

Project Key Findings

項目主要調查結果

ClearCarbon has conducted a simplified carbon footprint product analysis on the ZEO® Box corrugate box to understand the reductions in greenhouse gas (GHG) emissions associated with box light-weighting. Using a 2009 as a baseline timeframe, CO₂e emission savings were calculated based on utilizing less corrugate material in the design of a 48" x 47.5" x 30.5" box. Annual box specifications, raw materials, processing energy and supplier locations were provided by YFY Paper Corp (ZEO® cardboard maker) in Nanjing, China and standard industry data in Ecoinvent 2.1 were used to model the ZEO® Box and an equivalent average box of the same dimensions. A summary of the results follows.

“清潔碳公司”受“沃爾瑪公司”委託，就 ZEO® Box 瓦楞紙箱產品進行一簡化碳足跡分析，以了解並驗證該產品在溫室氣體（GHG）排放的減少與箱子本身重量減輕的關係。利用較少的瓦楞材料的設計出 48" x 47.5" x 30.5" 大小的箱子，並以 2009 年作為時間基準，來計算出節省二氧化碳的排放量。該年度紙箱規格、原物料內容、加工能源型態和供應商地點等資料，由中國南京“永豐餘造紙公司”（ZEO®的紙板製造商）所提供，且利用標準產業條件（於 Ecoinvent 2.1 中取得）來模擬 ZEO® Box 紙箱和平均一只相同尺寸的普通箱子之情況。結果總結如下：

Overall, the ZEO® Box compared to the average cardboard box saves **185 tons of CO₂e** per year. This is based on 2009 results received and replacing 526,000 boxes with ZEO® Boxes. The carbon footprint analysis considered the relevant “life cycle” phases of the box, including:

- Raw material,
- Raw material transportation,
- Manufacturing of the box, and
- Distribution of the box.

總體而言，本案生產的 ZEO®紙箱比採用普通紙板的紙箱，每年節省了 **185 噸的二氧化碳量**。這是基於 2009 年，以 526,000 只 ZEO®紙箱取代一般普通紙箱計算出來的結果。碳足跡分析說明了有關紙箱“生命週期”的階段，包括：

- 原物料
- 原物料運輸
- 紙箱的製造
- 紙箱的配送

Life Cycle Phase	1 ZEO® Box	1 Average Box
	kg CO2e/box	
Raw Material Transport	0.02	0.03
Raw Materials	0.90	1.18
Manufacturing	0.14	0.21
Distribution	0.42	0.46

Figure 1. Comparison of 1 ZEO® Box to 1 Average Corrugate Box by Life Cycle Phase

紙箱生命週期各階段	一只 ZEO® 紙箱	一只普通 紙箱
	公斤 二氧化碳量/紙箱	
原物料運輸	0.02	0.03
原物料	0.90	1.18
紙箱的製造	0.14	0.21
紙箱的配送	0.42	0.46

圖 1、一只 ZEO® 瓦楞紙箱與一只普通瓦楞紙箱在各生命週期階段之碳排放比較

The raw material and manufacturing life cycle phases contribute the majority of carbon savings for the ZEO® Box when comparing to the Average box.

在整個紙箱的使用生命週期中，ZEO®瓦楞紙箱比一般普通瓦楞紙箱，在原物料階段及紙箱製造過程這兩個階段，節省了最大部分碳的排放量。

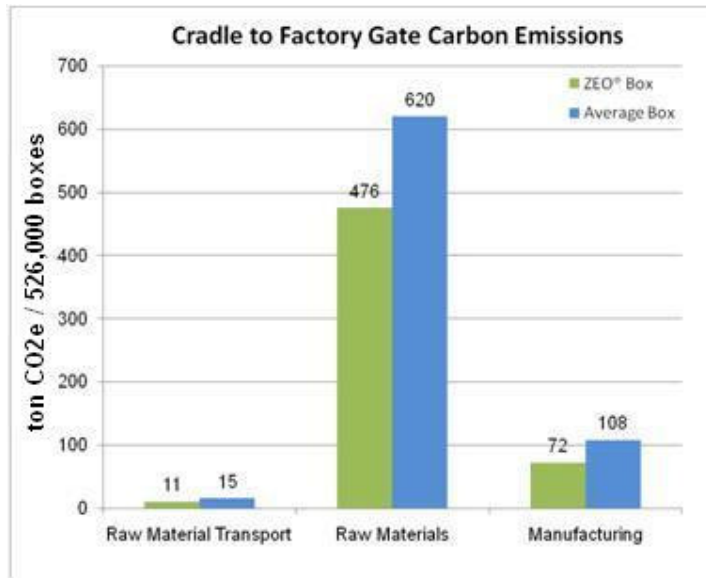


Figure 2. Comparison of 526,000 ZEO® Boxes to 526,000 Average Corrugate Boxes

* numbers reproduced based on ClearCarbon index for CJCHT orders of 2009.

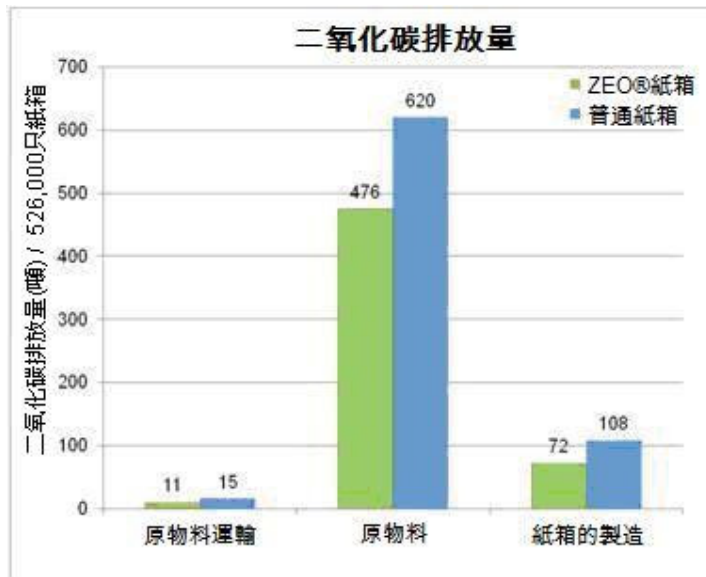


圖 2、526,000 只 ZEO®紙箱與 526,000 只普通瓦楞紙箱之比較

* 數據來源為 2009 年 CJCHT 訂單在 YFY NJ 生產並經 ClearCarbon 公司認證

For more information about this calculation, please contact: Anna Nicholson, ClearCarbon (anicholson@clearcarboninc.com).

若需更多有關此計算的資訊，請聯繫 ClearCarbon 公司：Anna Nicholson (anicholson@clearcarboninc.com)。