COLUMBIA PULP

Life Cycle Analysis and Carbon Footprint

CONFIDENTIAL

BACKGROUND

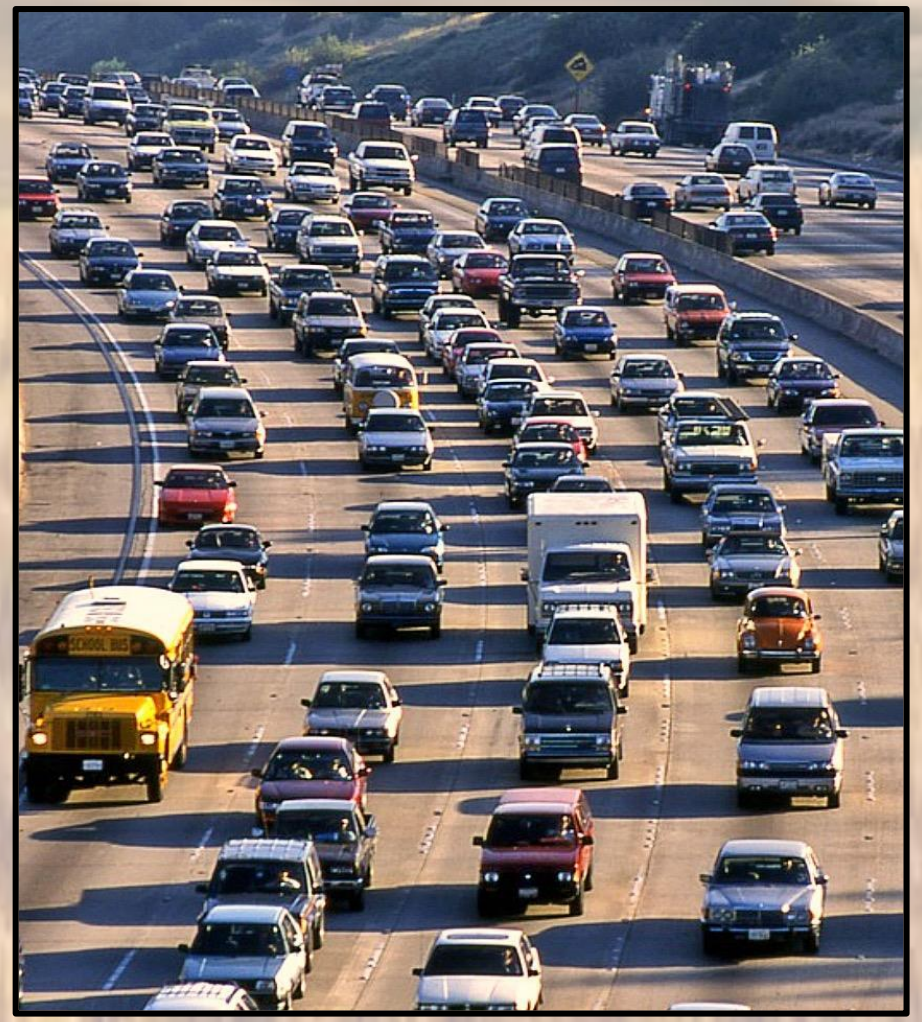
- Columbia Pulp commissioned Environmental Packaging International (EPI) and Intertek to produce an independent environmental analysis of cellulose pulp made from wheat straw.
- The study used Life Cycle Analysis (LCA) methodology to measure the carbon footprint
- The amount of product (functional unit) used in the LCA is 1ADMT (air dry metric ton).

Environmental Impact of the Columbia Pulp Process

- The carbon footprint of Columbia Pulp is 76% lower than the average carbon footprint of conventional pulps due to:
  - Utilization of an agricultural waste product
  - Energy efficiency
  - Minimal water usage
  - State of the art facility & process

Environmental Impact of the Columbia Pulp Process

- Replacing 140,000 tons of conventional pulp annually, using Columbia Pulp's product, will result in 133,000 metric tons of CO2 carbon savings per year
- This is equivalent to:
  - The CO2 absorbed by approximately 5.8 million trees each year
  - The CO2 emitted by approximately 40,000 cars, each driving 10,000 miles per year



CARBON FOOTPRINT OF COLUMBIA PULP

Carbon Footprint is often seen as the most important environmental metric

Carbon Footprint	Unit	Columbia air-dried pulp 1 metric ton	Conventional CTM pulp 1 metric ton	Conventional sulfate pulp 1 metric ton	Conventional sulfite pulp 1 metric ton
Global Warming Potential	Kg CO2 eq	309	1733	611	1437

Columbia Pulp has the lowest carbon footprint by a significant margin within the pulping industry. There are three main reasons:

1. Usage of a genuine waste product (straw left over from wheat farming)
2. Wheat straw is a locally sourced product for our facility, providing a resourceful supply chain
3. Produced in a state of the art new facility, which is more efficient than typical traditional pulping mills

CARBON FOOTPRINT INCLUDING STRAW PRODUCTION

In this Life Cycle Analysis (LCA) the straw is counted as a free input, because it is a waste product of wheat production . The inclusion of straw production would not cause a significant change in the LCA results.

Global Warming	Unit	Columbia air dried pulp 1 metric ton	Conventional CTM pulp 1 metric ton	Conventional sulfate pulp 1 metric ton	Conventional sulfite pulp 1 metric ton
Including Straw	Kg CO2 eq	382	1733	611	1437

CARBON FOOTPRINT OF COLUMBIA PULP MADE INTO PRODUCTS

Carbon Footprint	Unit	Columbia Corrugated Board	Conventional Corrugated Board	Columbia Tissue	Conventional Tissue	Columbia Molded Pulp	Conventional Molded Pulp
Global Warming Potential	kgC O2 eq	1352	1606	1344	3164	1438	2062

The carbon footprint of corrugated board made with Columbia Pulp's product is lower than the carbon footprint of corrugated board made from conventional pulp.

This is because the input pulp has a lower carbon footprint, and the other aspects are the same(conversion to board, transport, use and disposal/recycling).

The carbon footprint of Columbia Pulp's tissue is lower than the carbon footprint of conventional tissue and molded pulp for the same reasons.

WHICH NUMBERS ARE THE BEST ONES TO USE?

Columbia Pulp's LCA used standard methodology in that:

- A waste product such as wheat straw counts as a free input.
- A carbon credit for not burning something can only be counted if a product locks up the carbon for 100 years or more. Since paper products are likely to last for only a few years, the carbon release is only delayed by a few years, not for over a century. So the credit for not burning straw would not normally be accepted as fair by most LCA experts.
- A carbon credit for not burning straw was not taken

LCA Services provided by INTERTEK & EPI

Interteck is a leading Total Quality Assurance provider to industries worldwide. Interteck's network consists of more than 1,000 laboratories and offices and over 42,000 people in more than 100 countries.

The Intertek Sustainability Team has over 20 years of experience in carbon foot-printing and life cycle assessment to measure the environmental impact of products and processes.

Environmental Packaging International was founded in 1998 by Victor Bell, a consultant specializing in environmental compliance, product stewardship, and sustainability issues related to packaging, batteries, electronics and other products.

EPI offers a full range of customized regulatory tracking, research and compliance management.