GlobalData

Industry Insights: Mono-Materials in Packaging

Innovating for efficient recyclability and added function in single-material packaging



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Defining mono-materials

Mono-materials in packaging include both the traditional and the innovative

This trend balances sustainability, regulatory alignment, and operational efficiency in packaging design

The mono-material trend in packaging refers to the shift from multi-layer, composite structures to packs made from a single material type (e.g. all-paper or all-plastic). This design approach significantly improves recyclability, as mono-materials are easier to sort, process, and reintroduce into recycling streams compared with complex laminates. As regulations increasingly penalize hard-to-recycle formats, mono-material packaging helps brands improve recyclability scores, reduce extended producer responsibility (EPR) fees, and simplify compliance reporting. Key mono-material approaches include: the "paperization" trend, where plastic is replaced with fiber-based solutions; mono-polypropylene or mono-polyethylene flexible packaging designed for existing plastic recycling streams; all-PET trays and bottles; and aluminum mono-material packs. Mono-material innovation is generally heavily focused on sustainable plastics and fiber-based concepts, reflected in the focus of this report.

Key common mono-materials

Plastics

Common examples include polypropylene (PP), polyethylene (PE), polyethylene terephthalate (PET), and barrier films such as ethylene-vinyl alcohol (EVOH) and machine direction oriented (MDO) PE, designed to enhance the functionality of primary materials without undermining mono-material nature. Recyclable in conventional streams.

Fiber-based

Paper, board, and other natural fiber-based material, commonly used in food packaging as a replacement for plastics. Outer packaging across FMCG. Compostable and/or biodegradable in nature.

Glass

Traditional mono-material packaging, albeit commonly featuring applied labels of varied materials. True mono-material approaches are being embraced through engraved and novel surface finishes to increase sustainability. Heavy compared to alternatives; recycling is energy-intensive.

Metals

Aluminum and steel cans, suitable for recycling at scale. Can be complicated by lining materials and inks/printing. Metals are also used in multi-material scenarios for barrier properties (e.g. metalized films). Can be expensive to recycle.

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Packaging material trends reflect the dominance of plastics

Mono-material innovation is fueled by a need to address sustainability in the face of inelastic demand

Global: primary packaging and outers volume with five-year category forecast, by pack material, billion pack units, 2020-30[1]

Pack material	2020	2025	2030	CAGR 2020–25	CAGR 2025–30
Flexible packaging	1,150.0	1,264.3	1,377.2	1.9%	1.7%
Glass	422.2	452.6	473.3	1.4%	0.9%
Paper and board	618.0	638.8	643.4	0.7%	0.1%
Rigid metal	454.5	502.5	549.1	2.0%	1.8%
Rigid plastics	1,151.3	1,395.6	1,575.3	3.9%	2.5%

The data above highlights that rigid plastics and flexible (plastic) packaging are still the dominant materials in global FMCG packaging and, despite a forecast slowing of growth, are set to remain so through to 2030 (a critical year in various regulatory frameworks for recycling goals). Hidden behind the headline data is the degree to which recyclable and sustainable material innovation is occurring to change the nature of plastics on the market; the next slide underlines that in the form of tracking patent activity. Notably, while number three in size, paper and board—a key category in mono-material innovation—is overall showing weak growth, although this could reflect the circularity aimed for in the marketplace for these materials. Overall, the slowing growth in all materials also suggests the broader trend for packaging reduction: less material usage through simplification, lightweighting, and non-packaged products.

Source: GlobalData Market Data, Primary Packaging and Outers Volume with 5-year Category Forecast, accessed February 2026

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