

The Digest's 2026 Multi-Slide Guide to Plastic Pyrolysis and the Hosts That Absorb It

Mixed-plastic cracking survives only where a cracker or refinery owner absorbs the oil — and the claim attached to it.

Stand-alone pyrolysis plants closed. Plants inside crackers and refineries kept running.

CLOSED OR FAILED · 2025–26

Pryme One, Rotterdam

Permanently closed mid-2026

Viridor: Skive, Oslo, Malmö

All three closed, June 2026

Brightmark, Ashley (Indiana)

Chapter 11, Mar 2025, at 5% utilisation

Plastic Energy UK

Into administration, May 2026

Reported

STILL RUNNING UNDER A HOST

ExxonMobil Baytown, Texas

~250M lb/yr capacity (nameplate)

Neste Porvoo, Finland

Upgrader commissioned end-2025, up to 150 kt/yr

Grandpuits, France

15 kt/yr, now 100% TotalEnergies

Reported · capacities are nameplate, not throughput

THE QUESTION · INTERPRETATION

Who can absorb mixed-plastic pyrolysis oil — and does the recycled-content claim survive?

The oil is too contaminated to feed a cracker on its own. Someone must dilute or upgrade it, and an accounting rule now decides how much of the result can be sold as recycled.

Typical post-consumer oil misses cracker limits by one to four orders of magnitude.

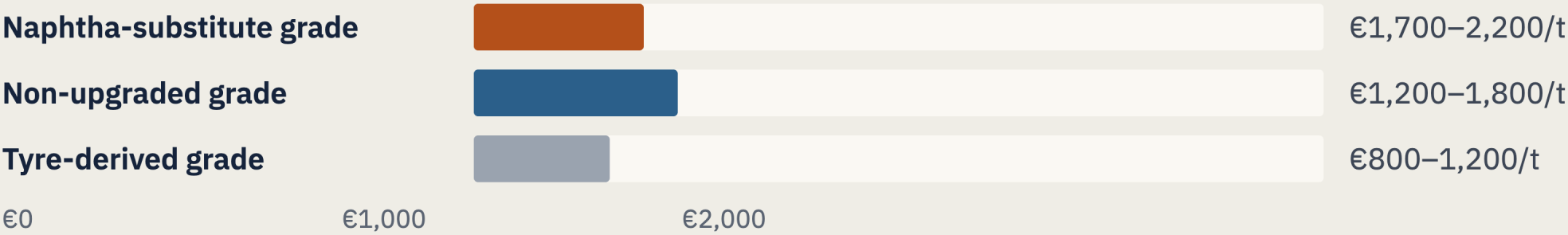
Contaminant	Oil, ppm	Limit, ppm	Times over limit · log scale, 160px = 10×
Chlorine	~1,460	3	~490×
Iron	33	0.001	33,000×
Calcium	17	0.5	34×
Nitrogen	~1,650	100	~17×
Oxygen	~1,250	100	~13×

Caveat: crackers usually take pyrolysis oil at low blending ratios, which dilutes these levels. That dilution is exactly what a host provides.

Source: Kusenberget al., “To decontaminate or not to decontaminate?”, Waste Management 138 (2022) — literature compilation.
Exceedance ratios derived.

THE PRICE OF CONTAMINATION · INDUSTRY BENCHMARK

Contamination is priced at the outlet, in the grade the oil earns.



3.7×

max premium over NW Europe naphtha
Industry benchmark · ICIS via Energy Institute

>€1,000/t

spread between best and worst oil grades
Derived from the ICIS ranges

Source: Energy Institute, New Energy World, citing ICIS ex-works Europe pyrolysis-oil prices, ~2023–24 (published 8 Jul 2024).
Scale: 320px = €1,000/t.

FEED SPEC AND DISTANCE · INDUSTRY BENCHMARK

The feed is nearly free. Sorting it to spec, close to the plant, is not.

PLATTS PYROLYSIS BALE SPEC · MAR 2025

Component	Limit
Polyolefin (PE, PP)	≥86%
Polystyrene	≤6%
Organics and moisture	≤5%
PVC · PET · metals, each	≤1%

Aimed at ≥75% oil yield. US price is for bales delivered within 200 miles.

US GRADE C FILM · JUL 2025

0.38¢/lb

about \$7.6 per ton (derived) — the cost is in collecting, sorting and hauling it

Industry benchmark · SMP Index

Sources: S&P Global Platts methodology note, advanced-recycling mixed plastic waste assessments (12 Mar 2025); Resource Recycling, “Plastic bale prices fall in July” (16 Jul 2025)

FAILURE ORDER 1: RELIABILITY · OBSERVED DATA

Stand-alone plants failed first on uptime — even with an offtaker signed.

Pryme One · Q2 2025

~150 t oil vs 1,500–2,000 t plan; reactor seals; Shell offtake



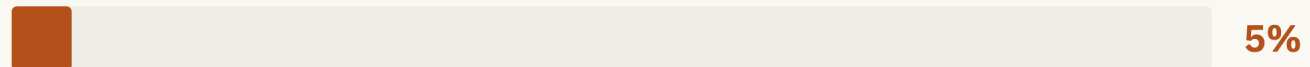
Quantafuel Skive · Jan 2023

548 t in the month; “up-time” the main problem



Brightmark Ashley · Mar 2025

utilisation when it filed for Chapter 11



Output as a share of plan or nameplate; full bar = 100% (900px). Pryme’s range is derived from its plan; all figures Reported.

Sources: Pryme trading updates (10 Dec 2024; Q2 2025); Argus, “Viridor to pay £90mn for Norway’s Quantafuel” (1 Mar 2023); Waste Dive, Brightmark bankruptcy (2025)

Then the chemistry worked — and the plants closed anyway.

IT WORKED

70–75%

dry oil yields on contaminated household plastic at Viridor's plants

Reported · Viridor, June 2026



IT CLOSED

3 of 3

Skive, Oslo, Malmö shut, citing cheaper virgin plastic, weak demand, weak enforcement

Reported · Viridor, 26 June 2026

Comparator: ~1 Mt of EU mechanical-recycling capacity lost since 2023 (Plastics Recyclers Europe, trade association). The virgin-price squeeze is not unique to chemical recycling.

The EU pipeline is 27 times what runs — and the leaders are cutting targets.

EU mixed-plastic pyrolysis oil, kt/yr · two separate figures, not additive · 1,000px = 2,700 kt



Industry benchmark · ICIS, 2024 · ratio >27× derived

Company	Earlier target	Latest position
ExxonMobil	1B lb/yr globally by 2027 (Nov 2024, Announced)	“On track” for ~450M lb/yr by end-2026 (Feb 2026, Announced)
Shell	1 Mt/yr by 2025, called “unfeasible” in 2023	Two upgraders taking up to 50 kt/yr of oil
Dow / Mura	120 kt/yr plant at Böhlen, Germany	Cancelled Aug 2025: host cracker closes Q4 2027

Sources: Energy Institute citing ICIS (8 Jul 2024); ExxonMobil (21 Nov 2024; Feb 2026); PlasticsToday, “Shell Walks Back Chemical Recycling Project” (2024); S&P Global (7 Aug 2025)

The survivors own the unit that dilutes or upgrades the oil.

EXXONMOBIL BAYTOWN

~250M

lb/yr capacity · co-feed

Oil co-fed into existing units. >70M lb processed 2022–Oct 2024. Plastics-vs-fuel split undisclosed.

Reported · ExxonMobil, Nov 2024 and Feb 2026

NESTE PORVOO

150 kt

kt/yr max · upgrader

€111M upgrader for liquefied waste plastic. Built end-2025; gradual ramp-up in 2026.

Reported · Hydrocarbon Engineering, Mar 2026

TOTALENERGIES GRANDPUITS

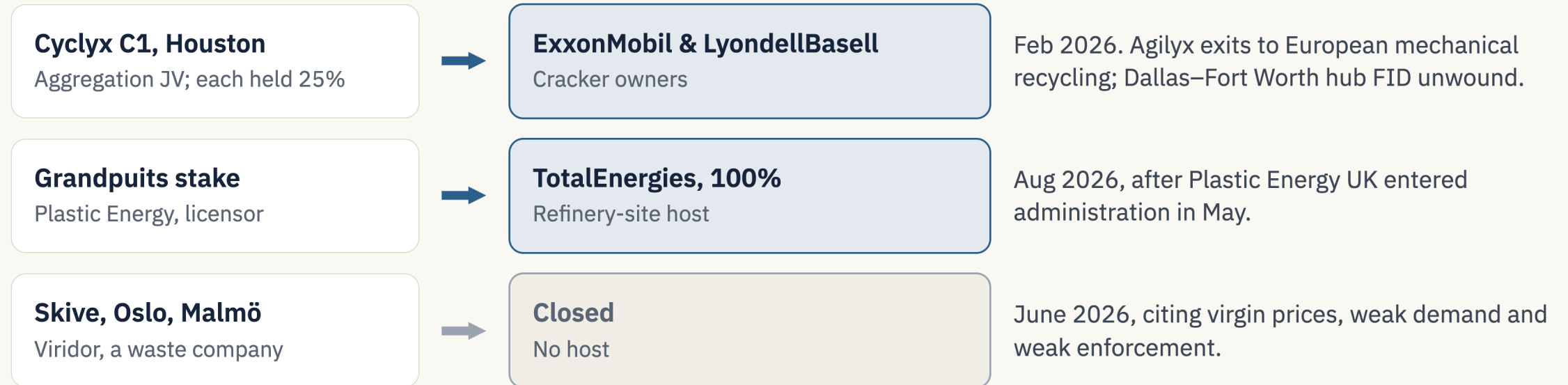
15 kt

kt/yr of plastic waste

Operational from Mar 2026. Licensors' stake passed to TotalEnergies in Aug 2026.

Reported · letsrecycle, Aug 2026

In distress, the offtaker absorbs the aggregator and the asset.



Interpretation: where the buyer owned a cracker, it took the asset; where none did, the plant closed.

The EU now credits only what becomes polymer — fuel earns nothing.

EU SUPD MASS-BALANCE ACT · VOTED 6 FEB 2026

- **Excluded:** fuel, process losses and char
- **Per facility:** credits not transferable
- **Balanced** within three months

Regulator-observed, as reported

CALIFORNIA V EXXONMOBIL

Filed Sept 2024 over “advanced recycling” claims; pending. Baytown’s plastics-vs-fuel split is undisclosed.

Regulator-observed · court record

Permitting relief did not decide survival: 25 US states classify advanced recycling as manufacturing (Reported), and Brightmark failed in one of them.

THE CONTRAST · OBSERVED DATA

One polymer and one brand buyer: PET methanolysis runs.

EASTMAN KINGSPORT, TENNESSEE · FY2025

>75%

utilisation after October 2025 modifications

DMT yield up to 94% · ~\$60M incremental EBITDA in 2025 ·

PepsiCo contract

Reported · Eastman Q4/FY2025 prepared comments

BUT: LONGVIEW, TEXAS

~2 yrs

delay to the \$1.2B second plant after DOE
cancelled a \$375M grant

Reported · Waste360, Aug 2025

A narrow polyester feed: these results do not transfer to mixed polyolefins.

Sources: Eastman, Q4 and FY2025 Prepared Comments (Jan 2026); Waste360, Eastman delays recycling facility after losing \$375M grant (5 Aug 2025)

WHAT MOST READERS MISS · INTERPRETATION

No documented failure was blamed on the catalyst.

Plants failed on uptime, then on price — and survived only inside a host. The variable that decides the business is who absorbs the oil, not how it is cracked.

Competing view: the hosts' scale-up partly defends a licence to operate rather than proving stand-alone economics. And pretreatment cost is not public, so its weight cannot be measured.

DECISION TEST

Six questions before backing a mixed-plastic pyrolysis plant

1. Who dilutes or upgrades your oil — and do they own the cracker or refinery?
2. What grade of oil does your actual feed produce, not the spec bale?
3. Is your premium over naphtha contracted, or a voluntary pledge?
4. Will your host asset still be operating in 2030?
5. How much of your output counts under fuel-exempt mass balance?
6. What is your uptime at month six, in tonnes per quarter?