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Sustainable Packaging Specification Recommendations for Automotive Manufacturing Operations

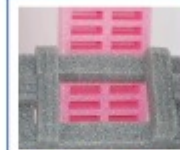




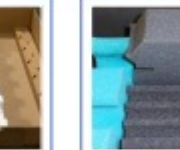













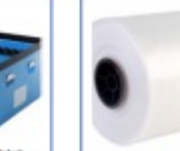



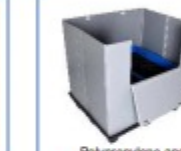





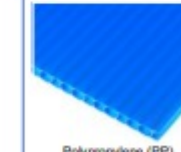




Guidance Document

Executive Summary

This guidance document focuses on best practice recommendations intended to help automotive original equipment manufacturers (OEMs) and their suppliers to source sustainable packaging designs for use in automotive manufacturing operations.

1. When building business cases for packaging design and logistics, include and communicate to procurement / supply chain managers a total enterprise financial scope that considers all corporate goals and strategies including health, safety, and the environment.
2. Whenever possible, source parts, modules and other products using returnable packaging and base this decision on life cycle factors.
3. Avoid using foams in packages that include spacers and dunnage, if possible, as most foams (polystyrene, polyurethane and other thermoset products) are difficult to recycle.
4. Use of expanding polyurethane foam in packages should be avoided, especially when formed within plastic bags. This package material creates a significant challenge for recycling and reuse.
5. If a foam packaging product is sourced, expanded polypropylene (EPP) may be more recyclable than other foam options.
6. Combination packaging (specifically incorporating multiple materials) should be avoided whenever possible. When unavoidable, materials should be able to be segregated without requiring significant time or force.
7. Pallet and container separation ease improves reuse and recycling potential. Avoid using screw fasteners, nails or staples to attach corrugated board / old corrugated container (OCC) boxes to wood pallets.
8. Avoid using metal clips on plastic banding. Plastic banding should be secured using plastic weld (sonic) technology.
9. Avoid using metal brackets and wood to reinforce corrugated board / OCC boxes. Oftentimes corrugated brackets and spacers can reinforce boxes where needed.
10. Whenever possible, avoid one-time use packaging and assembly aids.
11. Plastic corrugate, multidirectional board and straight walled totes, which many times are made of polypropylene or polyethylene, should not be sourced with mixed plastics as dunnage or metal fasteners, except for the plastic pallets with seatbelts. This material, when clean and used without fasteners, can be processed for recycling as well.
12. LDPE plastic bags and bubble wrap and other film can be reused or baled and placed into a plant recyclable film program. These materials can also be reused internally, or sent to non-profits, small local businesses as well as sent back to the supplier for reuse if clean and in good condition.
13. Polypropylene and polyester fabric bags that may be used to protect class A surface parts from mutilation such as lighting fixtures, fascias, chrome parts, etc. can be placed in the container and sent back to the supplier for reuse where feasible.
14. If a Logistics Optimization Center (LOC) is used to service nearby manufacturing operation(s), then efforts to concentrate and manage expendables for reuse and recycling at this location should be done. Aftermarket parts locations can also help consolidate materials for this purpose. These strategies create consolidation points for improved material management.
15. Wood pallets sourced in the US should be 40" X 48", 42" x 48", or 45" X 48" whenever possible, with the auto industry using 45" x 48" for production and 42" x 48" for service. The food and beverage industry uses 40" X 48 primarily. These sizes greatly improve the possibility for these pallets to be reused as compared to off-spec sizes.
16. Use of OSB (Oriented Strand Board) pallet planks and risers will likely limit recycling options and should only be used if local rules and international issues prohibit alternatives.
17. Wooden crates, even for small batch shipping use, should be designed with ease of disassembly for reuse and/or shredding for recyclability in mind. Often, wooden crates are assembled using plate steel and bolts that unnecessarily make recycling very laborious and costly.
18. Whenever possible, hook-and-loop fasteners, glue and double-sided tape should be avoided in securing interior dunnage to a container. These materials can create a challenge for recycling. Polypropylene or polyethylene-based fasteners (e.g. zip ties), or sonic welding, can be used to secure interior dunnage to a container as an alternative.

Executive Summary: Recyclability of Common Automotive Packaging Materials in U.S.

 <p>Class A</p> <p>Cross-linked polyethylene (XLPE)</p> <p>Generally not viably recycled</p>	 <p>Extruded polyethylene (PE)</p> <p>Can be viably recycled</p>	 <p>Class A</p> <p>Expanded polyethylene (EPE)</p> <p>Can be viably recycled</p>	 <p>Class A</p> <p>Molded expanded polypropylene (EPP)</p> <p>Can be viably recycled</p>	 <p>Cut plank expanded polypropylene (EPP)</p> <p>Can be viably recycled</p>	 <p>Expanded polystyrene (EPS)</p> <p>Generally not viably recycled</p>	 <p>Polyurethane foam (PU)</p> <p>Generally not viably recycled</p>
 <p>Expanding PU foam formed within plastic bags</p> <p>Generally not viably recycled</p>	 <p>Air-filled paper</p> <p>Can be viably recycled</p>	 <p>Class A</p> <p>One-sided synthetic flash spun high density polyethylene fiber coating</p> <p>Can be viably recycled</p>	 <p>Class A</p> <p>Two-sided synthetic flash spun high density polyethylene fiber coating</p> <p>Generally not viably recycled</p>	 <p>Class A</p> <p>Brushed nylon</p> <p>Generally not viably recycled</p>	 <p>Corrugated attached to wood pallets with screws, nails or staples</p> <p>Detrimental to recycling</p>	 <p>Corrugated attached to wood pallets with plastic banding</p> <p>Can be viably recycled</p>
 <p>Metal clips on plastic banding</p> <p>Detrimental to recycling</p>	 <p>Metal banding</p> <p>Generally not allowed by industry specifications</p>	 <p>Corrugated reinforced with metal brackets and/or wood</p> <p>Detrimental to recycling</p>	 <p>Corrugated reinforced with cardboard brackets</p> <p>Can be viably recycled</p>	 <p>Single-use tape (plastic with adhesive)</p> <p>Generally not viably recycled</p>	 <p>Dunnage with laminates, labels, PVC, glass, foam, and/or wire</p> <p>Detrimental to recycling</p>	 <p>LDPE / LLDPE</p> <p>Can be viably recycled</p>
 <p>Class A</p> <p>Polypropylene and polyester fabric bags</p> <p>Generally not viably recycled</p>	 <p>Wood pallets</p> <p>Can be viably recycled</p>	 <p>Oriented strand board (OSB)</p> <p>Generally not viably recycled</p>	 <p>Polypropylene and polyethylene sleeve packs</p> <p>Can be viably recycled</p>	 <p>Triple wall corrugated board sleeve packs</p> <p>Can be viably recycled</p>	 <p>Wooden crates assembled with large steel bolts / plates</p> <p>Detrimental to recycling</p>	 <p>Wooden crates assembled with removable clips</p> <p>Can be viably recycled</p>
 <p>Dunnage secured with hook-and-loop fasteners, glue and/or tape</p> <p>Detrimental to recycling</p>	 <p>High Density Polyethylene (HDPE) Totes</p> <p>Can be viably recycled</p>	 <p>Polypropylene (PP) corrugated plastic sheet</p> <p>Can be viably recycled</p>	 <p>HDPE corrugated plastic sheet</p> <p>Can be viably recycled</p>	 <p>Corrugated plastic with PU Foam attached</p> <p>Generally not viably recycled</p>	 <p>Corrugated plastic insert with fabric</p> <p>Generally not viably recycled</p>	 <p>Corrugated plastic covered with fabric</p> <p>Generally not viably recycled</p>

Executive Summary: Recyclability of Common Automotive Packaging Materials in U.S.

Packaging Material / Design Type	Viable Recyclability Classification	Class A Protection	Reference
<small>Base packaging material type and/or design feature.</small>	<small>Under normal conditions, is this material generally viably recycled in the U.S. today?</small>	<small>Is this material suitable for Class A surfaces, where required?</small>	<small>Reference to SP Sustainable Packaging guidance document for more information.</small>
Cross-linked polyethylene (XLPE)	✗ Generally not viably recycled	✓	Learn More
Extruded polyethylene (PE)	✓ Can be viably recycled		Learn More
Expanded polyethylene (EPE)	✓ Can be viably recycled	✓	Learn More
Molded expanded polypropylene (EPP)	✓ Can be viably recycled	✓	Learn More
Cut plank expanded polypropylene (EPP)	✓ Can be viably recycled		Learn More
Expanded polystyrene (EPS)	✗ Generally not viably recycled		Learn More
Polyurethane foam (PU)	✗ Generally not viably recycled		Learn More
Expanding polyurethane foam formed within plastic bags	✗ Generally not viably recycled		Learn More
Air-filled paper	✓ Can be viably recycled		Learn More
One-sided synthetic flash spun high density polyethylene fiber coating	✓ Can be viably recycled	✓	Learn More
Two-sided synthetic flash spun high density polyethylene fiber coating	✗ Detrimental to recycling	✓	Learn More
Brushed nylon	✗ Detrimental to recycling	✓	Learn More
Corrugated board /old corrugated container (OCC) boxes attached to wood pallets with screw fasteners, nails or staples	✗ Detrimental to recycling		Learn More
Corrugated board /old corrugated container (OCC) boxes attached to wood pallets with plastic banding	✓ Can be viably recycled		Learn More
Metal clips on plastic banding	✗ Detrimental to recycling		Learn More
Metal bandings	✗ Generally not allowed by industry specifications due to safety concerns		Learn More
Corrugated board/OCC boxes reinforced with metal brackets and/or wood	✗ Detrimental to recycling		Learn More
Corrugated board/OCC boxes reinforced with cardboard brackets and / or spacers	✓ Can be viably recycled		Learn More
Single-use tape (plastic with adhesive)	✗ Generally not viably recycled		Learn More
Dunnage with laminates, vinyl labels, PVC components, glues, foam, and/or wire	✗ Detrimental to recycling		Learn More
Low density polyethylene (LDPE) / Linear low-density polyethylene (LLDPE)	✓ Can be viably recycled		Learn More
Polypropylene and polyester fabric bags	✗ Generally not viably recycled	✓	Learn More
Wood pallets	✓ Can be viably recycled		Learn More
Oriented strand board (OSB)	✗ Generally not viably recycled		Learn More
Polypropylene and polyethylene sleeve packs	✓ Can be viably recycled		Learn More
Triple wall corrugated board sleeve packs	✓ Can be viably recycled		Learn More
Wooden crates assembled with large steel bolts / plates	✗ Detrimental to recycling		Learn More
Wooden crates assembled with removable clips	✓ Can be viably recycled		Learn More
Dunnage secured with hook-and-loop fasteners, glue and/or double-sided tape	✗ Detrimental to recycling		Learn More
High Density Polyethylene (HDPE) Totes	✓ Can be viably recycled		Learn More
Polypropylene corrugated plastic sheet	✓ Can be viably recycled		Learn More
HDPE corrugated plastic sheet	✓ Can be viably recycled		Learn More
Corrugated plastic with PU Foam attached	✗ Generally not viably recycled		Learn More
Corrugated plastic insert with fabric	✗ Generally not viably recycled		Learn More
Corrugated plastic covered with fabric	✗ Generally not viably recycled		Learn More

<https://www.supplierspartnership.org/sp-news/suppliers-partnership-for-the-environment-sp-publishes-updated-sustainable-packaging-guidance-for-automotive-manufacturing-operations/>

I. Introduction

Following are recommendations that are intended to help automotive original equipment manufacturers (OEMs) and their suppliers source sustainable packaging designs for use in automotive manufacturing operations.

These recommendations focus on opportunities to minimize automotive packaging waste and address barriers to recyclability in the design phase. Detailed guidance on sustainable management of packaging waste streams at the site level is outside the scope of this document.

Please note, additional recommendations and design variations can vary, based on business goal alignment, package material availability, and reuse as well as recycling infrastructure issues based on geographic location. Companies should be aware of national and local regulations that may dictate packaging selections in certain instances, such as hazardous materials regulations which are outside the scope of this document.

It is recommended that these specifications are entered into sourcing packages and other product sourcing documents as needed, typically described as Statement of Requirements (SORs) or Terms and Conditions to influence conformance.

In order to assure conformance to a sustainable packaging system, an internal monitoring program should be in place to track, measure and formally approve package design conformance by environmental or sustainability team personnel.

Key Definitions

- **Viably Recycled.** For the purposes of this guidance, a material is considered to be viably recycled where established systems are in place with capability to technically, and economically, recycle the material in major automotive operating regions in the United States. To be considered economically sustainable, the material must have a market value that typically meets or exceeds the cost to collect, transport and process the material for recycling. Consideration of materials that can be processed into resin for use back into the same or similar application is typically preferred where possible, however materials that are downcycled for use in other industries may be suitable where economically sustainable recycling systems exist.
- **Detrimental to Recycling.** For the purposes of this guidance, packaging materials or designs that require separation or other pre-processing in order to be acceptable into established recycling systems are considered to be detrimental. While the challenges presented by these materials can often technically be overcome, the additional time, labor and other costs required to do so may outweigh the recycling value thereby increasingly the likelihood that the material may be sent to landfill.

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