Valid from 1 January 2013

#### European Community (EC)

- [4] *2006/920/EC: Commission Decision of 11 August 2006 concerning the technical specification of interoperability relating to the subsystem Traffic Operation and Management of the trans-European conventional rail system*, August 2006

#### CEN (European Committee for Standardization)

- [5] *EN 14198+A1: Railway applications - Braking - Requirements for the brake system of trains hauled by locomotives*

## Abbreviations and Symbols

<b>CBB</b>	Composite Bake Blocks
<b>CEN</b>	European Committee for Standardization
<b>CIT</b>	International Rail Transport Committee
<b>COTIF</b>	Convention concerning International Carriage by Rail
<b>EBO</b>	Eisenbahn-Bau- und Betriebsordnung (German Railway Regulation)
<b>EC</b>	Exceptional Consignment
<b>EVN</b>	European Vehicle Number
<b>HERMES</b>	Handling through European Railways Message Electronic System (Electronic data transmission system of the European railways)
<b>ID</b>	Identification
<b>IM</b>	Infrastructure Manager
<b>IRS</b>	International Railway Solution
<b>IT</b>	Information Technology
<b>LOB</b>	Length Over Buffers
<b>LQ</b>	Limited Quantity
<b>MS</b>	Maximum Speed
<b>RailData</b>	UIC special group which develops and runs IT services for European RUs
<b>RID</b>	Regulation concerning the International Carriage of Dangerous Goods by Rail
<b>RU</b>	Railway Undertaking
<b>TSI</b>	Technical Specification for Interoperability
<b>UBS</b>	Unified Braking Scheme
<b>UIC</b>	International Union of Railways
<b>UN</b>	United Nations
<b>Xrail</b>	Alliance of seven RUs working on European Single Wagonload

# Concepts, terms and definitions

The subject of the glossary below is:

## 1. Brake setting

The brake setting (also referred as brake mode, brake regime or brake position) depends on the brake position selected for the locomotive and for the vehicles. They can be:

P brake mode (or brake position) of rapid-acting brake (passenger train)  
loco and all wagons in brake mode P (P-mode)

Sub regimes of P:

GP brake mode G for the loco and all wagons in brake mode P (or P-mode)  
P + LL long Locomotive brake mode, i.e., loco and first 5 wagons in G-mode,  
other wagons in P-mode (this brake mode sometimes is referred as LL)

G brake mode (or brake position) of slow-acting brake (freight train)  
loco and all wagons in brake mode G (G-mode)

R brake mode for passenger trains and fast freight trains  
It is a combination of brake mode P and a specified minimum brake mass percentage

## 2. Infrastructure Manager

Any public organisation or private company that is authorised to provide railway infrastructure for the operation of freight or passenger rail services, and which undertakes to manage the construction and maintenance of the railway infrastructure. The infrastructure manager also takes charge of the operation of the associated train control and signalling systems, plus the associated equipment for the provision of traction current on each line.

## 3. Railways

Railways are public institutions or privately organised companies that perform railway transport services and operate railway infrastructure.

## 4. Railway infrastructure

The railway infrastructure covers the operations facilities of the railways including the traction current supply lines.

## 5. Railway Undertaking

Any public undertaking or private company that is authorised to perform freight or passenger rail services on railway infrastructure.

**Braking sheet, consist list for locomotive drivers and requirements for the exchange of data necessary to the operation of freight rail services**

# **General Application**

# 1 – Objectives

One of the fundamental requirements for interoperability is that an international freight train be covered by the same braking sheet and consist list all along its route.

The purpose of this IRS ([see Abbreviations and Symbols - page 5](#)) is to enable international freight trains to cross borders faster, or indeed without stopping at all, by defining the minimum requirements to be met by the driver's braking sheet and consist list and by the electronic data exchanged between RUs ([see Abbreviations and Symbols](#)). Using documents produced in line with these rules, it is ensured that the production data necessary for execution of the service has been recorded and is available. This avoids having to produce a new braking sheet and consist list when trains:

- cross a border;
- are handed over from one RU to another.

## 2 – Principles

With regard to the train's braking characteristics and consist the RU shall, at the departure station, issue the driver of an international train with the following documents:

- the braking sheet, containing all the necessary information about the train's braking characteristics and speed;
- the consist list of the hauled vehicles forming the rake, containing as a minimum the information needed by the driver to operate the train safely.

Provided they have been properly filled out, these two documents shall remain valid:

- either along the whole route of the train, if both the consist and the braking characteristics are unchanged;
- or until the first point on the route where modification is made to either the consist and/or braking characteristics. As an exception, a single document can still be used in case it is possible to clearly differentiate in the document on which part of a route a particular information is valid.

All other information needed by the RU or IM (see [Abbreviations and Symbols - page 5](#)) for operational purposes is to be exchanged electronically, independently of the documents present on the train.

The documents must be suitable for use in international traffic, including trains running between countries where the brake performance calculation rules differ. Therefore, the documents must always contain unmodified braked weight values that have not been adjusted due to national rules. The particularities required in a single country can be reflected in separate fields that refer to that particular stretch of a train run.

## 3 – Application

The Braking Sheet and Wagon List provided in [Appendix C - page 20](#) shall be acceptable for use along the whole of the train's route, provided that the conditions specified under [point 2 - page 9](#) are fulfilled. If these conditions cease to be fulfilled, the carrier RU shall determine how the document(s) is (are) to be updated.

RUs may define in an operational agreement (e.g. a production contract) which of the following data they wish to use in addition to the necessary operational and safety-critical information, as far as this data is available electronically:

- optional data from the consist list;
- any further information to be added.

These arrangements must not, however, lead to delays or additional inspections at borders or handover points.

RUs shall use the templates provided in [Appendix C](#) for the presentation of data. The mandatory data and field names provided in [Appendix A - page 13](#) and [Appendix B - page 17](#) are to be indicated as a minimum. Further information may also be provided, though this may not be of relevance for recognition of the consist list. Information may be provided in one or more languages. If more than one language is used, the original language is to be used on the front of the page, with the other language(s) listed in a table on the rear.

RUs shall resolve the issues pertaining to which languages are to be used, and to the handover of documents at handover points, in an operating agreement.

For the electronic exchange of production data, RUs shall use the HERMES ([see Abbreviations and Symbols - page 5](#)) 30 message in accordance with *UIC Leaflet 404-2* ([see Reference documents - page 4](#)). In other instances, the simplified data entry procedure for Hermes messages via RailData ([see Abbreviations and Symbols](#)) is to be used wherever possible.



## 4 – Rounding

When indicating lengths, weights and forces, the following principles are to be applied for rounding:

- the total weight of all the loads carried by the vehicles is to be calculated precisely in kilograms and rounded up to the nearest full tonne;
- the total length of the full rake of vehicles is to be calculated precisely in centimetres and rounded up to the nearest full metre;
- the total weight of the full rake of vehicles is to be calculated precisely in kilograms and rounded up to the nearest full tonne;
- braked weights are given in full tonnes. Any reductions are to be rounded up and then subtracted from the available braked weight. The braked weight percentage calculated is to be rounded down to the nearest whole number;
- the available holding force is to be expressed for each vehicle in the consist in kN to one decimal place; the total for the rake is to be calculated by adding these together and rounding down to the nearest whole value in kN.

## **5 – Management of the IRS**

The IRS is managed by the UIC Operations Study Group, represented by the Chairman of mentioned group. Any amendments to the leaflet are to be approved by the UIC Freight Forum.

## Appendix A: Contents of the braking sheet for an international freight train

Necessary operational and safety-critical data in an interoperable braking sheet as per <i>IRS 40472</i>				
Field number	Field name	Field description	Mandatory	Optional
1	Issuing RU	The RU issuing the braking sheet	X	
2 <sup>1</sup>	Train number	The number of the train valid at departure from the station specified in field 4a	X	
3 <sup>1</sup>	Departure date	The departure date of the train valid at departure from the station specified in field 4a	X	
4a	Valid from station	The station from which the braking sheet is valid	X	
4b	Valid to station	The station until which the braking sheet is valid	X	
5	Country code	ISO codes of countries in which the braking sheet is valid	X	
6	Train profile	The train index (e.g., ME100). In the absence of index the timetabled train type (e.g. P or G). In Switzerland the "Zugreihe" and "Bremsreihe" (e.g., A50). Provided per country	X	
7	$v_{max}$ , km/h	The maximum technically allowed speed of the train considering the train profile and speed limits applied to vehicles in the train. Provided per country	X	
8	Remarks during the journey	Space for remarks about incidents and observations during the journey		X
9	Special features of the train	Direct explanations or references to attached documents that describe the special features of the train		X
10	Dangerous goods in train	Tick if there are any goods with RID (see <a href="#">Abbreviations and Symbols - page 5</a> ) marking in the train	X	
11	Exceptional consignment in train	Tick if there are any shipments in the train that are marked as exceptional consignment	X	
12	Additional documents about restrictions added	Tick if there are additional documents added to the brake sheet that describe further restrictions applying to the train	X	
13	Waste shipments in train	Tick if there are waste transports in train	X	
14	Required line classification	The highest railway line classification required by vehicles present in the train according to their loading condition. For the range of A-C only a letter (e.g., C) is to be given, starting from line class D also a number (e.g., D2) must be provided	X	

Necessary operational and safety-critical data in an interoperable braking sheet as per <i>IRS 40472</i>				
Field number	Field name	Field description	Mandatory	Optional
15	Brake setting (see <a href="#">Concepts, terms and definitions - page 6</a> )	Brake setting of the train to be ticked: "G", "P", "GP" (locomotives in G and wagons in P), "P+LL" (Long Locomotive) or "R"	X	
16a / 16c <sup>2</sup>	Valid from station	The station from which the train parameters are valid, written in text	X	
16b / 16d <sup>2</sup>	Valid to station	The station until which these train parameters are valid, written in text	X	
17a / 17c <sup>2</sup>	# of first wagon	The number of the first wagon after the locomotive on the given stretch	X	
18a / 18c <sup>2</sup>	# of last wagon	The number of the last wagon in the wagon rake on the given stretch	X	
19 <sup>3</sup>	Count (pcs)	The counted number of vehicles in train	X	
20 <sup>3</sup>	Length (m)	The summed length over buffers of vehicles in the train, given in whole meters (rounded up)	X	
21 <sup>3</sup>	Hand brake holding force (t / kN)	The summed hand brake holding force of vehicles that have hand brakes, either only in kN or in tons as well as kN (rounded down). Tons and kN are to be separated by a slash '/' sign. The hand brake holding force of the locomotive may only be included in case it remains coupled to the train at all times when stopped en route	X	
22 <sup>3</sup>	Braked weight after deduction (t)	The braked weight of vehicles in train after foreseen deductions, given in whole tons (rounded down). In case electrodynamic brakes (E-brakes) are also included in the braked weight calculation, the value with and without E-brakes is to be provided, separated by a slash '/' sign. E-brakes may only be included in case the rolling stock used and the infrastructure conditions ensure that E-brakes are available at all times when braking a moving train	X	
23 <sup>3</sup>	Gross weight (t)	The gross weight of vehicles in the train, given in whole tons (rounded up).	X	
24	Available brake (%)	The available brake ratio of this train, given in %	X	
25	Required brake (%)	The highest required brake ratio on the foreseen route for this train, given in %	X	
26	Missing brake (%)	The missing brake ratio, given in % points. To be filled in case the available brake ratio remains below the highest required brake ratio, thus demanding operation in degraded mode	X	
27	% of braked weight braked by cast iron blocks	The proportion of braked weight that is provided by wagons braked by using cast iron blocks, given in %	X	

Necessary operational and safety-critical data in an interoperable braking sheet as per IRS 40472				
Field number	Field name	Field description	Mandatory	Optional
28	Seq.	The sequence of the locomotive in train consist, starting from the head of the train. Counting starts with 1	X	
29	Number	Locomotive EVN (see Abbreviations and Symbols - page 5) number according to the UIC standard coding, digit groups (1-2, 3-4, 5-8, 9-11 and 12) are to be separated by a space	X	
30	Class	Locomotive class	X	
31	# of axles	The counted number of axles the locomotive has	X	
32	Length over buffers (m)	Length over buffers of the locomotive, given in meters with two digits after comma	X	
33	Gross weight (kg)	Gross weight of the locomotive, given in kg	X	
34	Brake block type	The type of brake blocks used in the locomotive, abbreviations to be used: K - K-blocks L - L-blocks LL - LL-blocks D - disc brakes F - cast iron blocks	X	
35	Brake position	The brake position set at the given locomotive (G, P, E), several brake systems to be marked by using a plus '+' sign (e.g., P+E)	X	
36	Braked weight (t)	The braked weight of the locomotive as applicable for the given brake position, given in tons (rounded down)	X	
37	Remarks	Any further remarks about the locomotive in a free text form (e.g., a comment that the locomotive is at the rear or middle of the train)		X
38	Date of issue	The date on which the brake sheet was created	X	
39	Time of issue	The time at which the brake sheet was created	X	
40	Issued by	The name and signature of the person who created the brake sheet. Alternatively, an ID (see Abbreviations and Symbols) code or any other reference can be used that ensures the user is traceable in the IT (see Abbreviations and Symbols) system of the RU issuing the document	X	
41	Date of review	The date on which the brake sheet was either enhanced, corrected or additionally checked, should this be necessary		X

Necessary operational and safety-critical data in an interoperable braking sheet as per <i>IRS 40472</i>				
Field number	Field name	Field description	Mandatory	Optional
42	Time of review	The time at which the brake sheet was either enhanced, corrected or additionally checked, should this be necessary		X
43	Reviewed by	The name and signature of the person who performed the enhancement, correction or additional check. Alternatively, an ID code or any other reference can be used that ensures the user is traceable in the IT system of the RU issuing the document		X
44	Remark	An explanation in free text describing the reason why fields 41-43 were used		X

1. This information is repeated in the header of each page.
2. Fields 16-18 are to be used for indicating the stretch for which the data in fields 19-27 is valid, should train parameters change en route. Several stretches are to be used in case the creation of a new brake sheet is not possible.
3. Fields 19-23: data to be provided for:
  - a / c: active locomotives in the train
  - b / d: wagons and inactive locomotives in the train
  - a+b / c+d: the overall total of vehicles in train

## Appendix B: Contents of the wagon list (wagons and inactive locomotives) for an international freight train

Interoperable wagon list containing safety-critical data for the train run as per <i>IRS 40472</i>				
Field number	Field name	Field description	Mandatory	Optional
45	Seq.	The sequence of the wagon in the wagon rake (active locomotives are not counted). Counting starts with 1	X	
46	Number	Wagon EVN number according to the UIC standard coding, digit groups (1-2, 3-4, 5-8, 9-11 and 12) are to be separated by a space	X	
47	# of axles	The counted number of axles the wagon has	X	
48	Length over buffers (m)	Length over buffers of the wagon, given in meters with two digits after comma	X	
49	Weight of load (kg)	Weight of load on the wagon, given in kilograms	X	
50	Gross weight (kg)	Gross weight of the wagon, given in kilograms	X	
51	Brake block type	The type of brake blocks used in the wagon, abbreviations to be used: K - K-blocks L - L-blocks LL - LL-blocks D - disc brakes F - cast iron blocks	X	
52	Braked weight (t)	The braked weight of the wagon before foreseen deductions, given in tons (rounded down). For P-wagons the column P is to be filled, for G-wagons and M-wagons (Matrosov brakes) the column G is to be filled. In case of Matrosov brakes an additional remark 'Matrosov' is to be made in field 59. In case of inactive brakes a minus '-' sign is to be used	X	
53 <sup>1</sup>	Hand brake holding force (t / kN)	The hand brake holding force of the vehicle in case it has hand brakes, either only in kN or in tons as well as kN (all rounded down). Tons and kN to be separated by a slash '/' sign. In case of no hand brakes available, a minus '-' sign is to be filled in	X	

Interoperable wagon list containing safety-critical data for the train run as per IRS 40472				
Field number	Field name	Field description	Mandatory	Optional
54	RID	The RID UN (see Abbreviations and Symbols - page 5) Numbers, Hazard Numbers and Danger Labels applying to the goods in the wagon are mandatory. It's also mandatory to indicate dangerous goods packed in limited quantities in excess of 8 tonnes (LQ - see Abbreviations and Symbols). In that case, a remark "LQ" must be added to column "UN No". In case several RID codes apply then additional rows shall be used for the same wagon. In case of no RID a minus sign '-' is to be used	X	
55	Exceptional consignment	Tick if there is a shipment in the wagon that is marked as an exceptional consignment, i.e., there is a permission number present. In case it is an exceptional consignment only in some countries, a remark is to be made in field 59	X	
56	Destination	The destination station name of the wagon, written in text	X	
57	$v_{max}$ , km/h	The maximum permitted speed of the wagon according to the wagon (**, ***) and load condition, given in km/h. Statements about potential country-specific speed limits are to be filled in field 59	X	
58	Required line classification	The railway line classification required for this wagon according to its loading condition. For the range of A-C only a letter (e.g., C) is to be given, starting from line class D also a number (e.g., D2) must be provided	X	
59	Remarks	Any further remarks about the wagon in free text form, e.g., statements about goods with specific risk on board or potential country-specific speed limitations for certain wagons		X
60	Date of issue	The date on which the wagon list was created	X	
61	Time of issue	The time at which the wagon list was created	X	
62	Issued by	The name and signature of the person who created the wagon list. Alternatively, an ID code or any other reference can be used that ensures the user is traceable in the IT system of the RU issuing the document	X	
63	Date of review	The date on which the wagon list was either enhanced, corrected or additionally checked, should this be necessary		X
64	Time of review	The time at which the wagon list was either enhanced, corrected or additionally checked, should this be necessary		X



Interoperable wagon list containing safety-critical data for the train run as per <i>IRS 40472</i>				
Field number	Field name	Field description	Mandatory	Optional
65	Reviewed by	The name and signature of the person who performed the enhancement, correction or additional check. Alternatively, an ID code or any other reference can be used that ensures the user is traceable in the IT system of the RU issuing the document		X
66	Remark	An explanation in free text describing the reason why fields 63-65 were used		X

1. Holding force of a vehicle compared with the lower value obtained from a comparison of the holding force indicated on the wagon with the share of gross weight resting on hand braked wheelsets.

# Appendix C: Brake sheet and wagon list template

This template is an example of how an interoperable braking sheet and wagon list can be laid out. It has been developed and agreed on the context of the Unified Braking Scheme project and works as basis for RU IT adaptation & implementation.

Train number: _____ Departure date: _____									
<b>International brake sheet and wagon list</b>								5. Country code	
1. Issuing RU		2. Train number		3. Departure date		6. Train profile:			
4a. Valid from station			4b. Valid to station			7. $v_{max}$ , km/h:			
<b>Train parameters</b>									
8. Remarks during the journey					9. Special features of the train				
<input type="checkbox"/> 10. Dangerous goods in train <input type="checkbox"/> 11. Exceptional consignment in train <input type="checkbox"/> 12. Additional documents about restrictions added <input type="checkbox"/> 13. Waste shipments in train		16a. Valid from station		16b. Valid to station		16c. Valid from station		16d. Valid to station	
		17a. # of first wagon		18a. # of last wagon		17c. # of first wagon		18c. # of last wagon	
		a	b	a+b	c	d	c+d		
		Active locomotives	Wagons and inactive locomotives	Total	Active locomotives	Wagons and inactive locomotives	Total		
19. Count, pcs									
20. Length, m									
21. Hand brake holding force, t / kN									
22. Braked weight after deduction, t									
23. Gross weight, t									
14. Required line classification 15. Brake setting <input type="radio"/> G <input type="radio"/> P <input type="radio"/> GP <input type="radio"/> P+LL <input type="radio"/> R		24. Available brake %:				24. Available brake %:			
		25. Required brake %:				25. Required brake %:			
		26. Missing brake %:				26. Missing brake %:			
		27. % of braked weight braked by cast iron blocks:				27. % of braked weight braked by cast iron blocks:			
<b>Active locomotives in train</b>									
28. Seq.	29. Number	30. Class	31. # of axles	32. Length over buffers, m	33. Gross weight, kg	34. Brake block type	35. Brake position	36. Braked weight, t	37. Remarks
1									
2									
3									
4									
5									
38. Date of issue		39. Time of issue		40. Issued by					
41. Date of review		42. Time of review		43. Reviewed by				44. Remark	

### Field explanations:

1.	The RU issuing the brake sheet.	
2.	The number of the train valid at departure from the "Valid from station" (field 4a). This information is repeated in the header of each page.	
3.	The departure date of the train valid at departure from the "Valid from station" (field 4a). This information is repeated in the header of each page.	
4a.	The station from which this brake sheet and wagon list is valid, written in text.	
4b.	The station until which this brake sheet and wagon list is valid, written in text.	
5.	ISO codes of countries in which this brake sheet is valid, fields 6 and 7 are to be filled according to the given country.	
6.	The train index (e.g. ME100). In the absence of index the timetabled train type (e.g. P or G). In Switzerland the "Zugreihe" and "Bremsreihe" (e.g. AS0). Provided per country.	
7.	The maximum technically allowed speed of this train consist by considering the train profile and speed limits applied to vehicles in the train. Provided per country.	
8.	Space for remarks about incidents and observations during the journey.	
9.	Direct explanations or references to attached documents that describe the special features of the train.	
10.	Tick if there are any goods with RID marking in the train.	
11.	Tick if there are any shipments in the train that are marked as exceptional consignment (i.e. permission number present).	
12.	Tick if there are additional documents added to the brake sheet that describe further restrictions applying to the train.	
13.	Tick if there are waste transports in train.	
14.	The highest railway line classification required by vehicles present in the train according to their loading condition. For the range of A-C only a letter (e.g. C) is to be given, starting from line class D also a number (e.g. D2) must be provided.	
15.	Brake setting of the train to be ticked: "G", "P", "GP" (locomotives in G and wagons in P), "P+LL" (Long Locomotive) or "R".	
16a. / 16c.	The station from which the train parameters are valid, written in text.	Fields 16-18 are to be used for indicating the stretch for which the data in fields 19-27 is valid, should train parameters change en route. Several stretches are to be used in case the creation of a new brake sheet is not possible.
16b. / 16d.	The station until which these train parameters are valid, written in text.	
17a. / 17c.	The number of the first wagon after the locomotive on the given stretch.	
18a. / 18c.	The number of the last wagon in the wagon rake on the given stretch.	
19.	The counted number of vehicles in train.	Data to be provided for: a / c) active locomotives in the train b / d) wagons and inactive locomotives in the train a+b / c+d) the overall total of vehicles in train
20.	The summed length over buffers of vehicles in the train, given in whole meters (rounded up).	
21.	The summed hand brake holding force of vehicles that have hand brakes, either only in kN or in tons as well as kN (rounded down). Tons and kN are to be separated by a slash '/' sign. The hand brake holding force of the locomotive may only be included in case it remains coupled to the train at all times when stopped en route.	
22.	The braked weight of vehicles in train after foreseen deductions, given in whole tons (rounded down). In case electrodynamic brakes (E-brakes) are also included in the braked weight calculation, the value with and without E-brakes is to be provided, separated by a slash '/' sign. E-brakes may only be included in case the rolling stock used and the infrastructure conditions ensure that E-brakes are available at all times when braking a moving train.	
23.	The gross weight of vehicles in the train, given in whole tons (rounded up).	
24.	The available brake ratio of this train, given in %.	
25.	The highest required brake ratio on the foreseen route for this train, given in %.	
26.	The missing brake ratio, given in % points. To be filled in case the available brake ratio remains below the highest required brake ratio, thus demanding operation in degraded mode.	
27.	The proportion of braked weight that is provided by wagons braked by using cast iron blocks, given in %.	
28.	The sequence of the locomotive in train consist, starting from the head of the train. Counting starts with 1.	
29.	Locomotive EVN number according to the UIC standard coding, digit groups (1-2, 3-4, 5-8, 9-11 and 12) are to be separated by a space.	
30.	Locomotive class.	
31.	The counted number of axles the locomotive has.	
32.	Length over buffers of the locomotive, given in meters with two digits after comma.	
33.	Gross weight of the locomotive, given in kg.	
34.	The type of brake blocks used in the locomotive, abbreviations to be used: K - K-blocks L - L-blocks LL - LL-blocks D - disc brakes F - cast iron blocks	
35.	The brake position set at the given locomotive (G, P, E), several brake systems to be marked by using a plus '+' sign (e.g. P+E).	
36.	The braked weight of the locomotive as applicable for the given brake position, given in tons (rounded down).	
37.	Any further remarks about the locomotive in a free text form (e.g. a comment that the locomotive is at the rear or middle of the train).	
38.	The date on which the brake sheet was created. This field is mandatory.	
39.	The time at which the brake sheet was created. This field is mandatory.	
40.	The name and signature of the person who created the brake sheet. Alternatively, an ID code or any other reference can be used that ensures the user is traceable in the IT system of the RU issuing the document. This field is mandatory.	
41.	The date on which the brake sheet was either enhanced, corrected or additionally checked, should this be necessary.	
42.	The time at which the brake sheet was either enhanced, corrected or additionally checked, should this be necessary.	
43.	The name and signature of the person who performed the enhancement, correction or additional check. Alternatively, an ID code or any other reference can be used that ensures the user is traceable in the IT system of the RU issuing the document.	
44.	An explanation in free text describing the reason why fields 41-43 were used.	





**Field explanations:**

45.	The sequence of the wagon in the wagon rake (active locomotives are not counted). Counting starts with 1.
46.	Wagon EVN number according to the UIC standard coding, digit groups (1-2, 3-4, 5-8, 9-11 and 12) are to be separated by a space.
47.	The counted number of axles the wagon has.
48.	Length over buffers of the wagon, given in meters with two digits after comma.
49.	Weight of load on the wagon, given in kilograms.
50.	Gross weight of the wagon, given in kilograms.
51.	The type of brake blocks used in the wagon, abbreviations to be used: K - K-blocks L - L-blocks, LL - LL-blocks D - disc brakes F - cast iron blocks
52.	The braked weight of the wagon before foreseen deductions, given in tons (rounded down). For P-wagons the column P is to be filled, for G-wagons and M-wagons (Matrossow brakes) the column G is to be filled. In case of Matrossow brakes an additional remark 'Matrossow' is to be made in field 59. In case of inactive brakes a minus '-' sign is to be used.
53.	The hand brake holding force of the vehicle in case it has hand brakes, either only in kN or in tons as well as kN (all rounded down). Tons and kN to be separated by a slash '/' sign. In case of no hand brakes available, a minus '-' sign is to be filled in.
54.	The RID UN Numbers, Hazard Numbers and Danger Labels applying to the goods in the wagon are mandatory. It's also mandatory to indicate dangerous goods packed in limited quantities in excess of 8 tonnes (LQ). In that case, a remark „LQ“ must be added to column „Un No“. In case several RID codes apply then additional rows shall be used for the same wagon. In case of no RID a minus sign '-' is to be used.
55.	Tick if there is a shipment in the wagon that is marked as an exceptional consignment, i.e. there is a permission number present. In case it is an exceptional consignment only in some countries, a remark is to be made in field 59.
56.	The destination station name of the wagon, written in text.
57.	The maximum permitted speed of the wagon according to the wagon (**, ***) and load condition, given in km/h. Statements about potential country-specific speed limits are to be filled in field 59.
58.	The railway line classification required for this wagon according to its loading condition. For the range of A-C only a letter (e.g. C) is to be given, starting from line class D also a number (e.g. D2) must be provided.
59.	Any further remarks about the wagon in free text form, e.g. statements about goods with specific risk on board or potential country-specific speed limitations for certain wagons.
60.	The date on which the wagon list was created. This field is mandatory.
61.	The time at which the wagon list was created. This field is mandatory.
62.	The name and signature of the person who created the wagon list. Alternatively, an ID code or any other reference can be used that ensures the user is traceable in the IT system of the RU issuing the document. This field is mandatory.
63.	The date on which the wagon list was either enhanced, corrected or additionally checked, should this be necessary.
64.	The time at which the wagon list was either enhanced, corrected or additionally checked, should this be necessary.
65.	The name and signature of the person who performed the enhancement, correction or additional check. Alternatively, an ID code or any other reference can be used that ensures the user is traceable in the IT system of the RU issuing the document.

## Appendix UIC-1 - Regulatory listing

**This appendix is an integral part of the following IRS:**

IRS-40472:2022,Ed1: Braking sheet, consist list for locomotive drivers and requirements for the exchange of data necessary to the operation of freight rail services

The table(s) below list(s) the regulatory source(s) specifically citing this IRS of which UIC has been made aware by the relevant bodies. If applicable, users shall check the validity of this table(s) with the source indicated.

Table UIC-1.1: European regulatory sources citing *IRS-40472:2022, Ed. 1*

Source: title	Source: passage	IRS: passage targeted	Remarks
none			

# Bibliography

The following documents are recommended for the understanding or for more in-depth information about subjects treated in this IRS:

## 1. UIC Leaflets

### International Union of Railways (UIC)

*UIC Leaflet 404-2: Compendium of the data to be exchanged between Railway Undertakings (RUs) for the purpose of conveying freight traffic, 5th edition, May 2015*

*UIC Leaflet 419-2: Systematic numbering of international freight trains, 3rd edition, April 2011*

## 2. Miscellaneous

### International Rail Transport Committee (CIT)

*Convention concerning International Carriage by Rail (COTIF) - Appendix C - Regulation concerning the International Carriage of Dangerous Goods by Rail (RID), Valid from 1 January 2013*

### European Commission (EC)

*2019/773/EU: Commission Implementing Regulation of 16 May 2019 on the technical specification for interoperability relating to the operation and traffic management subsystem of the rail system within the European Union*

### CEN (European Committee for Standardization)

*EN 14198+A1: Railway applications - Braking - Requirements for the brake system of trains hauled by locomotives*

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