

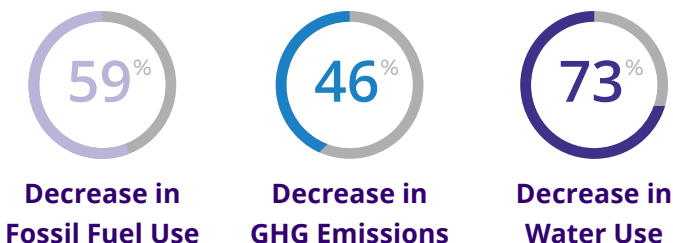
Comparing KoolTemp® GTS Excel with CCT EcoFlex™ Extended

LIFE CYCLE ASSESSMENT (LCA)

Determining the environmental impact of shipping systems can be challenging to quantify. The origin, use, transport, and disposal of various components all must be considered to calculate the full impact. This can be further complicated when evaluating reusable shippers which have additional factors to consider. We know from the adage “Reduce, Reuse, Recycle,” that reusables are usually a good choice, but how do they measure up in real world applications?

To understand the real environmental benefits of reuse, Cold Chain Technologies (CCT) collaborated with Trayak, a sustainability consulting and software company, to conduct a Life Cycle Assessment (LCA) comparing CCT’s single-use and reusable shippers. Trayak used their Ecolmpact-COMPASS software to model CCT’s shippers and conduct the LCA according to the requirements of International Standard ISO 14044:2006. This work was then further reviewed by a 3rd party to confirm its conformance to relevant ISO standards.

The results showed that reusable options had lower environmental impact than the comparable single-use shipper, including for indicators such as Fossil Fuel Use and Greenhouse Gas (GHG) Emissions. Considering our reusable CCT EcoFlex™ Extended (CCT EcoFlex) shipper specifically, the improvement for a short-distance shipment over 20 shipments was:



Many factors are at play to keep the environmental impact low for a reusable fleet, and each real shipment’s impact is different depending on location and local infrastructure. From conducting this study, we have been able to identify some of the most important ways to lower impact in the field:

- **High Return Rates – There’s no reuse without returning the shipper**
- **Low Damage Rates – Robust design protects both the product and reusable components**
- **Shrink the Loop – Closer refurbishment sites cut unnecessary transport**

As you can see, lower environmental impact is a group effort! We depend on our external partners, customers, and internal team to make reuse feasible from both an environmental and business perspective.

**All values and figures presented here are taken from our LCA report prepared May 4, 2022. A copy of the report containing the study and the third-party attestation of ISO compliance is available upon request.*



ColdChainTech.com

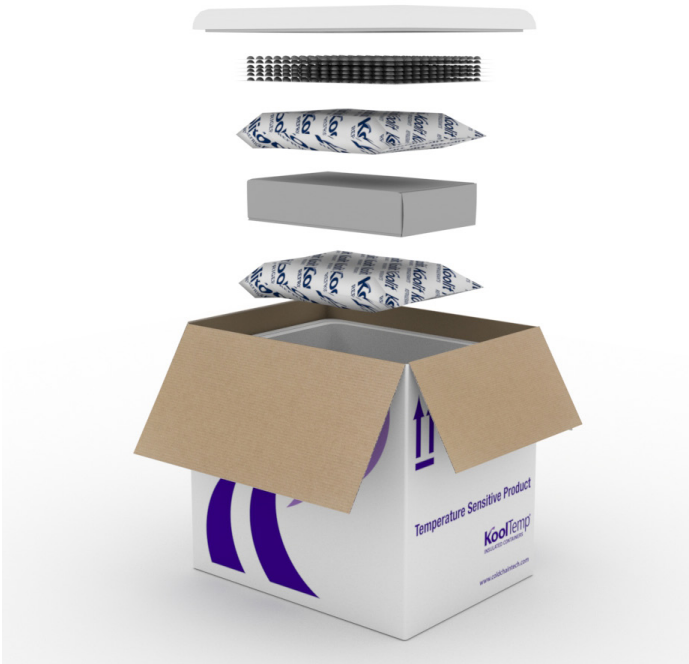


Global Headquarters
Tel: (508) 429-1395
Fax: (508)-429-9056
Toll-Free: (800)-370-8566
info@coldchaintech.com

Panama & South America
Tel 1: +507-6506-7384
Tel 2: +507-830-0705
Tel 3: +1-508-333-5888
cct-latam@coldchaintech.com

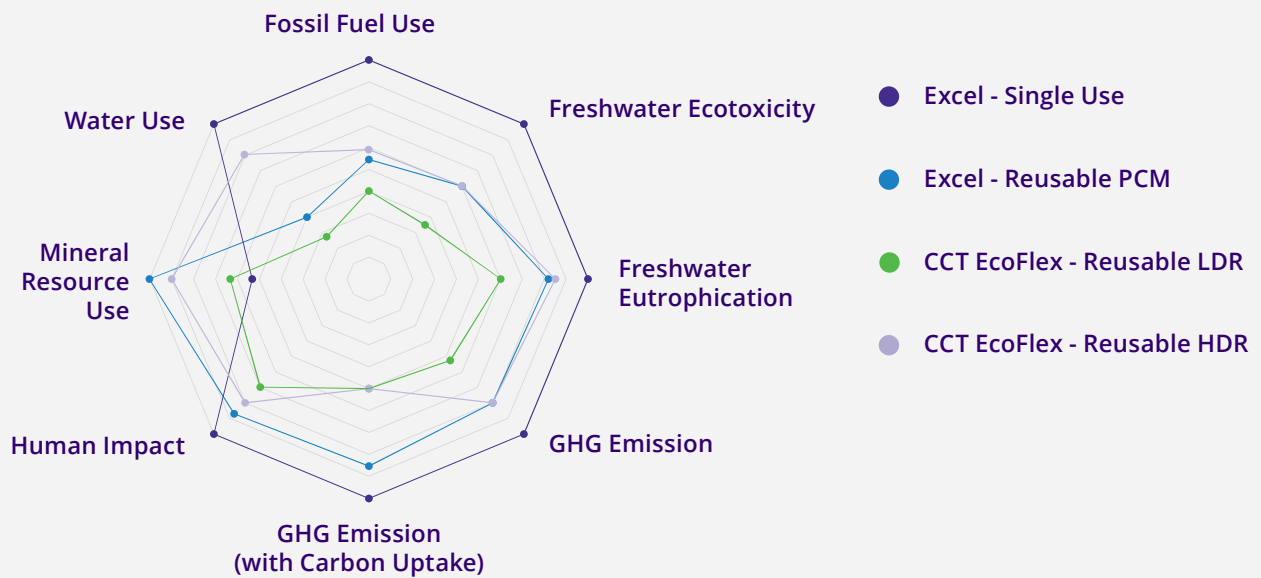
Europe, Middle East, & Africa
Dreamstreet 71
2133 LK Hoofddorp
The Netherlands: +65 6818 6203
emea@coldchaintech.com

Singapore & Asia Pacific
Customer Services: +65 6818 6204
Sales: +65 6818 6203
cct-ap@coldchaintech.com



Specifically, our KoolTemp® GTS Excel (Excel) and CCT EcoFlex™ Extended (CCT EcoFlex) shippers were modeled.

Overview of LCA Results for Short Distance Comparison



Comparison of environmental impact for the four (4) scenarios modeled for short distance transport. Lower values indicate lower environmental impact, which is preferred.



ColdChainTech.com



Global Headquarters
 Tel: (508) 429-1395
 Fax: (508) 429-9056
 Toll-Free: (800)-370-8566
 info@coldchaintech.com

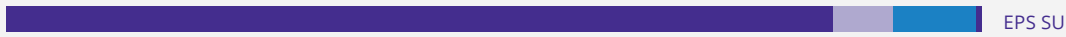
Panama & South America
 Tel 1: +507-6506-7384
 Tel 2: +507-830-0705
 Tel 3: +1-508-333-5888
 cct-latam@coldchaintech.com

Europe, Middle East, & Africa
 Dreamstreet 71
 2133 LK Hoofddorp
 The Netherlands: +65 6818 6203
 emea@coldchaintech.com

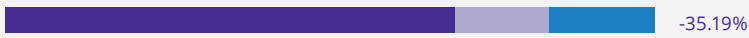
Singapore & Asia Pacific
 Customer Services: +65 6818 6204
 Sales: +65 6818 6203
 cct-ap@coldchaintech.com

Fossil Fuel Use

Excel - Single Use



Excel - Reusable PCM



CCT EcoFlex - Reusable LDR



CCT EcoFlex - Reusable HDR



1 2 3 4 5

- MATERIAL
- MANUFACTURING
- TRANSPORTATION

Detailed look into the Fossil Fuel Use indicator results for short distance transport.

GHG Emissions

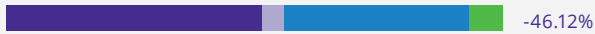
Excel - Single Use



Excel - Reusable PCM



CCT EcoFlex - Reusable LDR



CCT EcoFlex - Reusable HDR



50 100 150 200

- MATERIAL
- MANUFACTURING
- TRANSPORTATION
- END OF LIFE

Detailed look into the GHG Emissions indicator for short distance transport.



ColdChainTech.com



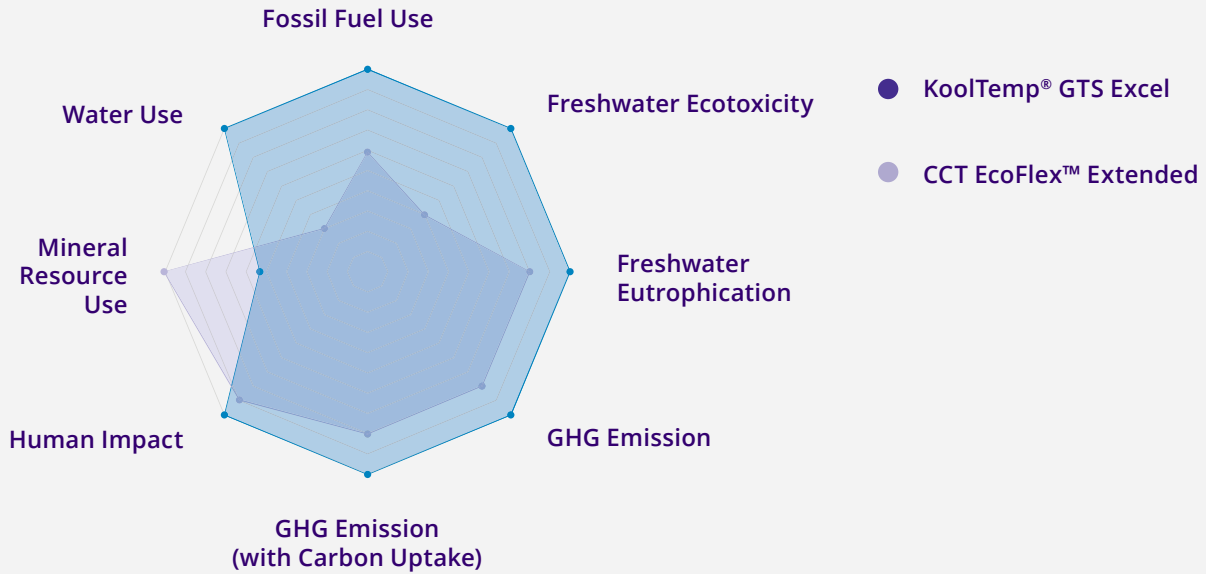
Global Headquarters
 Tel: (508) 429-1395
 Fax: (508) 429-9056
 Toll-Free: (800)-370-8566
 info@coldchaintech.com

Panama & South America
 Tel 1: +507-6506-7384
 Tel 2: +507-830-0705
 Tel 3: +1-508-333-5888
 cct-latam@coldchaintech.com

Europe, Middle East, & Africa
 Dreamstreet 71
 2133 LK Hoofddorp
 The Netherlands: +65 6818 6203
 emea@coldchaintech.com

Singapore & Asia Pacific
 Customer Services: +65 6818 6204
 Sales: +65 6818 6203
 cct-ap@coldchaintech.com

Overview of LCA Results for Longer Distance Comparison



Comparison of environmental impact for the two scenarios modeled for long distance transport. Lower values indicate lower environmental impact, which is preferred.

Fossil Fuel Use

Excel - Single Use



Excel - Reusable PCM



1 2 3 4 5 6

● MATERIAL ● MANUFACTURING ● TRANSPORTATION

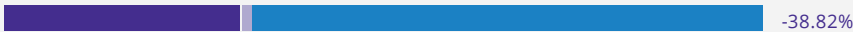
Detailed look into the Fossil Fuel Use indicator results for short distance transport.

GHG Emissions

Excel - Single Use (Long Distance)



CCT EcoFlex - Reusable LDR (Long Distance)



50 100 150 200 250 300

● MATERIAL ● MANUFACTURING ● TRANSPORTATION

Detailed look into the GHG Emissions indicator results for long distance transport.



ColdChainTech.com



Global Headquarters
Tel: (508) 429-1395
Fax: (508)-429-9056
Toll-Free: (800)-370-8566
info@coldchaintech.com

Panama & South America
Tel 1: +507-6506-7384
Tel 2: +507-830-0705
Tel 3: +1-508-333-5888
cct-latam@coldchaintech.com

Europe, Middle East, & Africa
Dreamstreet 71
2133 LK Hoofddorp
The Netherlands: +65 6818 6203
emea@coldchaintech.com

Singapore & Asia Pacific
Customer Services: +65 6818 6204
Sales: +65 6818 6203
cct-ap@coldchaintech.com