TECHNICAL BULLETIN

Prepared by WG-5

TB 66/26 – November 2026

Application of the EU Packaging and Packaging Waste Regulation to Industrial Gas Companies

Introduction

This Technical Bulletin provides industrial gas companies with a structured interpretation of how Regulation (EU) 2025/40 on packaging and packaging waste (PPWR) applies to refillable high-pressure gas cylinders and associated components. It identifies the principal exemptions for packaging used for the transport of dangerous goods and highlights obligations that may continue to apply.

Scope

This bulletin addresses refillable gas cylinders that are placed on the European Union market empty or filled and that are used in industrial, medical, food, beverage or other gas-supply applications. It focuses on cylinders transported in accordance with Directive 2008/68/EC and the applicable ADR framework. It does not provide a complete legal assessment for every packaging configuration, national EPR system or contractual supply chain.

Regulatory context

Regulation (EU) 2025/40 establishes requirements covering the entire life cycle of packaging, including sustainability, labelling, packaging-waste prevention, reuse and refill, collection, recycling and extended producer responsibility. The Regulation entered into force on 11 February 2025 and generally applies from 12 August 2026, while several obligations have later or conditional application dates.

- Directive 2008/68/EC governs the inland transport of dangerous goods and provides the legal reference used by several PPWR exemptions.
- TPED and ADR safety requirements continue to apply independently. PPWR packaging minimization must not be interpreted as permitting reductions that would compromise pressure-equipment or dangerous-goods safety.
- Member State implementation remains relevant for producer registers and reporting procedures.

Classification of refillable gas cylinders

Why a cylinder is packaging

Article 3 defines packaging by reference to functions including containment, protection, handling, delivery and presentation of products. A refillable gas cylinder contains the gas, protects it during storage and transport, enables handling and delivers the gas to the user. Annex I expressly lists refillable steel cylinders used for various kinds of gas, excluding fire extinguishers, as an indicative example of packaging.

Situations requiring separate assessment

- Fire extinguishers are expressly excluded from the Annex I cylinder example. Their regulatory treatment should not be inferred from the treatment of industrial gas cylinders.
- Cylinders, cylinder bundles, dry-ice containers, dewars, pallet-tanks perform a packaging function as part of the complete packaging configuration; they are considered primary packaging.
- Caps, valve protection devices, labels, shrink foils and other associated components should be assessed separately as part of the overall packaging, these are considered components that do not have an independent packaging function without the primary packaging.
- A cylinder can qualify as reusable packaging, but this does not automatically mean that every reuse target or reuse-system obligation applies.

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Applicability overview

Requirement	Status	PPWR reference	Industrial gas interpretation
Packaging status	Applies	Article 3 and Annex I	Refillable steel gas cylinders are identified as packaging; fire extinguishers are excluded from the example.
Substance restrictions	Applies	Article 5	Heavy-metal concentration limit applies. PFAS limits apply to food-contact packaging from 12 August 2026.
Recyclability / design for recycling	Exempt	Article 6(11)(f)	Packaging used for transport of dangerous goods under Directive 2008/68/EC is exempt from the Article 6 recyclability requirements.
Minimum recycled plastic content	Exempt	Article 7(4)(f)	Dangerous-goods transport packaging is excluded from paragraphs 1 to 3. Confirm treatment of ancillary plastic components. Articles 8, 9 and 11 are not applicable in the evaluation process.
Packaging minimisation	Applies in principle	Article 10	Document that mass and volume are limited to the minimum compatible with functionality and legally required safety performance.
Labelling	Case-specific	Articles 12–13	Application dates and implementing acts must be checked. ADR/CLP/TPED marking remains separate.
Excessive packaging / empty space	Usually limited relevance	Article 24	Applies to grouped, transport and e-commerce packaging, not simply to unavoidable ullage or internal volume of a pressure receptacle.
Re-use targets	Exempt	Article 29	Dangerous-goods-related exemptions and the precise packaging category must be checked.
Producer registration	Applies	Article 44	Register in each relevant Member State in accordance with the producer definition and national arrangements.
Extended producer responsibility	Applies	Articles 45–47	Exemption from recyclability does not remove EPR financial responsibility.
Reporting and records	Applies	Article 44 and Annex IX	Maintain reliable mass, material, format and market-placement data; confirm national reporting details.

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Requirements that are relevant

Substances in packaging

Article 5 limits the sum of lead, cadmium, mercury and hexavalent chromium resulting from substances present in packaging or packaging components to 100 mg/kg. Industrial gas companies should obtain or maintain evidence for cylinder coatings, paints, valve guards, caps, labels, adhesives and other relevant components.

The European Commission has clarified in its updated PPWR FAQ that the heavy metal restriction in Article 5(4) PPWR (100 mg/kg for lead, cadmium, mercury and hexavalent chromium) is not intended to apply where ADR-mandated safety components have no technically feasible alternative. In accordance with Article 2(2) PPWR, dangerous goods transport legislation takes precedence in case of conflict with PPWR requirements.

What the Commission says:

"The restriction in Article 5(4) PPWR is not intended to apply where ADR-mandated safety components leave no technical feasible alternative. This is in accordance with Article 2(2) of PPWR that states that, in case of conflict between PPWR and Directive 2008/68/EC, the latter should prevail."

This clarification is particularly relevant for refillable gas cylinders and LPG cylinders, where safety-critical components such as brass valves must comply with ADR requirements and currently rely on lead-containing alloys to ensure leak-tightness and safe operation. The Commission guidance provides important clarification for manufacturers, cylinder operators and gas suppliers, while recognizing that ADR safety requirements must continue to be met.

Food-contact packaging and PFAS

Article 5 introduces specific restrictions on PFAS in food-contact packaging to limit their presence above defined concentration thresholds. From 12 August 2026, food-contact packaging may not be placed on the market at or above the PPWR PFAS concentration limits, unless the placing on the market is already prohibited by another Union act:

- 25 ppb for any single PFAS measured by targeted analysis, excluding polymeric PFAS from quantification;
- 250 ppb for the sum of PFAS measured by targeted analysis, where applicable after precursor degradation, excluding polymeric PFAS; and
- 50 ppm for PFAS including polymeric PFAS, using the total-fluorine route and the evidence mechanism specified in Article 5.

Packaging minimisation

Article 10 requires packaging to be designed so that its weight and volume are reduced to the safely achievable minimum necessary for functionality. For pressure receptacles, the documented assessment should explicitly recognise mandatory design, wall thickness, stability, impact resistance, valve protection, inspection life, handling, filling and transport requirements. PPWR minimisation does not displace TPED, ADR or applicable design standards!

Labelling and digital information

The Article 12 labelling framework is dependent on harmonised labels, specifications and implementing acts. Companies should monitor these measures and assess whether material-composition, reusable-packaging or digital-data-carrier requirements apply to cylinders and related packaging components. Existing ADR, CLP and TPED marks must remain clear and must not be obscured or confused by PPWR information.

Producer registration and EPR

Article 44 requires producers to register in each Member State where the conditions in the producer definition are met. Article 45 establishes EPR obligations. The responsible entity may differ according to whether the transaction concerns transport packaging, empty packaging, packaged products, direct supply to end users, distance sales, importation or unpacking without being the end user.

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Recommended action plan

Step 1. Determine PPWR Scope

Review the PPWR requirements and determine which company products and components qualify as packaging. Identify the packaging types within scope and the applicable requirements.

Output: List of packaging within PPWR scope, *Reference*: Articles 3 and 5-12; Annex I

Step 2. Create a Packaging Inventory

Establish a register of all relevant packaging components and packaging families. Record the internal code, description, supplier, material composition for each item.

Output: Complete packaging inventory and classification.

Step 3. Identify the Responsible Manufacturer

Determine which legal entity places the packaging on the market under its own name or trademark. Assign internal responsibility for procurement, technical compliance, sustainability and legal review.

Output: Documented compliance ownership and responsibility matrix, *Reference*: Articles 3 and 15

Step 4. Collect Supplier Compliance Data

Obtain supporting evidence on material composition, packaging and component weights, heavy metals, substances of concern and PFAS where relevant. Verify that supplier declarations are supported by appropriate documentation.

Output: Supplier compliance data set, *Reference:* Article 5

Step 5. Assess Packaging Minimization

Demonstrate that packaging weight and volume have been minimized while maintaining product protection, safety, hygiene and transport performance. Where packaging designs are sufficiently similar, packaging families may be established and assessed together based on common design characteristics, materials, functions and applicable constraints. Document relevant are ADR, TPED, PED and technical-standard constraints.

Output: Packaging minimization assessment, *Reference*: Article 10

Step 6. Assess Recyclability

Determine whether the recyclability requirements apply to the packaging concerned. Where a requirement does not apply, retain a documented legal and technical justification.

Output: Documented applicability conclusion, *Reference*: Article 6

Step 7. Assess Recycled Content Requirements

Determine whether minimum recycled-content obligations apply, particularly to plastic packaging or plastic components. Record the basis for any exclusion or conclusion of non-applicability.

Output: Documented applicability conclusion, *Reference*: Article 7

Step 8. Verify Labelling Requirements

Review material identification, harmonized PPWR markings, reuse markings and any required barcode, QR code or data carrier. Confirm compatibility with existing transport and product-safety markings.

Output: Labelling compliance assessment, *Reference*: Article 12

Step 9. Compile Technical Documentation

Assemble packaging descriptions, drawings, specifications, supplier declarations, certificates and assessments against all applicable PPWR requirements. Retain written justification for requirements considered not applicable.

For industrial-gas companies, at least the following commonly used packaging items need to be considered when defining the scope of the technical file:

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Application	Packaging items to be considered
High-pressure gases	☐ Cylinders ☐ Valves ☐ Valve guards/caps ☐ Valve protection plugs/caps ☐ Protective plastic sleeves/netting ☐ Tamper-evident shrink seals/foils ☐ Product/identification labels ☐ Additional adhesive labels ☐ Cylinder bundles/palletisation components ☐ Stretch/shrink film and strapping
Cryogenic liquids	☐ Dewars ☐ Pallet tanks / cryogenic liquid containers ☐ Protective caps/covers ☐ Tamper-evident seals ☐ Product/identification labels ☐ Additional adhesive labels ☐ Protective sleeves/wrapping ☐ Pallets/frames ☐ Stretch/shrink film and strapping
Dry ice	☐ Dry ice containers ☐ Insulated boxes ☐ Cardboard boxes/cartons ☐ Inner liners/bags ☐ Insulating inserts ☐ Adhesive tape ☐ Product/identification labels ☐ Pallets ☐ Stretch/shrink film and strapping

Output: Complete technical file, *Reference*: Article 15; Annex VII

Step 10. Issue the Declaration of Conformity

Prepare and sign the Declaration of Conformity (DoC) for the packaging or packaging family concerned. Include the manufacturer details, packaging identification and description, applicable PPWR requirements, relevant standards or specifications, and the authorized signature, place and date. The Declaration of Conformity is a mandatory requirement based on the provisions currently established in the PPWR. However, it should be treated as a living document, to be reviewed and updated as outstanding provisions, implementing acts, harmonised standards and supporting guidance become available.

The Declaration of Conformity shall be issued in accordance with Article 39 and Annex VIII of Regulation (EU) 2025/40 and made available to the competent authorities upon request.

Declaration of Conformity must be kept available for 10 years after the packaging is placed on the market. It is strongly recommended to keep the DoC and all supporting documents until the end of use.

NOTE: Not all elements of the proposed implementation process can currently be completed, as supporting legislation, technical specifications and guidance for several PPWR provisions are still under development. The implementation steps should therefore be applied to the extent possible on the basis of the requirements and information available at the time, with documentation updated as the regulatory framework develops.

Output: Signed PPWR Declaration of Conformity, *Reference*: Article 39; Annex VIII

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Timeline of the actions

The table below summarizes the phased compliance deadlines and core requirements for the EU Packaging and Packaging Waste Regulation (PPWR) from its entry into force through 2040.

Deadline	To-do
11 February 2025	• Entry into force of the PPWR
From 12 August 2026	• Declaration of Conformity (Article 39) • Identification marking (Article 15(5)): type, batch or serial number • Manufacturer identification (Article 15(6)): name, trade name or trademark, postal address and electronic means of communication • Substances in packaging requirements (Article 5)
From 12 August 2028	• Labelling requirements (Article 12): material composition and sorting instructions via pictograms
From 2030	• Only packaging with at least 70% recyclability may be placed on the market • Recyclability performance grades A, B and C • Minimum recycled-content targets for plastic packaging • Packaging minimisation and empty-space requirements • Restrictions on certain packaging formats • Reuse targets • Reduction of packaging waste by 5%
2035	• Recyclability grades A, B and C and recycled-at-scale requirements • Reduction of packaging waste by 10%
2038	• Only recyclability grades A and B permitted (minimum 80%)
2040	• Stricter minimum recycled-content targets for plastic packaging • Reduction of packaging waste by 15%

NOTE: The obligations arising for companies under the PPWR depend on the packaging type, the role of the economic operator, the material fraction and the product to be packaged, including food and non-food applications.

References

Regulation (EU) 2025/40, *Regulation on packaging and packaging waste* http://eur-lex.europa.eu/

Directive (EU) 2008/68/EC, *Directive on the inland transport of dangerous goods* http://eur-lex.europa.eu/

Directive (EU) 2010/35/EU *Transportable Pressure Equipment Directive (TPED)* http://eur-lex.europa.eu/

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