

TempTrust™ Sustainability Initiatives

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Reduce. Reuse. Recycle

Reducing our carbon footprint and preserving the planet's precious resources are key to not only the future of the packaging industry, but the future of our planet. Using both standard and innovative packaging materials, Mesa Labs is leading the way in developing packaging solutions that are both recyclable and reusable.

A number of factors contribute to our customer's packaging requirements, all of which affect sustainability. These may include:

- Container weight, which contributes to fuel costs
- Potential for waste due to the packaging's ability to protect the product
- Type and length of transit and storage, which contributes to the amount of refrigerant needed and the type/thickness of insulator required
- Durability, which is the ability for the packaging to be used repeatedly and stack for efficient loading
- Ease and cost of recycling and disposal, which affects the willingness and ability to recycle in a specific geography

This brief will describe the material used to develop effective cold chain packaging, why it was used, and how the company encourages sustainability initiatives within its customer base.

Mesa packaging materials

The majority of Mesa Labs' insulation material comes from either EPS (Expanded Polystyrene), PUR (Polyurethane), or EPP (Expanded Polypropylene) in conjunction with a refrigerant and an outer corrugate shell. The combination of material and how much of it is used is based on the client's cold supply chain requirements.

Mesa Labs encourages the use of environmentally friendly, sustainability initiatives and provides programs to customers.

Handling and disposal of packaging material

Upon decomposition, products may emit styrene, carbon monoxide, carbon dioxide, low molecular weight hydrocarbons and other toxic gases at elevated temperatures and therefore should be disposed of in an appropriate manor.

Waste Disposal in the US / Canada – EPS, PUR, and ePUR products, if discarded, is not expected to be a hazardous waste according to US or Canadian regulations. The use, mixing or processing of this product may alter its properties or hazards. Check local, state, federal, and provincial environmental regulations prior to disposal.

Preferred disposal methods for polymers in order of preference are:

- clean and reuse if possible;
- contact resin broker;
- contact plastic recycler;
- incinerate with waste heat recovery and/or
- landfill.

Reuse, recycling, storing, transportation, and disposal must be in accordance with applicable federal, state/provincial and local regulations.



Handling and safety - All packaging products manufactured or distributed by Mesa Labs can be provided with a materials safety data sheet (MSDS) providing the required information for regulatory, safety, composition, first aid, and disposal of packaging and packaging components. As each product is slight different than the next, you should refer to the MSDS documents of your particular container for details.



TempTrust EPS Containers

TempTrust EPS Containers are 100% recyclable. Composed of a lightweight rigid cellular plastic, EPS comprises of 90% air bubbles made from reprocessed EPS molding beads.

Although EPS is an excellent insulator, it can chip or break, and therefore is often placed into a corrugate cardboard box for shipping. The box increases the number of times it can be used. Recovered EPS can then be easily transported and reprocessed mechanically or chemically into reprocessed resin and be used for a variety of new products.

In addition, Mesa Labs is at the forefront of technology, testing new age plastics and coatings that have been proven to increase usage up to ten times today's existing EPS solutions.

For a list of [EPS packaging recyclers in the US and Canada](#), please refer to the EPS Packaging Industry Alliance website [here](#) or [download a directory of recyclers](#).

TempTrust PUR and ePUR

Similar to consumer plastic products, TempTrust polyurethane (PUR) products can be recycled using several methods to eliminate them from the waste stream and recapture its inherent value by breaking down the material into its chemical components.

TempTrust PUR is also packaged in a courage or plastic container, which allows the packaging to be reused many times over. This not only lowers the probability of being simply dumped into the waste stream, but lowers the cost per use of the product.

For a list of PUR plastics recylers in the US and Canada, please refer to the directory of companies listed on <http://www.plasticsmarkets.org>.

TempTrust Extreme (EPP/EPS/VIP) Solutions

Damaged product costs millions of dollars in squandered goods as well as ecological resources. Minimizing this damage with optimum protection reduces energy use by a larger amount than the energy used for the life of the packaging itself. The TempTrust Extreme was designed to maximize the usable product life for an insulated passive container to support reuse, and thus encourage sustainability through product performance.

While EPS is an excellent insulator, it is not very durable. So, rather than a single-use EPS container, Mesa Labs focused on combining materials EPS with more durable expanded polypropylene (EPP). EPP is an exceptionally eco-friendly, and versatile plastic foam designed for lightweight, energy management and cushioning.

Manufacturing EPP does not produce VOCs (Volatile Organic Compounds), chlorofluorocarbon or other compounds that are recognized as most damaging to the environment. It is also It is 100%recyclable.

The TempTrust Extreme combines both EPP and EPS in layers to provide thermal efficiency, reuse, and recyclability. The Extreme product line was also designed in black to reduce visible damage and further make reuse appealing to shippers.

In addition, because the solution is more rugged, it does not require an external corrugate box and can be easily and safely stacked to maximize a trailer's or warehouse's vertical space.

For a list of [EPS / EPP packaging recyclers in the US and Canada](#), please refer to the EPS Packaging Industry Alliance website [here](#). Or [download a directory of recyclers](#).

TempTrust Refrigerants / PCMs

TempTrust Refrigerants / PCMs are freezer gels are used for transportation and storage of items or cold application for use in transportation and storage. TempTrust PCMs are designed to be refurbished and reused up to 4,000 times. This not only benefits the environment, but also your bottom line.

Although the composition can vary based on the model of PCM used, they typically contain water, a polymer, and a preservative. They are also not classified as dangerous according to U.S. and Canadian regulations.

PCM should not, however, be dumped into the ground, sewers, or bodies of water. Before disposal, refer to the relevant national and local laws and regulations or contact Mesa Labs for support.

The Impact of Product Damage

Damaged products costs millions of dollars in wasted product as well as wasted environmental resources. By avoiding transport damage, the optimum protection saves significantly more energy than the energy used for the entire life of the packaging.

Preventing damage though, does not start or end with the carrier. Mesa Labs provides a number of different testing services to assure handling factors do not damage the product in transit. Testing may include thermal packaging qualification, shock, drop and vibration testing as part of physical qualification testing, or Performance Qualification Testing to assure a specific process will meet its predetermined acceptance criteria.

Return, Reuse and Refurbishment Consulting

The reuse or refurbishment of packaging components and materials requires a well-controlled process. As a full service provider of packaging solutions, Mesa Labs, can develop custom SOPs to support quality inspections and acceptance criteria to evaluate the reuse or refurbishment of packaging materials to maintain both thermal and physical performances of temperature controlled packages.



Mesa Labs will work with clients and the recycling coordinator / team to:

- Estimate the amount of EPS (perform a waste audit)
- Find an EPS recycler
- Establish material handling and storage procedures
- Enable product refurbishment and cleaning
- Provide quality assurance to original performance standards
- Train designated personnel
- Coordinate activities with senior management as required

Mesa Labs assists customers in establishing procedures and controls for the reuse and refurbishment process you may want to implement in your operations.

TempTrust, from Mesa Labs. Trusted leader in cold chain management.

Since 2002 Infitrak, now Mesa Labs, has designed and developed comprehensive cold-chain solutions that protect a product's integrity and ensures patient and consumer safety. Mesa Labs is the only company with all three areas of compliance-based, temperature controlled services and products: packaging, consulting, and real-time monitoring. This translates into a team that is with you all the way from raw materials to end user. For more information, visit us at www.temptrust.mesalabs.com.

