



EPS Bio Sustainable Insulation Evaluation Report

Testing Summary: Performance Analysis of TempAid™
Biodegradable EPS Coolers

Although EPS is a fantastic packaging solution, most discarded plastics end up in biologically active landfills. TempAid is currently manufacturing a new EPS cooler line that has been tested to be up to 92% biodegradable in most landfills*.

This new product line not only addresses the need for a more sustainable solution but is also proven via qualification in TempAid Labs to be as effective in temperature stability as standard EPS coolers on the market today.



How The EPS Bio Shipper decomposes 92% over four years

TempAid biodegradable EPS coolers use a licensed, proprietary resin homogeneously distributed throughout standard EPS coolers during manufacturing. The resin transforms the cooler into a product with a new end-of-life story. These containers are shown to **biodegrade 91.9% over four years** under conditions that simulate both wetter and biologically active landfills using ASTM D5511 testing. In comparison, standard EPS containers only degraded 5.75% over the same conditions and same four-year period.

The resin changes the properties of the coolers to promote microorganism consumption of polystyrene surface carbon atoms. As a result, the coolers break down into the same compounds as those formed in the decomposition of organic material. The TempAid EPS BIO coolers are moldable to any size and look the same as standard EPS shippers. Testing shows similar, if not better, thermal properties as traditional EPS coolers.



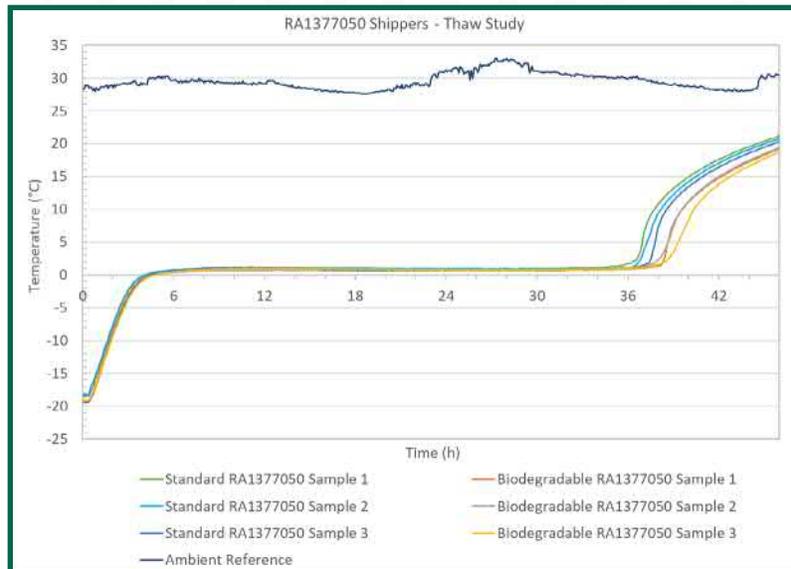
Product Qualification Testing

Qualification testing was performed on three different types of coolers, comparing the biodegradable and standard EPS versions in triplicate, totaling 18 shippers. Testing involved:

1. Packaging the shippers with gel packs, attaching a resistance thermal detector (RTD), and then placing them in a freezer at -20°C.
2. The shipper's internal temperature was then monitored, and data was collected.
3. After completing the freeze test, the time taken for each of the shipper's gel packs to go from +5°C to -5°C was averaged, and the percent difference between the biodegradable and standard EPS shippers was determined.
4. Next, the shippers were placed in a room-temperature environment at 25-33°C.
5. Upon test initiation, the internal temperature was monitored, and data was collected.
6. After completing the thaw test, the gel packs' average time was measured to go from -5°C to +5°C. The percentage difference between the biodegradable and standard EPS shippers was then calculated.



As an example, the thaw test with the biodegradable and standard RA1377050 shippers is shown in Figure 1 below.



Test Results Reveal EPS Bio Coolers Perform at the Same Level or Better Than Standard EPS Coolers

The percent difference between the average time taken for the gel packs to go from +5°C to -5°C within the RA1377071HD**, RA1377050, and RA1377092HD* biodegradable and standard EPS coolers were 1.8%, 2.7%, and 4.8%, respectively.

The percent difference between the time taken for the gel packs to go from -5°C to +5°C within the RA1377071HD, RA1377050, and RA1377092HD biodegradable and standard EPS coolers were 2.1%, 3.8%, and 5.3%, respectively.

For a copy of the complete qualification report, contact us.



About TempAid EPS Bio Coolers

EPS bio coolers are available in over 20 sizes and both standard and high-density versions. **Pricing for TempAid Biodegradable coolers is the same as standard EPS coolers.**

Complete your sustainable solution with TempAid drain-friendly gel packs to accompany these new coolers. Both solutions are available today in volume with competitive pricing.

Contact TempAid sales today for samples or detailed testing data of the solution's temperature stability and biodegradability.

*The resin used in Bio EPS coolers biodegrade 92% over four years. They were tested under conditions simulating both wet and biologically-active landfills using the ASTM D5511 test. The extent of degradation and stated rate do not mean the product will continue to decompose. The data stated above has been provided in good faith and believed to be reliable, it does not constitute a part of our terms and conditions.

**HD = High Density Cooler