

# Guide to Regulations for Refrigerated Trucks

## Introduction

Refrigerated trucks are required to meet a number of regulations covering different aspects of their design and performance. In this article, we've summarised the key regulations that refrigerated truck builders and operators need to be aware of for their fleets. These include:

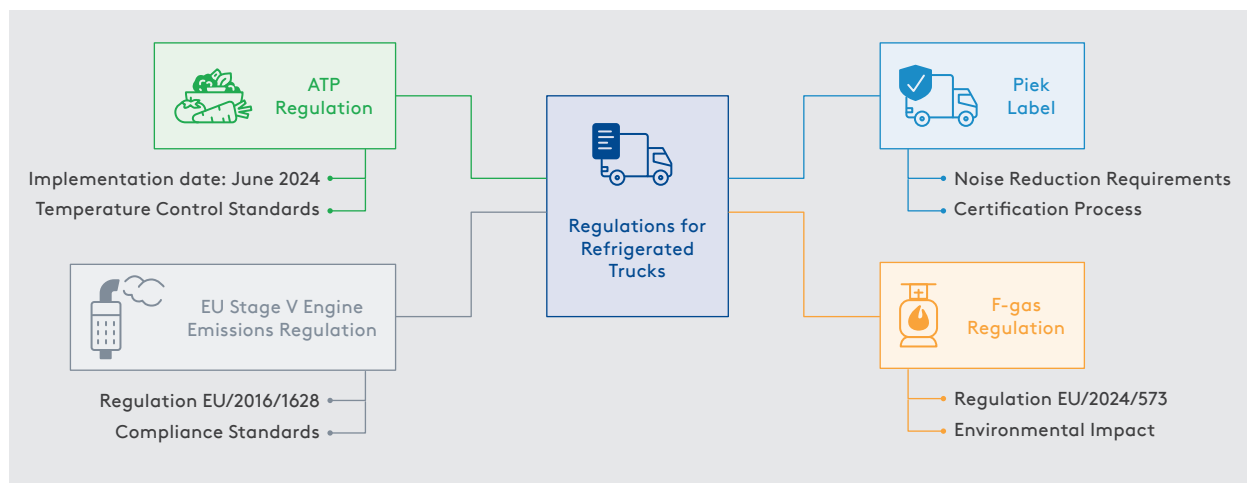


Figure 1: Key regulations.

## ATP (Agreement Transport Perishable) Regulation (June 2024)

ATP is an international standard for the regulation of refrigerated, temperature-controlled transport of perishable foods intended for human consumption. It is a **legal requirement** for any vehicle transporting perishable foods within or between countries which are signatories of the act to hold an **ATP certificate**.

How are vehicles classified under the ATP system?

The ATP sets out different categories of vehicle, based on their design and the necessary transport temperature. The most used classifications are insulated and insulated mechanically refrigerated.

### Insulated

These vehicles either have an insulated compartment (IN) or an isothermal structure with additional insulation (IR). They are designed to maintain internal contents at a constant temperature but have no cooling unit.

### Insulated mechanically refrigerated

These vehicles have normal or reinforced isothermal bodywork and feature a refrigeration unit to maintain internal temperatures at a set constant level. They are classified based on the insulation level and the required transportation temperature for the goods as shown in Figure 2.

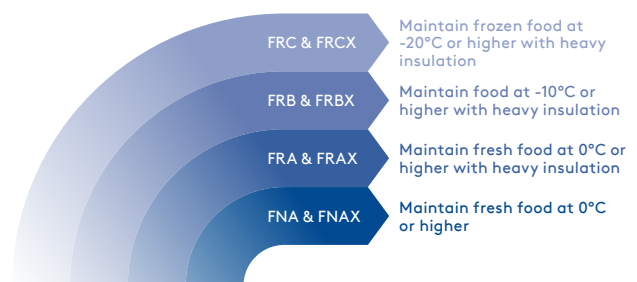


Figure 2: Vehicle classification.

For demanding frozen food transportation where goods must be kept below -20°C an additional classification of **RRC** is available. These are typically equipped with eutectic plates which accumulate cold and then release it into the cell.

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## How can you obtain an ATP certification?

The simplest approach is to purchase a pre-certified vehicle (either new or second hand).

ATP certificates are issued to new vehicles either based on individual testing, or as a mass serially produced design accepted through Type Approval. This certificate covers the insulated body and (where relevant) the refrigeration unit and is valid for 6 years. 'In service' examinations can then be carried out which are valid for a further 3 years.

The vehicle should be supplied with the unique ATP certification and the testing centre will have a record of: the information shown in Figure 3. If your vehicle does not have an ATP certificate, then it will need to be submitted for testing at an approved test station and a certificate awarded before it can be used.

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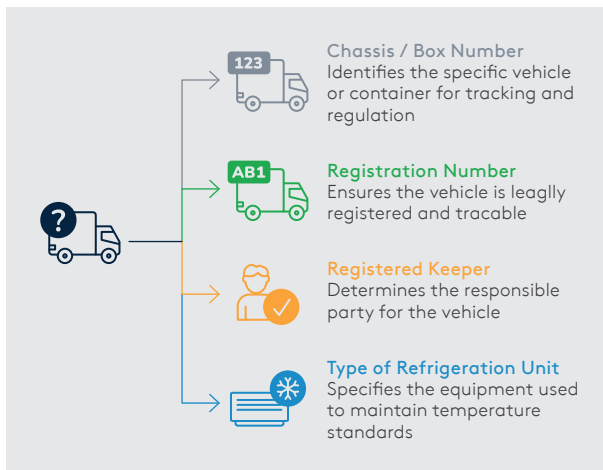


Figure 3: Information held by the testing centre.

## Piek Label

Managing nighttime noise pollution from delivery vehicles is a growing area of concern – particularly within urban areas. Whilst no global standard or regulation applies in this area, the Piek label (which is a national standard within Netherlands) is now being adopted on projects in many other countries.

The Piek label looks to limit 'peak noises' - short bursts of noise which can occur either from driving noise or during loading and unloading activities - during nighttime deliveries in residential areas. These are:

- **Maximum noise level L<sub>max</sub> caused by driving noise from transport equipment 7:00 PM - 7:00 AM: 70 dB(A)**
- **Maximum noise level L<sub>max</sub> caused by other peak noises 7:00 PM - 7:00 AM: 65 dB(A)**

Source: EPEE F-gas Brochure EPEE Brochure.

The Dutch Environmental Act allows these values to differ per municipality and location. There is also a long transition period, and the previously permitted peak levels may therefore still apply. These are:

- **Between 7:00 PM and 11:00 PM: Peak level 65 dB(A)**
- **Between 11 PM and 7 AM: Peak level 60 dB(A)**

The Piek label and certificate is issued to suppliers and body builders after a sound measurement shows that the guidelines have been met.

## F-gas Regulation EU/2024/573

Fluorinated greenhouse gases (F-gases), which are commonly used as refrigerants, are known to have very high Global Warming Potential (GWP). As a result, the EU is now committed to phasing out all F-gases by 2050. F-gas Regulation EU/2024/573 forms a key step in this process, seeking to encourage a transition to alternative refrigerants such as ammonia, carbon dioxide and hydrocarbons.



Figure 4: The EU's phasing out timeline.

The regulation came into force on 11 March 2024 and replaces the previous F-gas regulation ((EU) 517/2014) introducing a number of new measures and stricter requirements.

The Regulation covers fluorinated greenhouse gases which include HFCs, HFOs and HFO / HFC blends, among other gases (including PFCs and SF<sub>6</sub>). Whilst non-fluorinated gases are not in the scope of the Regulation, certification and training requirements are extended to these alternatives. This means that to receive a certification to work with F-gases, staff must also have training on non-fluorinated alternatives.

## What is new in F-gas Regulation EU/2024/573?

The 2024 regulation introduces a number of key changes from the previous version.

### New rules for containment, certification and training

*Applies only to technicians that have or require an F-gas certificate.*

- Containment requirements are extended to HFOs and to mobile equipment to reduce leakages
- Certification and training requirements are extended to HFO refrigerants, and to more types of equipment, as well as non-fluorinated refrigerants
- Leak checks for mobile equipment must be completed by persons that carry a training attestation

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## Steeper phase down of HFC quota

The HFC phase down is only applicable to virgin HFCs. HFOs or non-fluorinated refrigerants, recycled and reclaimed refrigerants are not in scope.

- A stricter phase down path from 2025 onwards, and a phase out of virgin HFCs by 2050 (the latter is subject to a review in 2040)
- Inclusion of the MDI sector (metered dose inhalers: small aerosols used to administer lung medication e.g. for asthma treatment)
- New pricing mechanism for the allocation of the HFC quota (€3 per tonne of CO<sub>2</sub>eq)

## New prohibitions for placing on the market of certain products

- Several additional product bans in addition to existing bans
- Full F-gas bans are introduced by 2032 / 2035 for select product categories (subject to a review before 2030)
- Safety exemptions are applicable for all new product bans
- Lifecycle CO<sub>2</sub> emission exemptions remain applicable

## Clearer customs rules

Clearer rules for customs and competent authorities to facilitate the fight against illegal activities, e.g. HFC imports without quota.

## Export ban

From 12 March 2025 the export of refrigeration, air conditioning and heat pump equipment is no longer allowed if the GWP  $\geq$  1000, with the exception of those products that are still allowed to be placed on the market in the EU.

## Servicing restrictions

The servicing ban for refrigeration equipment is strengthened, and additional restrictions are introduced for air conditioning and heat pump equipment. Other exemptions were deleted such as for stationary refrigeration equipment < 40t CO<sub>2</sub>eq.

## What is the certification process for F-gas Regulation EU/2024/573?

To support the framework set out in EU/2024/573, the European Commission has introduced **Implementing Regulation (EU) 2024/2215**. This sets a new certification process (see Figure 4) for technicians or companies involved in the installation, maintenance, servicing, and decommissioning of refrigerated vehicles and containers containing fluorinated greenhouse gases (F-gases) or their alternatives. The certification process is shown in Figure 5.

Different levels of certification are available depending on the equipment being assessed and the gas they contain. It also sets out conditions to ensure that certifications issued in one country are valid across the EU.

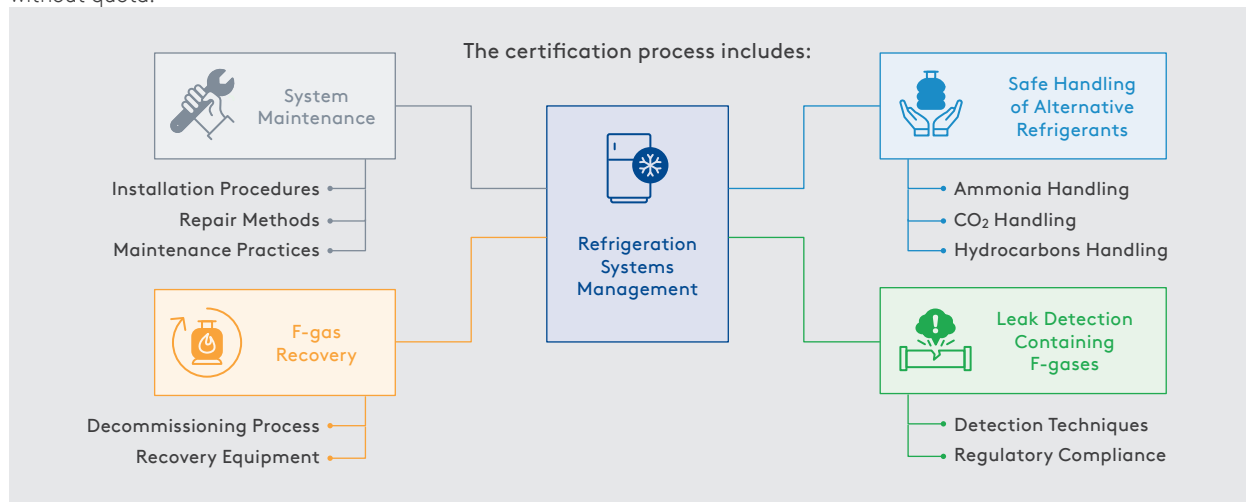


Figure 5: The certification process.

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## EU Stage V Engine Emissions Regulation EU/2016/1628

This EU emissions standard applies to Non-Road Mobile Machinery (NRMM) with spark/compression ignition engines ranging from < 19 kW to > 560 kW. This includes transport refrigeration units (TRUs) typically operated on refrigeration trucks.

The NRMM Regulation aims to progressively reduce the pollutant emissions from new engines and to phase out equipment with the most polluting engines. To do this, it sets emission limits for carbon monoxide, nitrogen oxides, hydrocarbons, and particulate matter. The limits differ depending on the engine power ranges and applications. It also lays down the procedures that engine manufacturers have to follow in order to obtain type-approval of their engines – which is a prerequisite for placing their engines on the EU market.

## VECTO Trailer

VECTO is a simulation tool from the European Commission to calculate CO<sub>2</sub> emissions and fuel consumption for heavy-duty vehicles (HDVs). Since 2019, it has been expanded to include various vehicle types, including lorries, buses, and coaches, with tailored mission profiles. It uses parameters like rolling resistance, air drag, weight, and engine performance to simulate emissions and fuel consumption. Manufacturers must report and publicly disclose this data.

## Challenges and Costs

Meeting CO<sub>2</sub> reduction targets is difficult, even with improvements like better tyres, reduced weight, and aerodynamics. Manufacturers face steep penalties if compliance is not achieved, leading to higher trailer costs. Innovations like electric axles could help but are not widely available or practical for all trailers.

## Impact on Intermodal Transport

Intermodal trailers face unique challenges. Reinforced chassis and the incompatibility of aerodynamic changes with ships or trains hinder CO<sub>2</sub> reductions. With fewer road miles, the added costs from fines or modifications disproportionately affect intermodal transport, potentially increasing CO<sub>2</sub> emissions rather than reducing them. Calls have been made to exempt intermodal trailers from VECTO regulations.

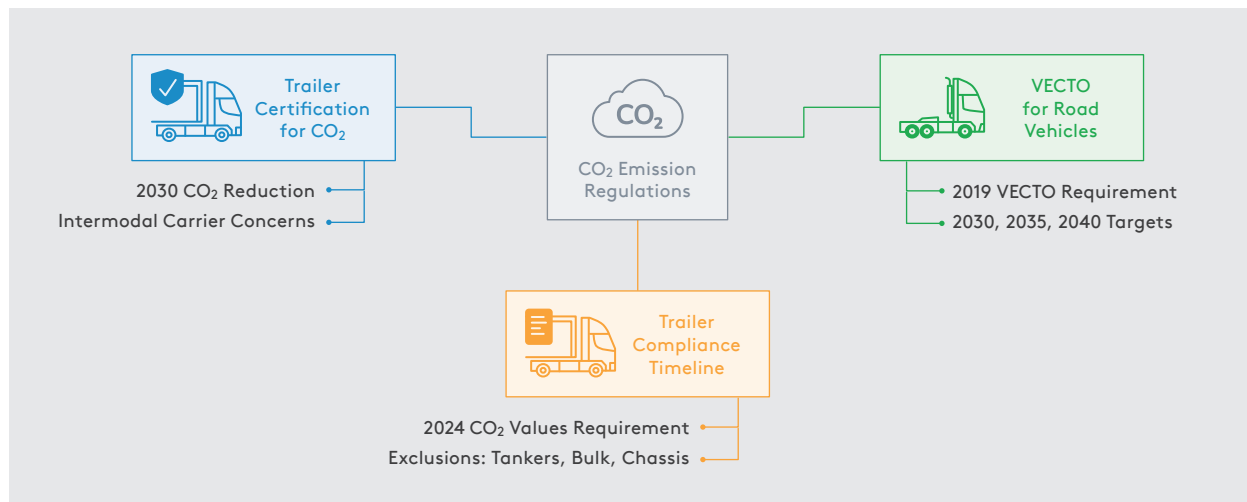


Figure 6: Data from the VECTO simulator includes various parameters.

Source: Policy update ICCT.

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# Contact Details

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## Great Britain

**Kingspan Technical Insulation Ltd**  
Harvey Road | Burnt Mills Industrial Estate  
Basildon | SS13 1QJ

T: +44 (0) 1457 890400  
E: [info.kti@kingspan.com](mailto:info.kti@kingspan.com)  
[www.kingspantechinsulation.co.uk](http://www.kingspantechinsulation.co.uk)

For individual department contact details please visit  
[www.kingspantechinsulation.co.uk/contacts](http://www.kingspantechinsulation.co.uk/contacts)

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## Ireland

**Kingspan Insulation Ltd**  
Castleblayney | County Monaghan

T: +353 (0) 42 975 4219  
E: [info.kti@kingspan.com](mailto:info.kti@kingspan.com)  
[www.kingspantechinsulation.ie](http://www.kingspantechinsulation.ie)



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