

# EU CO<sub>2</sub>-based tolling – Eurovignette Directive and EFC standards

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# Outline

1. Overview of standards and Electronic Fee Collection (EFC) standardization
2. Impact of the updated Directive [1999/62](#) on EFC standards
3. Overview of CO<sub>2</sub>-related requirements from EU legislation that stem from the updated Directive [1999/62](#) and how these are supported by EFC standards
4. Examples of the calculation of the CO<sub>2</sub> emission classes for heavy-duty vehicles (HDVs)
5. [Update on new developments since Feb 2024](#)

# 1. Overview of standards and EFC standardization

# Overview of standards and EFC standardization

- **What is a standard?**

- A document approved by a recognized standardization body (CEN, ISO,...), intended to be used repeatedly, creating synergies and reducing costs, maintained to keep abreast with market developments and technology advancements
- Standards are not laws but sometimes referred to in legislation. For example, 8 CEN EFC standards are referred to in the European electronic toll service (EETS) legal acts ([Directive](#), [Delegated Act](#) and [Implementing Act](#))



- **EFC standardization**

- Create and ensure the long-term stability of the EFC ecosystem, support agreement, open market and interoperability
- 50+ published standards, technical specifications and technical reports  
System architecture, vocabulary, data dictionary, information exchanges for charging and compliance checking, security, testing for conformance assessment
- For more details – see [Introduction to standards on electronic fee collection \(EFC\)](#)

## 2. Impact of the updated Directive 1999/62 on EFC standards

# Directive 1999/62



European Union (EU) [Directive 1999/62](#) (aka the Eurovignette Directive) sets out how EU Member States can charge vehicles for using their road infrastructure, with the aim to:

- establish an internal market in road transport with a level playing field and ensure uniform and non-discriminatory application of rules
- strengthen the application of the user and polluter pays principles
- contribute to the financing of road infrastructures
- tackle congestion and the negative environmental and health impacts of air pollution and noise
- boost transport decarbonization by contributing to the implementation of the [Paris Agreement](#) on climate change and the EU's plans to reduce CO<sub>2</sub> emissions

# Directive 1999/62 and EFC standardization



## **The Directive does not refer to EFC standards**

- No automatic review procedure or request to update standards from the EC
- EFC stakeholders want the updated Directive to be underpinned by standards
- CEN EFC standardization group launched a review and updating procedure to
  - Identify the relevant changes in the new directive
  - Identify the need for changes in the standards
  - Work out, agree and implement the solutions

# Main changes to the Directive 1999/62 and their impacts on EFC standards

Change	Impact on EFC standards
All kinds of vehicles with at least four wheels (buses, heavy- and light-duty vehicles...)	None, already supported
In principle, time-based user charges are no longer permitted for HDVs from 25 March 2030	
Detailed regulations on time-based user charges for all types of vehicles	
Regulations on congestion charges	
<b>HDVs are to be categorized into one of five CO<sub>2</sub> emission classes</b> <ul style="list-style-type: none"> <li>Infrastructure charge may be varied according to CO<sub>2</sub> emission class</li> <li>An external cost-charge may be added for CO<sub>2</sub> emissions and be modulated depending on the CO<sub>2</sub> emission class</li> </ul>	<b>Yes</b> , current CO <sub>2</sub> class scheme is based on a static structure based on <b>CO<sub>2</sub> g/km</b> value ranges The new classification scheme is based on a CO <sub>2</sub> emission class ( <b>CO<sub>2</sub> g/tkm</b> ) and the classification of the vehicle is reassessed every six years

# New CO<sub>2</sub> emission scheme in a nutshell

## Example Truck:

- Specific CO<sub>2</sub>-Emissions: 41,6 g/tkm
- Vehicle sub-group: 5-LH (tractor unit, >16t, 4 axles, sleeper cab, ≥ 265 kW)
- Initial Vehicle Registration date: 01.08.2021



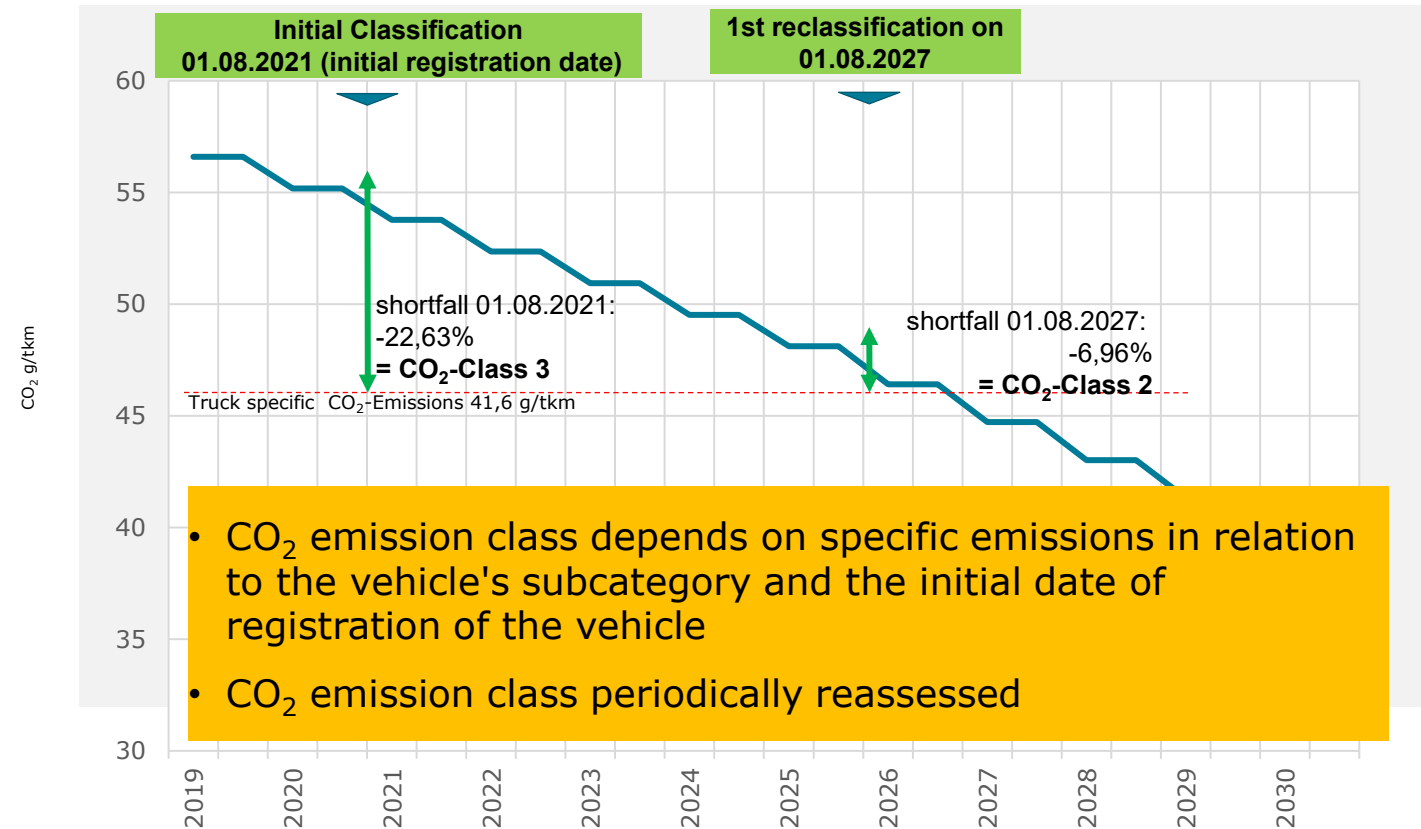
**Reference CO<sub>2</sub> emissions for the period of 1 July 2019 to 30 June 2020 for vehicle sub group 5-LH: 56,60 g/tkm**

## Initial classification 01.08.2021:

- CO<sub>2</sub>-limit for reporting period 2021: 53,77 g/tkm
- shortfall: -22,63%  
**= CO<sub>2</sub>-Class 3**

## 1st reclassification 01.08.2027:

- CO<sub>2</sub>-limit for reporting period 2027: 44,71 g/tkm
- shortfall: -6,96%  
**= CO<sub>2</sub>-Class 2**



- CO<sub>2</sub> emission class depends on specific emissions in relation to the vehicle's subcategory and the initial date of registration of the vehicle
- CO<sub>2</sub> emission class periodically reassessed

[Source: based on slide of CEN/TC 278/WG 1 task force on the Eurovignette]

# Relevant data for new CO<sub>2</sub> emission classification scheme

## Relevant for toll calculation according to new directive

- CO<sub>2</sub> emission class (1-5)
  - The **CO<sub>2</sub> emission class** is **the only new relevant attribute** to calculate the toll adhering to the new directive
  - The toll may still be differentiated according to other parameters like axles
- 

## Relevant for classification and reclassification of vehicle

- Vehicle specific CO<sub>2</sub> value in [g/tkm]
- Initial vehicle registration date
- Vehicle group and sub-group
- Reference CO<sub>2</sub> value for vehicle sub-group
- Classification and re-classification is relevant to the vehicle owner and his TSP
- TCs have to consider a change of the emission class after re-evaluation when calculating the toll
- Enforcement operators may require this information to check the TSPs provided vehicle classification

# Overview of impacts on standards

Change	Impact on EFC standards
CO <sub>2</sub> emission classes (1-5)	<b>Yes</b> , should be supported for exchange on the white list and over the DSRC interface
Vehicle-specific CO <sub>2</sub> emission value [g/tkm]	<b>Yes</b> , should be supported for exchange on the white list for toll calculation and for enforcement purposes
Initial vehicle registration date	
Vehicle group or sub-group	
Reference CO <sub>2</sub> value for vehicle sub-group	No, this information is available in published EU legislative acts for each vehicle group and sub-group. The vehicle sub-group is determined by base values <i>vehicle group, vehicle type, axle or tyre configuration, cabin type and engine power</i> .
Vehicle identification number (VIN)	<b>Yes</b> . It is already exchangeable via "Provide User Data" but it is currently not part of the nominal vehicle attributes, which will also be supported in the future

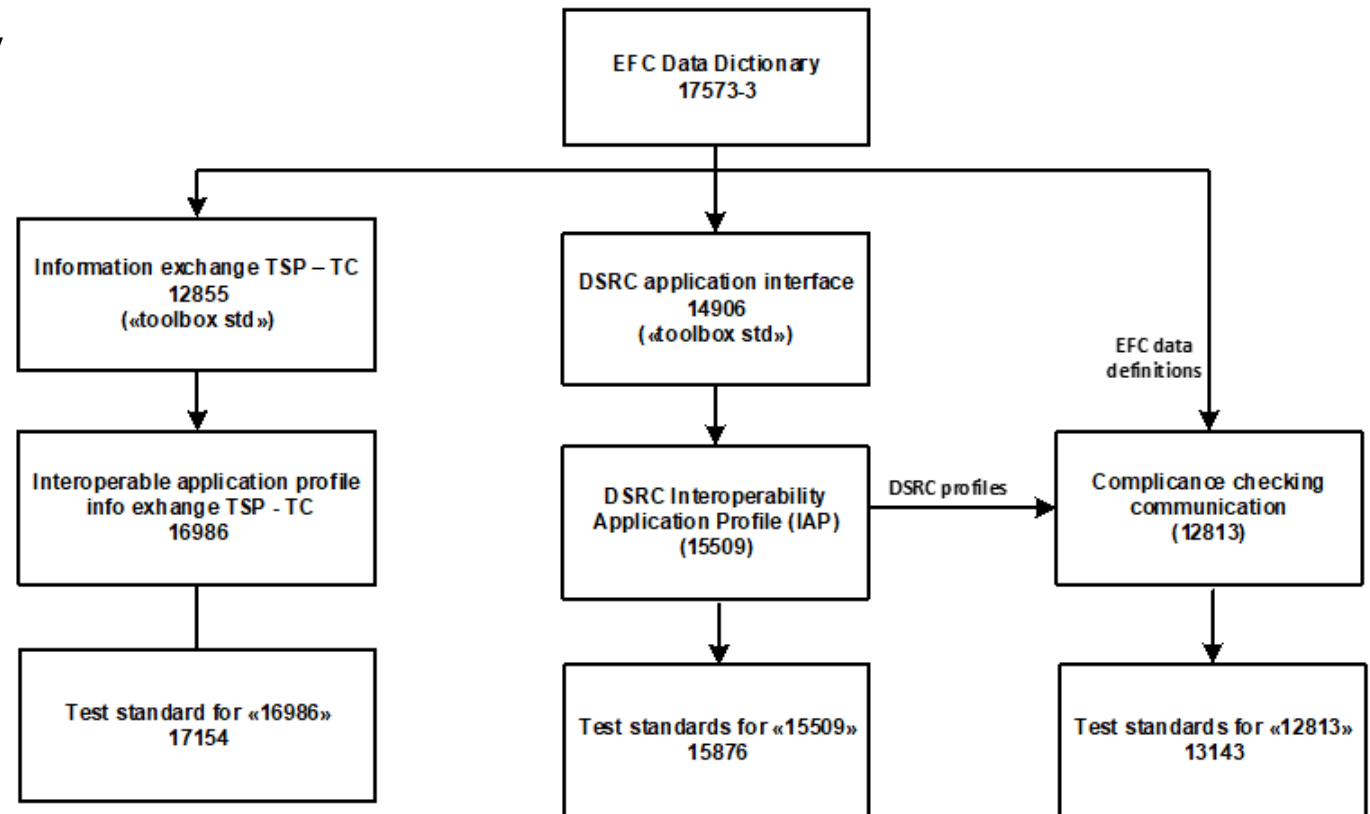
# Updating approach and relationship between relevant standards

## Updating approach

1. EFC data dictionary – ensures consistency across the EFC suite of standards
2. Information exchanges-related standards
  - a) Toolbox standards
  - b) Profile standards
3. Test standards - certification and homologation

**The actual approach has been slightly adapted due to ongoing revisions**

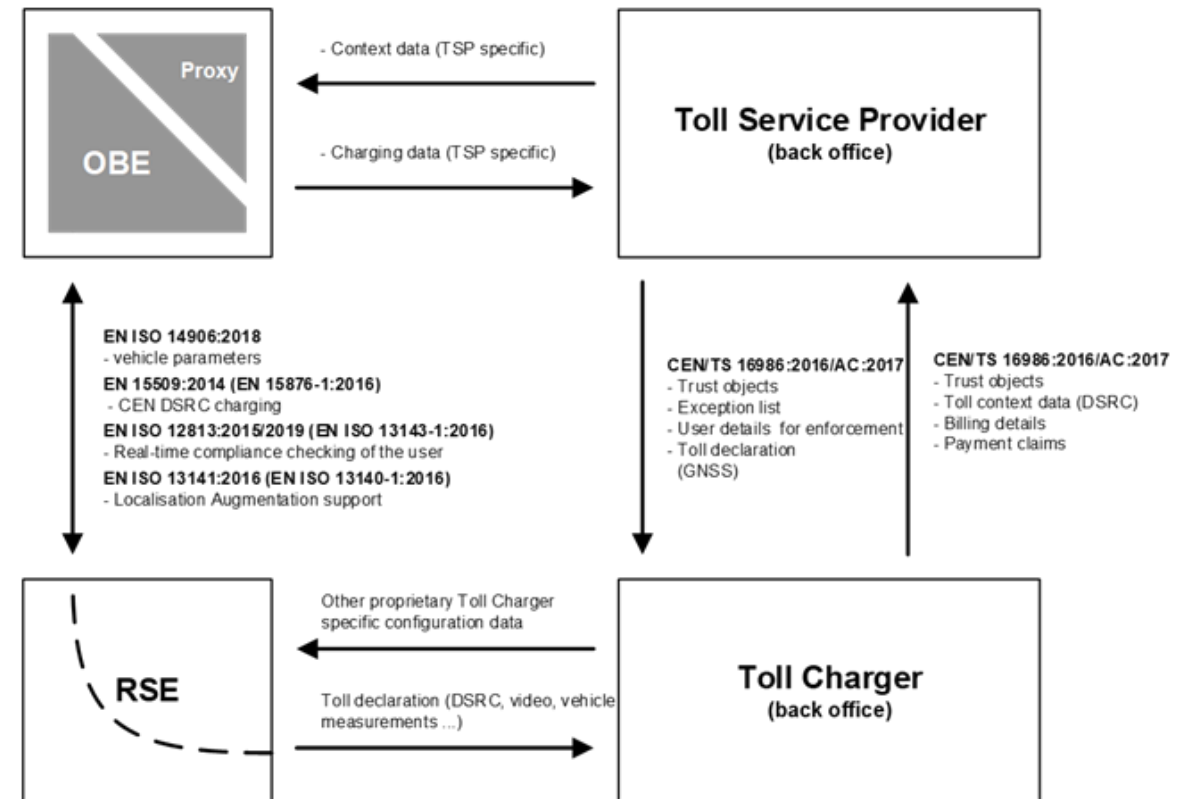
## Relationship between relevant standards



# Summary

- Standards are maintained to be kept up to date
- EFC standards are being updated with extended vehicle related-data (CO<sub>2</sub> emissions...) to underpin the new Directive
- 16986 Enquiry version includes the relevant data types to support the new Directive
- Enquiry and Formal Vote versions are also publicly available - may be relevant to consider in agreements
- The legislator decides whether to refer to (updated) standards in legislation
- The recast of the EETS legislation refers to dated versions of standards – updated versions are not automatically adopted in the EETS legislation

## CEN EFC standards referenced in the EETS legislation



### 3. Overview of CO<sub>2</sub>-related requirements from EU legislation that stem from the updated Directive 1999/62 and how these are supported by EFC standards

# Introduction

- EU legal acts are published in the Official Journal of the European Union and made available via the [EU law website](#). The date of entry into force is specified in the respective legal act
- EU legal acts are updated from time to time, either through recasts or amendments. A recast of legal act brings together in a single new act a legislative act and all the amendments to it. The new act passes through the full legislative process and repeals all the acts being recast
- Example: Directive 2022/362 refers to Regulation (EU) 2017/2400, Annex I, Table 1 – vehicle groups for vehicles of category N. Regulation 2017/2400 has been subject to amendments
  - Text of **12.8.2020: vehicle groups: 0-17**
  - Text of **12.8.2022: vehicle groups: 0-19**
- **Hence, the EU CO<sub>2</sub> tolling-related legislation has evolved since the publication of the Directive 1999/62 on 24.03.2023**
- **Other changes or amendments to EU CO<sub>2</sub> tolling-related legal acts are likely to happen in the next few years, e.g. the current legal initiative on the trailer amendment ...**

# Approach used to present the inventory of requirements 1(3)

The following slides build on and provide further details on the relevant data for new CO<sub>2</sub> emission classification scheme

1. CO<sub>2</sub> emission class: The only new relevant data to calculate the toll according to the updated Directive [1999/62](#)
2. Relevant parameters for CO<sub>2</sub> emission classification and reclassification of the heavy-duty vehicle (HDV)
  - a) vehicle specific CO<sub>2</sub> value in g/tkm
  - b) initial vehicle registration date
  - c) vehicle group and sub-group
  - d) reference CO<sub>2</sub> emissions per vehicle sub-group

# Approach used to present the inventory of requirements 2(3)

## 3. Relevant parameters for verification of the heavy-duty vehicle sub-group

- a) axle configuration
- b) chassis configuration
- c) permissible maximum laden weight
- d) cab type
- e) engine power

NB: vehicle identification number and licence plate number are assumed to be known to the audience, and therefore not further discussed in this presentation

### Regulation 2017/2400

vehicle groups			Vehicle group
Axle configuration	Chassis configuration	Technically permissible maximum laden mass (tons)	
4 × 2	Rigid lorry	> 3,5 – 7,5	(0)
	Rigid lorry (or tractor) (**)	> 7,5 – 10	1
	Rigid lorry (or tractor) (**)	> 10 – 12	2
	Rigid lorry (or tractor) (**)	> 12 – 16	3

### Regulation 2019/1242

Table 1  
Vehicle sub-groups (sg)

Heavy-duty vehicles	Cab type	Engine power	Vehicle sub-group (sg)
Rigid lorries with axle configuration 4 × 2 and technically permissible maximum laden mass > 16 tonnes	All	< 170 kW	4-UD
	Day cab	≥ 170 kW	4-RD
	Sleeper cab	≥ 170 kW and < 265 kW	
	Sleeper cab	≥ 265 kW	4-LH
Rigid lorries with axle configuration 6 × 2	Day cab	All	9-RD

# Approach used to present the inventory of requirements 3(3)

## Columns in the table below

- What – structured according to the previous slides
- Reference to EU legal provisions (**legal act** and relevant part within the act)
- Reference to how these are underpinned by EFC standards (reference to the clause in the main document)
  - Data dictionary (draft submitted for final approval vote, i.e. **FprEN ISO/FDIS 17573-3:2024, ed 2**)
  - Interoperable application profiles for information exchange between Service Provision and Toll Charging (**EN 16986:2024**, reference to the information and table)
- Vehicle holder data exchanges: User parameter request (table 11) + User parameter response details (table 16)
- Exception list entries extended
  - 12855's extended Nominal vehicle parameters (table 15)
  - 16986's constrained Nominal vehicle parameters (table 41; `NominalVehicleParameters`)
- `AduReasonCode` (table 5) and ICS Proforma (Annex B): also extended but not discussed in the slides below

# Inventory of requirements 1(4)

What	EU legal provisions	FprEN ISO/FDIS 17573-3:2024	EN 16986:2024
1) CO <sub>2</sub> emission class	<p>Directive (EU) <a href="#">2022/362</a> and Directive <a href="#">1999/62/EC</a>  Article 7ga (2) defines the CO<sub>2</sub> emission classes for heavy-duty vehicles (slide 24 provides further details)</p> <p><a href="#">Directive 1999/37/EC</a>, Annex I, (V.10) CO<sub>2</sub> emission class of heavy-duty vehicles determined at the moment of first registration</p>	5.2.8 (part of Future Characteristics)	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)
2a) CO <sub>2</sub> emissions	<p><a href="#">Commission Regulation (EU) 2017/2400</a>, Annex IV, Part II (Customer information file), 2.6.1 - Specific CO<sub>2</sub> emissions [gCO<sub>2</sub>/tkm] (12.8.2022 edition)</p> <p>NB: point 2.3 in 12.8.2020 version</p>	5.2.11	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)
2b) Initial registration date	<p><a href="#">Council Directive 1999/37/EC</a> on the registration documents for vehicles, Annex I, Part I, II.5: (B) date of first registration of the vehicle</p>	5.4.6	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)

# Inventory of requirements 2(4)

What	EU legal provisions	FprEN ISO/FDIS 17573-3:2024	EN 16986:2024
2c) Vehicle group and vehicle sub-group	<a href="#">Commission Regulation (EU) 2017/2400</a> , Annex I, Table 1 - Vehicle groups for vehicles of category N. Consolidated text of 01.01.2023, incorporating M1-M3  <a href="#">Regulation (EU) 2019/1242</a> , Annex I, Table 1 - Vehicle sub-groups (sg)	5.3.11 EuVehicleGroup <ul style="list-style-type: none"> <li>mainEuVehicleGroup</li> <li>subGroup</li> </ul>	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)
2d) Reference CO2 emissions per vehicle sub-group	<a href="#">Commission Implementing Decision (EU) 2021/781</a> , Annex II - reference CO2 emissions referred to in Regulation (EU) 2019/1242 (see slides 26-27 for details)	N/a	N/a

# Inventory of requirements 3(4)

What	EU legal provisions	FprEN ISO/FDIS 17573-3:2024	EN 16986:2024
3a) axle configuration	<a href="#">Commission Regulation (EU) 2017/2400</a> , Annex I, Table 1 (vehicle groups for vehicles of category N), Axle configuration: 4 x 2, 4 x 4, 6 x 2, 6 x 4, 6 x 6, 8 x 2, 8 x 4, 8 x 6 and 8 x 8.  <a href="#">Regulation (EU) 2019/1242</a> , Annex I, Table 1 - Vehicle sub-groups (sg)	5.3.29 (wheels configuration)	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)
3b) chassis configuration	<a href="#">Regulation (EU) 2019/1242</a> , Art 3, definitions: (6) rigid lorry, (7) tractor	5.2.7	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)
3c) permissible maximum laden weight	<a href="#">Directive (EU) 2022/362</a> , Art 3, Part I (data relating to vehicles) – technically permissible max. laden mass of the vehicle <a href="#">Directive 1999/37/EC</a> , Annex I, (F.1) maximum technically permissible laden mass	5.2.69	UserParameterRequest (Table 11) UserParameterResponseDetails (Table 16) NominalVehicleParameters (Tables 15/41)

# Inventory of requirements 4(4)

What	EU legal provisions	FprEN ISO/FDIS 17573-3:2024	EN 16986:2024
3d) Cab type	<p><a href="#">Regulation (EU) 2019/1242</a>, Annex I, Table 1 - Vehicle sub-groups (sg), 1st para below the table “Sleeper cab’ means a type of cab that has a compartment behind the driver’s seat intended to be used for sleeping as reported in accordance with Regulation (EU) 2018/956”</p> <p><a href="#">Regulation (EU) 2018/956</a>, Annex I, Part B: Data to be monitored and reported by manufacturers of heavy-duty vehicles, 2. Data to be monitored and reported: Data no 84: Sleeper cab (yes/no)</p>	5.2.6	<p>UserParameterRequest (Table 11)</p> <p>UserParameterResponseDetails (Table 16)</p> <p>NominalVehicleParameters (Tables 15/41)</p>
3e) Engine power	<p><a href="#">Commission Directive 2003/127/EC</a>, Annex I, II.5, (P.2) maximum net power (in kW) (if available),</p>	5.3.10 (part of EngineDetails)	<p>UserParameterRequest (Table 11)</p> <p>UserParameterResponseDetails (Table 16)</p> <p>NominalVehicleParameters (Tables 15/41)</p>

## 4. Examples of the calculation of the CO<sub>2</sub> emission classes for HDVs

# HDVs - Determination of CO<sub>2</sub> emissions classes per vehicle sub-group

## **How are the heavy-duty vehicle CO<sub>2</sub> emission classes defined?**

- CO<sub>2</sub> emission classes are defined per vehicle sub-group (sg)
  - Reference CO<sub>2</sub> emissions classes are specified by vehicle sg
  - Relevant emission reduction trajectory is specified
- ➔ Allows determination of the thresholds for CO<sub>2</sub> emission classes per vehicle sg, and hence the CO<sub>2</sub> emission class for a specific vehicle

Two examples are used to illustrate how to determine these in practice

# HDVs - CO<sub>2</sub> emissions classes per vehicle sub-group

Directive [1999/62](#), Article 7ga (2) defines the CO<sub>2</sub> emission classes for HDVs

- a) **CO<sub>2</sub> emission class 1** – vehicles that do not belong to any of the CO<sub>2</sub> emission classes;
- b) **CO<sub>2</sub> emission class 2** – vehicles of the vehicle sg registered for the first time in the reporting period of the year Y with CO<sub>2</sub> emissions more than 5 % below the emission reduction trajectory for the reporting period of the year Y and the vehicle sg but not belonging to any of the CO<sub>2</sub> emission classes 3-5;
- c) **CO<sub>2</sub> emission class 3** – vehicles of the vehicle sub-group registered for the first time in the reporting period of the year Y with CO<sub>2</sub> emissions more than 8 % below the emission reduction trajectory for the reporting period of the year Y and the vehicle sg not belonging to any of the CO<sub>2</sub> emission classes 4-5;
- d) **CO<sub>2</sub> emission class 4** – low-emission HDVs (Art 2, point 30);
- e) **CO<sub>2</sub> emission class 5** – zero-emission vehicles (Art 2, point 29).

The **classification of a vehicle belonging to CO<sub>2</sub> emission class 2 or 3 is reassessed every six years** after the date of its first registration and that, where relevant, the vehicle is reclassified in the relevant emission class based on the thresholds applicable at that time

# HDVs - reference CO<sub>2</sub> emissions for heavy-duty vehicle groups 1(2)

[Commission Implementing Decision \(EU\) 2021/781](#), Annex II - Reference CO<sub>2</sub> emissions referred to in Article 1, second paragraph, of Regulation (EU) 2019/1242:

Below the reference CO<sub>2</sub> emissions for the sub-groups of **vehicle-duty vehicle groups 4, 5, 9 and 10** for the period from 1 July 2019 to 30 June 2020.

Sub-group <i>sg</i>	<i>rCO<sub>2sg</sub></i> in g/tkm
4-UD	307,23
4-RD	197,16
4-LH	105,96
5-RD	84,00
5-LH	56,60
9-RD	110,98
9-LH	65,16
10-RD	83,26
10-LH	58,26

# HDVs - reference CO<sub>2</sub> emissions for heavy-duty vehicle groups 2(2)

[Commission Implementing Decision \(EU\) 2023/2698](#), Annex I - Reference CO<sub>2</sub> emissions for vehicle groups not covered by Regulation (EU) 2019/1242:

Below the reference CO<sub>2</sub> emissions for the heavy-duty vehicle groups 1, 2, 3, 11, 12 and 16.

Vehicle group	Reference CO <sub>2</sub> emissions in g/tkm
1	410,1
2	267,9
3	207,2
11	157,0
12	104,4
16	110,3

# HDVs - emission reduction trajectory

Directive [1999/62](#), Article 2 (point 37) defines the (CO<sub>2</sub>) 'emission reduction trajectory'

for the reporting period of a year (Y) and vehicle sub-group (sg), namely ETY,sg, means the product of the annual CO<sub>2</sub> emissions reduction factor (R-ETY) times the reference CO<sub>2</sub> emissions (rCO<sub>2</sub>sg) of the sub-group (sg), namely  $ETY,sg = R-ETY \times rCO_2sg$ ; for years  $Y \leq 2030$ , R-ETY and rCO<sub>2</sub>sg are both determined in accordance with point 5.1 of Annex I to Regulation (EU) 2019/1242; for years  $Y > 2030$ , R-ETY is 0,70; rCO<sub>2</sub>sg applies as adjusted by delegated acts adopted in accordance with Article 11(2) of Regulation (EU) 2019/1242 for the reporting periods commencing after the respective dates of application of those delegated acts;



- HDVs reference CO<sub>2</sub> emission values and thresholds for classes 2-3
  - From 1 July 2019 to 30 June 2026 (a six-year period) a linear reduction of **2.5% per year**
  - From 1 July 2026 to 30 June 2031 (a five-year period) a linear reduction of **3.0% per year**

# Thresholds for CO<sub>2</sub> emission classes per year per sg 5-LH

	Year trajectory	ref Y	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+11
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		100%	97.5%	95.0%	92.5%	90.0%	87.50%	85%	82.0%	79.0%	76.0%	73.0%	70.0%
Reference CO2 emissions rCO <sub>2sg</sub> in g/tkm	56.6	56.6	55.2	53.8	52.4	50.9	49.5	48.1	46.4	44.7	43.0	41.3	39.6
class 2	53.77	53.8	52.4	51.1	49.7	48.4	47.0	45.7	44.1	42.5	40.9	39.3	37.6
class 3	52.07	52.1	50.8	49.5	48.2	46.9	45.6	44.3	42.7	41.1	39.6	38.0	36.5
class 4 LE HDVs	28.30	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
class 5 (ZEV)	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

# Thresholds for CO<sub>2</sub> emission classes per year per sg 5-LH

		ref Y	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+11
	Year trajectory	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		100%	97.5%	95.0%	92.5%	90.0%	87.50%	85%	82.0%	79.0%	76.0%	73.0%	70.0%
Reference CO <sub>2</sub> emissions													
rCO <sub>2sg</sub> in g/tkm	56.6	56.6	55.2	53.8	52.4	50.9	49.5	48.1	46.4	44.7	43.0	41.3	39.6
class 2	53.77	53.8	52.4	51.1	49.7	48.4	47.0	45.7	44.1	42.5	40.9	39.3	37.6
class 3	52.07	52.1	50.8	49.5	48.2	46.9	45.6	44.3	42.7	41.1	39.6	38.0	36.5
class 4 LE HDVs	28.30	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
class 5 (ZEV)	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Example:** threshold for class 2 at the time of the 1st reclassification

**Example:** threshold for class 3 at the time of the initial registration

**Example: specific CO<sub>2</sub> emissions 41.6 g/tkm, initial registration date 1 Aug 2021**

- CO<sub>2</sub> emission class at the initial registration date: **class 3**
- CO<sub>2</sub> emission class at the 1<sup>st</sup> reclassification (6 years later, i.e. 1 Aug 2027): **class 3**

# Thresholds for CO<sub>2</sub> emission classes per year per sg 10-RD

	Year trajectory	ref Y	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+11
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		100%	97.5%	95.0%	92.5%	90.0%	87.50%	85%	82.0%	79.0%	76.0%	73.0%	70.0%
Reference CO2 emissions rCO <sub>2sg</sub> in g/tkm	83.3	83.3	81.2	79.1	77.0	74.9	72.9	70.8	68.3	65.8	63.3	60.8	58.3
class 2	79.10	79.1	77.1	75.1	73.2	71.2	69.2	67.2	64.9	62.5	60.1	57.7	55.4
class 3	76.60	76.6	74.7	72.8	70.9	68.9	67.0	65.1	62.8	60.5	58.2	55.9	53.6
class 4 LE HDVs	41.63	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6
class 5 (ZEV)	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

# Thresholds for CO<sub>2</sub> emission classes per year per sg 10-RD

		ref Y	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+11
	Year trajectory	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		100%	97.5%	95.0%	92.5%	90.0%	87.50%	85%	82.0%	79.0%	76.0%	73.0%	70.0%
Reference CO2 emissions rCO <sub>2sg</sub> in g/tkm	83.3	83.3	81.2	79.1	77.0	74.9	72.9	70.8	68.3	65.8	63.3	60.8	58.3
class 2	79.10	79.1	77.1	75.1	73.2	71.2	69.2	67.2	64.9	62.5	60.1	57.7	55.4
class 3	76.60	76.6	74.7	72.8	70.9	68.9	67.0	65.1	62.8	60.5	58.2	55.9	53.6
class 4 LE HDVs	41.63	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6
class 5 (ZEV)	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Example:** threshold for class 3 at the time of the initial registration

**Example:** threshold for class 3 at the time of the 1st reclassification

**Example: specific CO<sub>2</sub> emissions 61.2 g/tkm, initial registration date 5 April 2021**

- CO<sub>2</sub> emission class at the initial registration date: **class 3**
- CO<sub>2</sub> emission class at the 1<sup>st</sup> reclassification (6 years later, i.e. 5 April 2027): **class 3**

## 5. Update on new developments since Feb 2024

# Update of regulation 2019/1242 “CO<sub>2</sub> emission performance for new HDVs”

- Regulation [2019/1242](#) has been amended by Regulation [2024/1610](#) and must be applied from 1 July 2024
- Main changes are:
  - Inclusion of further vehicle categories in the scope (M2, M3, N1, N2, N3, O3 and O4)
  - Definition of vehicle subgroups for every vehicle group
  - Introduction of a new vehicle property (operational range) for assigning subgroups and therefore potential re-classification of existing vehicles
  - New definition of zero-emission vehicles
  - New or updated emission reduction curves for vehicle subgroups

CO <sub>2</sub> emissions reduction targets $r_{f,sg}^*$ and $r_{fp,sg}^*$					
Vehicle sub-groups $sg$		Reporting periods of the years			
		2025 – 2029	2030 – 2034	2035 – 2039	As from 2040
Medium lorries	53, 54	0	43 %	64 %	90 %
Heavy lorries > 7,4t	1s, 1, 2, 3	0	43 %	64 %	90 %
Heavy lorries > 16 t with 4x2 and 6x4 axle configurations	4-UD, 4-RD, 4-LH, 5-RD, 5-LH, 9-RD, 9-LH, 10-RD, 10-LH	15 %	43 %	64 %	90 %
Heavy lorries > 16 t with special axle configurations	11, 12, 16	0	43 %	64 %	90 %
Vocational vehicles	53v, 1sv, 1v, 2v, 3v, 4v, 5v, 9v, 10v, 11v, 12v, 16v	0	0	64 %	90 %

\* Further definitions for buses and trailers in the regulation

# Update of reference values and new reference values for vehicle subgroups

- Existing reference values for vehicle subgroups 4, 5, 9 and 10 are likely to be updated in the next few months
- New reference values have been published for vehicle subgroups 1, 2, 3, 11, 12 and 16 in December 2023 (Regulation [2023/2698](#))

## New Euro 7 legislation

- In May 2024, Regulation [2024/1257](#) has been published – “on type-approval of motor vehicles and engines and of systems, components and separate technical units intended for such vehicles, with respect to their emissions and battery durability (Euro 7)”
- New Euro 7 classes: Euro 7G, Euro 7ext, Euro 7Gext
  - G – geofencing technology to monitor driving in zero emission mode
  - Ext – type approval of N2 vehicles based on N1 vehicle requirements
  - Gext – combination of both properties
  - Euro 7 classes for N1 vehicles (I, II and III)

# Impact of new legislation on EU tolling schemes

- Toll schemes that already have or plan to implement it in the future, need to respect the new or updated rules for determination of the CO<sub>2</sub> emission class of a vehicle
- Vehicles that could not be categorized so far, because of missing reference values, can now be assigned better CO<sub>2</sub> emission classes than 1
- New rules need to be implemented for re-classification of vehicles 6 years after initial registration (new reference values for subgroups 4, 5, 9 and 10)
  - CO<sub>2</sub> emission calculators need to be significantly updated
- Inclusion of almost all types of vehicles into the CO<sub>2</sub> reduction schemes (buses), different treatment of vocational vehicles needs to be applied
- Complex interactions of different dates of entry into force need to be analysed (begin of reduction curves, publication of reference values, initial registration dates of vehicles)
- A number of details of actual implementation of these new rules still need to be clarified together with the EC

# Impact of new legislation on standards

- The following new parameters are included in FprEN ISO/FDIS 17573-3 respectively proposed to be included in the ongoing revision process of ISO 12855 to underpin the new legislation

```
EuroValueSubClass ::= INTEGER {
    noEntry                (0),
    euro7G                 (1),
    euro7ext               (2),
    euro7Gext              (3)
    -- (4-255) are reserved for future CEN and ISO use
}(0..255)
```

```
VehicleOperationalRange ::= Int2Unsigned
```

Update of VehicleDescription in ISO 12855

Table 27 — EuroValueSubClass

Subtype	Parent type	Semantics
	INTEGER	<p><b>EuroValueSubClass</b> represents the vehicle's sub-category which is defined for certain Euro emission categories as defined in the EU Regulation cited in Reference [12].</p> <p>The following semantics are assigned:</p> <ul style="list-style-type: none"> <li><b>euro7G</b>: Indicating a subgroup for vehicles equipped with internal combustion engines with geofencing technologies.  NOTE These vehicles are equipped with a driver warning system to inform the user when the traction batteries are nearly empty and to stop the vehicle if not charged within 5 kilometres from the first warning while on zero-emission mode inside the geofencing area;</li> <li><b>euro7ext</b>: Indicating a subgroup for vehicles of category N2 between 3,5 and 5 tonnes maximum mass originating from a type of vehicle of category N1 if the vehicle meets the requirements for a type of vehicle of category N1;</li> <li><b>euro7Gext</b>: Indicating a subgroup for vehicles that meet both the characteristics of euro7g and euro7ext.</li> </ul>

Table 64 — VehicleOperationalRange

Subtype	Parent type	Semantics
Int2Unsigned		<b>VehicleOperationalRange</b> defines the distance a vehicle can travel under long haul transport conditions without being re-charged or re-filled. The value shall be stated in km.

# Want to know more or participate?

## Co-ordination of EFC standardization in ISO/TC 204/WG 5 and CEN/TC 278/WG 1

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