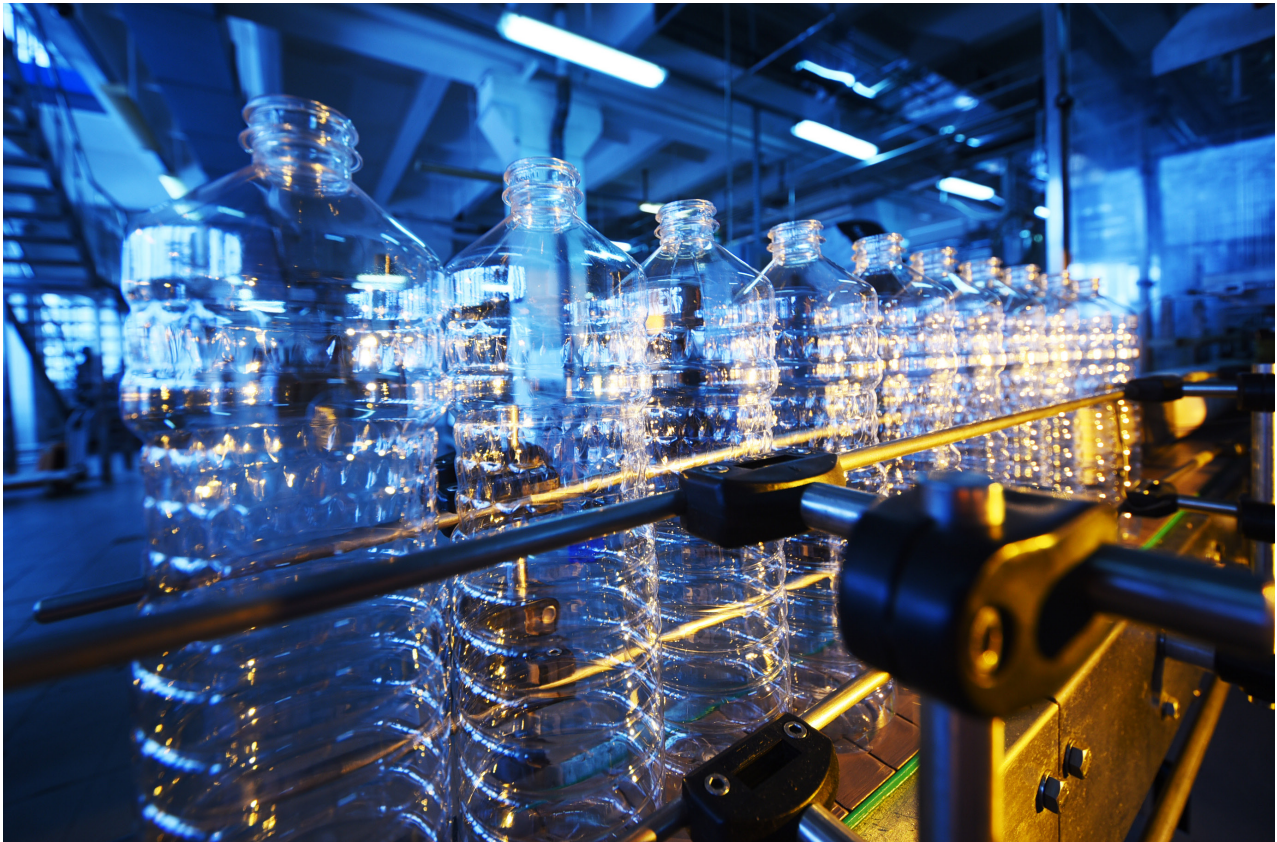


MARKET ADVISORY

Packaging Market Q4 2023



EXECUTIVE SUMMARY

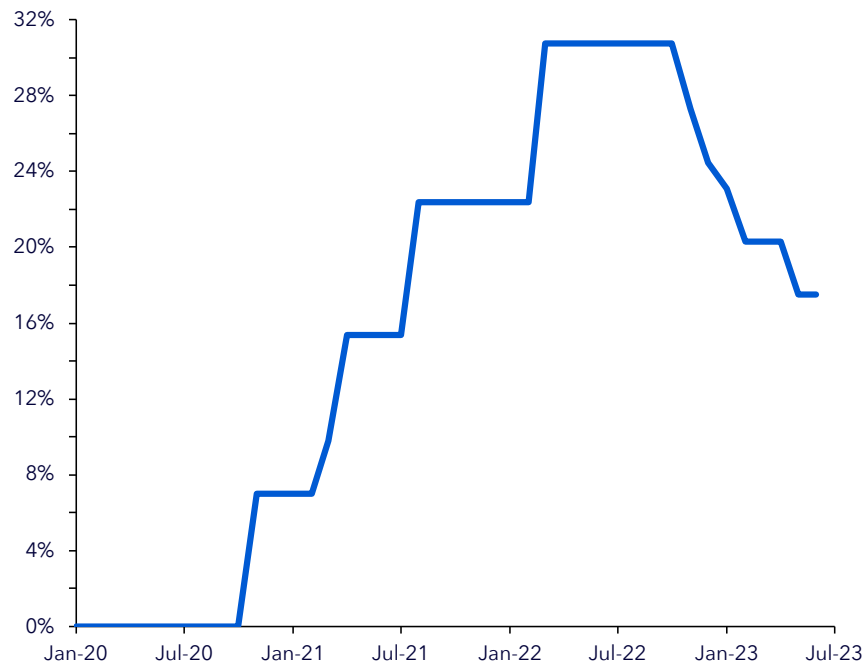


- **Corrugated:** Sales of cardboard boxes remain down 10%+ YoY; long-planned new capacity coming online in parallel with concerns around consumer sentiment that can drive corrugated demand suggests market has not yet reached a bottom and further relief is likely into 2024.
- **Pallets:** Significant softening continues since late 2022 in both new and recycled pallet markets with most pallet depots still working through excess inventory but expected to approach a bottom in coming months – significant opportunity to lock in longer-term pricing at market floor in Q4 2023.
- **Plastic Packaging:** Key inputs HDPE and PP are down 20%+ YoY, driving down production costs on bags, films, and bottles. There is a continued emphasis on shifting to more sustainable packaging solutions. Pricing relief could extend further – if the UAW strike continues to impact production at the current rate, it's estimated that the demand for Polypropylene from the big three U.S. automakers could decrease by 26k tons.
- **Paper Cores & Tubes:** Approximately 70% of core costs are driven by key input fiber; .020" Bending Chip index is down ~10% YTD with further relief expected.

CORRUGATED MARKET UPDATE

- Sales of cardboard boxes have been declining over the past year; YoY sales of corrugated down 10%+ with suppliers remaining concerned about demand and further pricing relief expected.
- Indices that underly price adjustment mechanisms for Corrugated are down ~15% since Q4 2022 with additional relief expected into 2024.
- Planned merger of major packaging companies WestRock and Smurfit Kappa announced in Q3 2023 - from a sourcing standpoint, little to be concerned about near-term as it relates to packaging sourcing given demand slow-down and continued existence of competitive supply base despite merger.
- Suppliers continue to be interested in securing contracts and booking business into the future to minimize the risk of underutilization given broader economic concerns; while standard agreements will contain mechanisms (e.g., formulaic pricing adjustments based on RISI 42 lb. Linerboard index) to capture market relief, significant opportunity beyond index-driven relief is available for organizations willing to test the market via a competitive event.

LINERBOARD, % CHANGE FROM JAN 2020

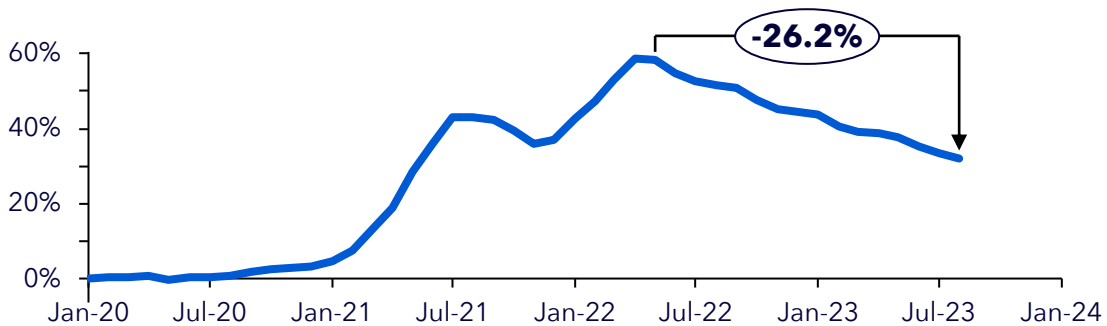


Sources: American Forest and Paper Assn., Freightwaves, Conversations with Market Participants, ISG COE Analysis

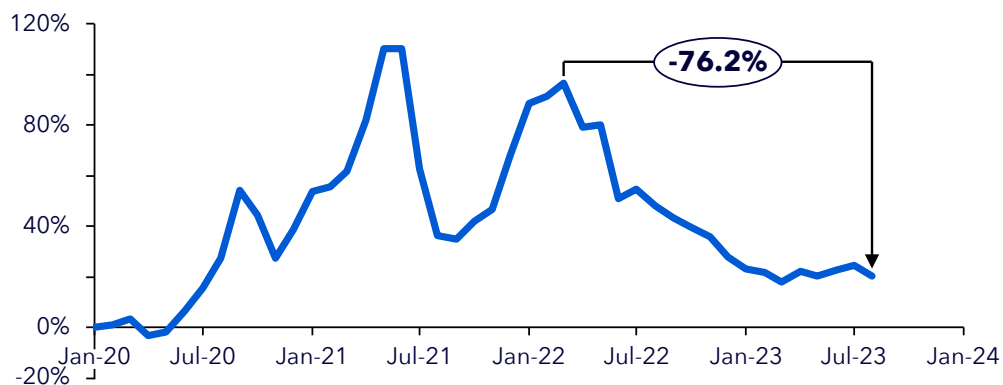
PALLETS & CRATES MARKET UPDATE

- Significant contraction in pallets markets continue since late 2022 in both new and recycled pallet markets; in certain instances, market pricing for pallets is 50%+ lower YoY.
- New pallet pricing softening in line as lumber prices stabilize to new normal from the pandemic lumber “bubble”; driven by slowing new housing market and reduced interest in home remodeling and renovations.
- Severe correction in recycled pallets markets in general, although specific recycled pallets market dynamics will vary by locale – pallet yards still working to offload excess inventory in many markets and downwards pressure continues, although pricing is expected to approach a floor.
- Consolidation within the industry continues in 2023, including by national, PE-backed pallet management companies (e.g., 48forty Solutions acquisition of Taylor Pallets & Recycling, Kamps acquisition of Pal-King).
- Many organizations has shifted to month-to-month or quarterly RFQ strategy in 2023 to continuously capture market relief; however, expectation is that market is approaching a bottom and a shift back to an annual RFP should be considered to lock in at floor prices.

PPI: WOOD PALLETS; % CHANGE FROM JAN 2020



PPI: LUMBER, % CHANGE FROM JAN 2020

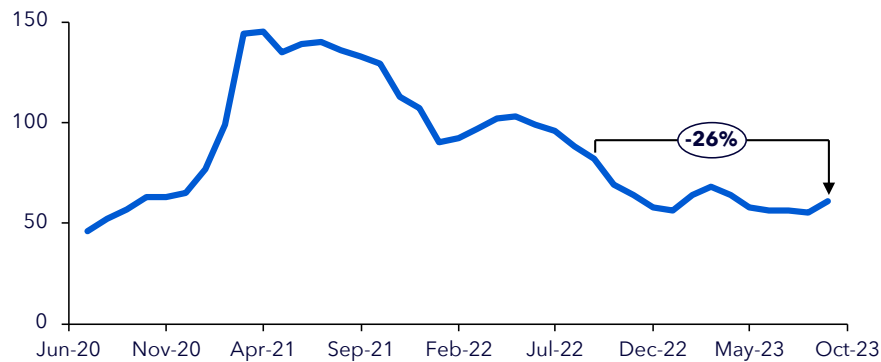


Sources: FRED, Conversations with Market Participants, ISG COE Analysis

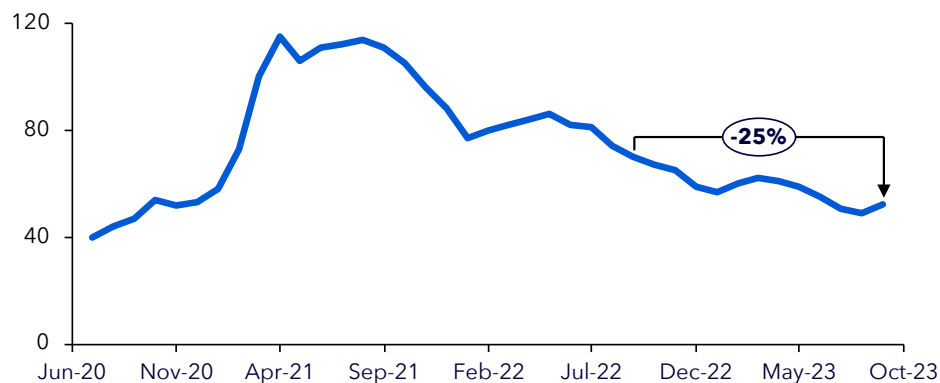
PLASTIC PACKAGING MARKET UPDATE

- While Polypropylene prices increased 3.6% MoM, they are still down ~30% since Sep 22'.
- If the UAW strike continues to impact production at the current rate, it's estimated that the demand for Polypropylene from the big three U.S. automakers could decrease by 26,000 tons, based on H1 2023 volumes.
- Despite achieving peak sales in August for 2023, Polypropylene sales for September have slowed down. Supply remains steady even with industry operating rates remaining below 80% for the last 13 months through August.
- U.S. demand for recycled Polypropylene is experiencing a downturn that is line with broader macroeconomic shifts and affecting both the Polyethylene and Polypropylene market.
- U.S. September Polyethylene contract prices increased by \$0.03/lb due to rising integrated production costs and a slight boost in domestic demand.
- Disruptions in Ethylene production and decreases in Polyethylene production capacity are expected to keep prices steady in the near term.

POLYPROPYLENE HOMOPOLYMER N. AMERICA



HDPE BLOW MOLD N. AMERICA

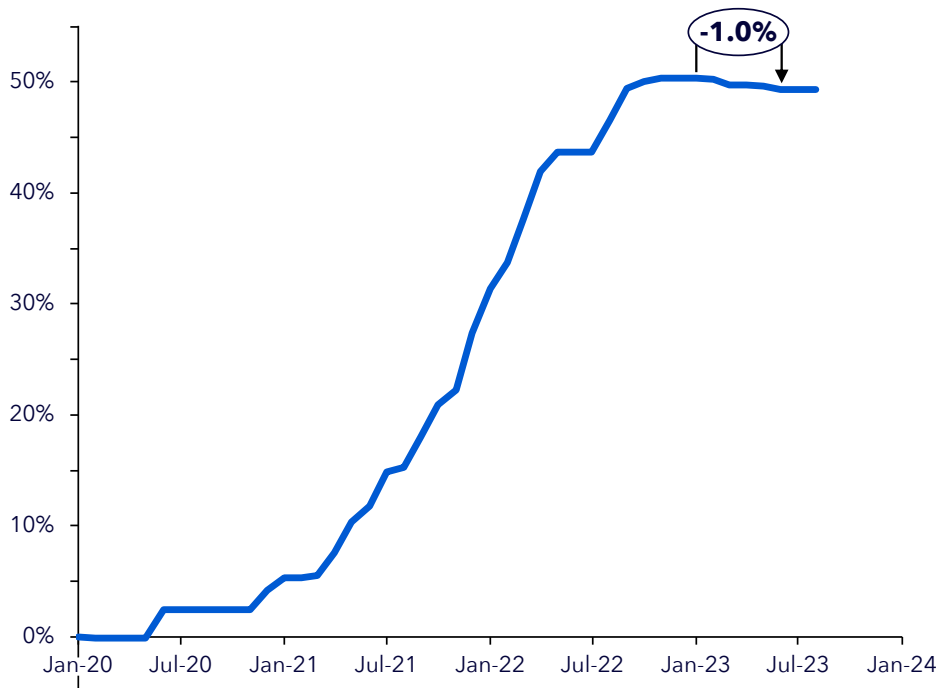


Sources: FRED, Plastics Today, Conversations with Market Participants, ISG COE Analysis; Prices shown are in cents

PAPER CORES & TUBES MARKET UPDATE

- Paper Cores & Tubes prices have stabilized and even softening after a multi-year run of consistently rising costs.
- Approximately ~70% of core costs are driven by key input fiber. The .020” Bending Chip index, which tracks fiber pricing and frequently drives contract price adjustments for large core buyers, is down 8% YTD with further relief planned.
- Market share is dominated by two large global players – Sonoco and Greif – although a subset of regional or national players have been aggressively pushing for market share; in addition, Abzac (French-based cores producer) materially entered the US market via consolidation of U.S. operations with Nagel Paper in 2022.
- As prices have inflated over past 3 years, the business case for insourcing the cutting of cores to size has strengthened. This is a relevant market dynamic to consider for buyers of various length cores.

PPI : FIBER CORES & TUBES, % CHANGE FROM JAN 2020



Sources: FRED, Conversations with Market Participants, ISG COE Analysis



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