



WHITEPAPER

EU PELLET LOSS REGULATION

Regulation (EU) 2025/2365 on the Prevention of Plastic Pellet Losses
Scope, obligations for operators and carriers, certification, monitoring,
sanctions, and recommendations

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1. Executive Summary

With Regulation (EU) 2025/2365, the European Union has for the first time established a binding legal framework for the prevention of unintentional releases of plastic pellets.¹ The regulation entered into force on 16 December 2025 and obliges all actors along the supply and transport chain – from polymer production through recycling and processing to transport and handling – to take precise organisational and technical precautions.

This whitepaper analyses the full scope of the regulation, the staggered implementation deadlines, the obligations for installation operators and carriers, the certification system, monitoring and documentation requirements, maritime special provisions, as well as enforcement and sanctions mechanisms. It places the regulation within the broader EU regulatory framework against microplastics and formulates concrete recommendations for affected companies.

¹ Regulation (EU) 2025/2365 of the European Parliament and of the Council of 12 November 2025 on the prevention of pellet losses.

2. Background and Problem Statement

2.1 The Pellet Problem in Numbers

Plastic pellets – also known as “nurdles” – are lentil-shaped granules with a diameter of 1 to 5 mm. They serve as industrial raw materials for the manufacture of virtually all plastic products. Significant quantities are lost along the supply and processing chain: up to 184,000 tons of pellets enter the environment in the EU alone each year – equivalent to approximately 7,300 fully loaded trucks.² Globally, an estimated 230,000 tons per year enter marine ecosystems.

This makes pellet losses the third-largest source of unintentional microplastic emissions in the EU, after tyre wear and paints. Unlike these diffuse sources, however, pellet losses are localised at identifiable points in the value chain – making them particularly amenable to regulatory intervention.

2.2 Environmental and Health Risks

Pellets persist in the environment for centuries and fragment into ever smaller microplastic particles. Their hydrophobic surface adsorbs persistent organic pollutants (POPs) such as DDT, PAHs and PCBs. Studies show that the bioavailability of these pollutants upon ingestion by organisms reaches an alarming 13 % for slightly weathered pellets.³ Philippine field studies detected microplastics in 85 % of surveyed sardine populations – an indicator of bioaccumulation in food chains.

2.3 From Voluntarism to Binding Regulation

Previous approaches such as the voluntary programme “Operation Clean Sweep” (since 1991) proved insufficient. Participation rates remained low, standardised controls were lacking, and measurable progress in reducing pellet losses could not be demonstrated. Against this backdrop, the EU has taken the step from voluntary self-commitments to binding, auditable obligations.

2.4 The X-Press Pearl Disaster as Catalyst

The fire and sinking of the container ship X-Press Pearl off Sri Lanka in May 2021, which released an estimated 1,680 tons of pellets, dramatically illustrated the devastating impact of uncontrolled pellet releases. The event significantly accelerated political negotiations at EU level and led to the inclusion of maritime transport routes in the scope of the regulation.

² Source: European Commission, *Impact Assessment for the Pellet Regulation*, 2023.

³ Thompson et al. (2024): *Twenty-year retrospective on microplastic pollution – planetary boundaries exceeded*.

3. Scope and Addressees

3.1 Materials Covered

The regulation covers plastic granulate in all forms: pellets (cylindrical or lentil-shaped bodies), flakes (particularly from recycling processes) and powder (fine-grained plastic raw materials). The definition is oriented towards industrial practice and covers the full range of plastic pre-products used as raw materials.

3.2 Addressees along the Value Chain

The regulation targets all actors handling plastic granulate:

Actor	Activity	Applies from
Polymer manufacturers	Production of plastic pellets	17 December 2027
Recycling companies	Processing into recycled granulate	17 December 2027
Converters/processors	Conversion into plastic products	17 December 2027
Warehouse operators	Storage and handling	17 December 2027
Carriers (land)	Transport by road/rail	17 December 2027
Cleaning companies	Cleaning of facilities/containers	17 December 2027
Loaders/seagoing vessels	Maritime transport in containers	17 December 2028

Table 1: Addressees of the Pellet Loss Regulation and application dates.

3.3 Thresholds

The regulation differentiates by company size and handling volume:

- From 5 tons/year: Obligation to prepare risk management plans
- From 1,000 tons/year: Additional documentation and monitoring obligations
- Above 1,500 tons/year: Mandatory third-party certification every three years
- Below 1,500 tons/year: Simplified requirements with self-declaration

4. Implementation Deadlines in Detail

4.1 Obligations in Force since 16 December 2025

Immediately upon entry into force, the following core obligations already apply:

- Article 3(1): General obligation to prevent pellet releases into the environment – this fundamental duty applies immediately and to all actors
- Article 5(6): Obligation for annual documentation of handled and released granulate quantities
- Article 16: Standardisation mandate – development of harmonised methods for loss estimation
- Article 17(1): Designation of competent national authorities by the Member States
- Articles 18(2)–(3): Development of guidance and training materials

4.2 From 17 December 2027: Core Operational Obligations

The majority of material obligations take effect from this date:⁴

- Preparation, implementation and regular updating of site-specific risk management plans
- Implementation of technical and organisational measures for loss prevention
- Task-specific personnel training
- Certification by independent third parties (for operators above 1,500 t/year) or self-declaration
- Notification obligations to competent authorities
- Labelling and transport notifications for land transport

4.3 From 17 December 2028: Maritime Obligations

Delayed deadlines apply for maritime transport:⁵

- Obligation for high-quality packaging of pellets in freight containers
- Provision of transport and cargo information
- Regulatory enforcement against loaders and vessel operators
- Transport companies from third countries must designate an EU authorised representative

⁴ Cf. Article 21(2) of Regulation (EU) 2025/2365: Application from 17 December 2027.

⁵ Cf. Article 21(3): Maritime provisions apply from 17 December 2028.

5. Risk Management and Technical Measures

5.1 Risk Management Plans

Every installation handling more than 5 tons of plastic pellets per year must prepare a detailed, site-specific risk management plan. This must:

- Identify all process steps where pellet losses may occur (delivery, storage, internal transport, processing, loading, cleaning)
- Specify technical and organisational countermeasures for each identified risk point
- Define responsibilities and escalation pathways
- Include procedures for accident situations and unplanned releases
- Be regularly reviewed and updated

5.2 Typical Technical Measures

The regulation does not prescribe rigid technical solutions but requires appropriate, site-specific measures. In practice, these typically include:

- Closed transport systems (pneumatic conveying, enclosed conveyor belts)
- Containment trays and screens at critical transfer points
- Barriers at drainage channels and sewer inlets
- Regular cleaning of operational areas with suitable equipment (industrial vacuum cleaners rather than water)
- Specialised packaging and sealing procedures for pellet buildings and containers
- Training of personnel in pellet-aware working practices

5.3 Immediate Remediation Obligation

Should pellet losses occur despite prevention measures, they must be remediated as quickly as possible. The regulation thus enshrines a principle that goes beyond mere prevention: even unavoidable losses may not simply be accepted but must be actively addressed.

6. Certification and Compliance Verification

6.1 Three-Tier System

The regulation establishes a three-tier compliance system that takes company size into account:

Tier	Threshold	Verification	Frequency
Tier 1 - Large operators	> 1,500 t/year	Third-party certification	Every 3 years
Tier 2 - SMEs	≤ 1,500 t/year	Self-declaration	Once in 5 years
Tier 3 - EMAS-registered	Independent	EMAS integration	Per EMAS cycle

Table 2: Three-tier certification system of the Pellet Loss Regulation.

6.2 Third-Party Certification

Operators with an annual pellet volume exceeding 1,500 tons must obtain certification from an independent, accredited body every three years. The certification verifies full implementation of the regulation's requirements: risk management plan, technical measures, personnel training, monitoring and documentation. Member States are required to establish and accredit certification bodies.

6.3 EMAS Privilege

EMAS-registered companies and installations with certain certified environmental management systems may be exempted from recurring declaration and certification obligations, provided the pellet-related requirements are fully integrated into the existing system and validated. This creates an incentive for the implementation of comprehensive environmental management systems.

6.4 Alternative: Regulatory Permits

As an alternative to certification, Member States may ensure compliance through a permitting system with regular inspections. This flexibility accommodates the different administrative traditions across Member States.

7. Monitoring, Documentation and Reporting

7.1 Annual Documentation

Companies must systematically collect and document the following data annually:

- The total quantity of plastic granulate handled (in tons)
- The estimated quantity of granulate released (in kilograms or tons)
- The prevention measures taken and their effectiveness
- Any accidents or unplanned releases

7.2 Harmonised Estimation Method

A harmonised European standard is to be developed for estimating release quantities. The Commission must submit the standardisation mandate to a European standardisation organisation by 17 December 2026.⁶ Until this standard is available, transitional mechanisms apply – companies must estimate their losses to the best of their knowledge.

7.3 Notification Obligations

Installations and carriers are subject to notification obligations to the competent authorities. Material changes – such as new operational sites, capacity expansions or modifications in handling procedures – must be notified. Companies must also declare whether they are above or below the 1,500 tons per year threshold.

⁶ Cf. Article 16 of Regulation (EU) 2025/2365: Standardisation mandate.

8. Maritime Special Provisions

Approximately 38 % of all pellet movements in the EU occur by sea. The regulation thus closes a critical regulatory gap by, for the first time, including maritime transport on a binding basis.

8.1 Packaging and Cargo Securing

For sea transport of pellets in freight containers, enhanced packaging quality requirements apply from December 2028. Pellets must be packed in tear-resistant, tightly sealed containers, and containers must be loaded in a manner that minimises spillage during rough seas and loading/unloading operations.

8.2 Information and Documentation Obligations

Loaders must provide transport and cargo information that clearly identifies the pellet nature of the cargo. Ship captains and agents must have appropriate procedures in place for dealing with leaks and accidents.

8.3 Third-Country Rules

To ensure a level playing field, transport companies from third countries shipping pellets into the EU must designate an authorised representative in the EU. This ensures that non-European actors are also subject to the accountability and transparency obligations.

9. Transparency, Enforcement and Sanctions

9.1 Public Registers

The regulation requires Member State authorities to maintain publicly accessible registers of installations and carriers and publish them on easily accessible websites. This transparency creates reputational pressure and enables civil society, media and business partners to assess companies' compliance performance.

9.2 Inspection Powers

Member States must confer comprehensive inspection and enforcement powers on their competent authorities. These include the right of access to installations, the review of documents, risk management plans and certificates, and the power to issue orders for remediation. All information and documents – regardless of format or storage medium – may be used as evidence.

9.3 Sanctions Framework

The regulation provides for deterrent sanctions to increase compliance readiness. Member States must establish effective, proportionate and dissuasive penalties, which may extend to turnover-related fines. The triad of transparency, certification and sanctions is intended to ensure that the regulation is not merely a paper exercise but is effectively enforced.

Important: The sanctions framework goes significantly beyond previous voluntary approaches. Turnover-related fines can have substantial financial consequences, particularly for large companies.

10. Expected Impact and Critical Assessment

10.1 Projected Emission Reduction

The European Commission projects a reduction in pellet losses of 54 to 74 %. In absolute terms, this would mean between 28,000 and 136,000 fewer tons of pellets entering the environment each year – a substantial contribution to reducing unintentional microplastic emissions.

10.2 Critical Evaluation

Despite the ambitious approach, the regulation has weaknesses that may limit its effectiveness:

- **SME challenge:** 98 % of conversion companies and 97 % of transport/storage companies fall below the SME threshold. The majority of actors therefore only need to file a self-declaration – without independent verification.
- **Lack of measurement methods:** The regulation requires loss documentation but does not yet define standardised measurement methods. The harmonised standard will be available in 2028 at the earliest.
- **Legacy pollution:** Pellets already emitted – millions of tons in ecosystems worldwide – are not addressed. The regulation is purely forward-looking.
- **Enforcement challenges:** Effectiveness depends critically on the willingness and capacity of national authorities to enforce the regulation.

10.3 Positioning within the EU Regulatory Framework

The Pellet Loss Regulation complements the REACH restriction (Entry 78) on intentionally added microplastics. While REACH addresses emission sources in products, the Pellet Regulation targets industrial process losses. Together with the Single-Use Plastics Directive and the new Packaging Regulation, an increasingly dense regulatory net against plastic pollution is emerging.

11. Recommendations for Companies

11.1 Immediate Actions (since December 2025)

1. Stocktaking: Comprehensively map where in your company plastic granulate is handled – from delivery to dispatch.
2. Threshold assessment: Determine your annual handling volume and assign yourself to the correct certification tier (below/above 1,500 tons).
3. Implement the prevention obligation: The general prevention duty already applies. Identify and eliminate obvious loss sources immediately.
4. Start documentation: Begin systematic recording of handling and loss quantities.
5. Plan personnel training: Prepare task-specific training for all relevant employees.

11.2 Medium-Term Actions (by December 2027)

6. Prepare risk management plan: Develop a detailed, site-specific plan with technical and organisational measures.
7. Implement technical measures: Invest in closed systems, containment devices and appropriate cleaning technology.
8. Certification preparation: Identify the relevant certification body and prepare the evidence.
9. Evaluate EMAS integration: Assess whether EMAS registration or integration into an existing environmental management system offers advantages.
10. Adapt transport logistics: Ensure that labelling, notification obligations and accident procedures are implemented.

11.3 Strategic Perspective

The Pellet Loss Regulation is part of a long-term trend towards a zero-emission economy for plastics. Companies that invest early in prevention technologies and establish transparent processes position themselves not only in regulatory compliance but also as responsible actors in the plastics value chain. The public registers will create transparency – and thereby also business consequences for companies that fail to meet the requirements.

12. Conclusion and Outlook

The EU Pellet Loss Regulation (EU) 2025/2365 marks a milestone in European environmental law. For the first time, unintentional pellet releases are regulated on a binding basis – with clear obligations, independent audits and deterrent sanctions. The paradigmatic shift from voluntary programmes to binding, auditable obligations sends a strong signal to the entire plastics industry.

For Wasser 3.0, the regulation is a long-overdue step. Prevention is always more effective – and more cost-efficient – than the subsequent removal of microplastics from the environment. Our work demonstrates daily how laborious the removal of microplastics from water bodies is. Every pellet that never enters the environment is a gain for ecosystems and society.

At the same time, we urge vigilance: the regulation will only be as effective as its enforcement. The high SME thresholds, the absence of measurement methods and the unaddressed legacy of pellets already released require improvement and scientific accompaniment. Wasser 3.0 will actively and critically monitor the implementation process.

Do you need support with microplastic analysis and quantification?

Then get in touch with us.



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