

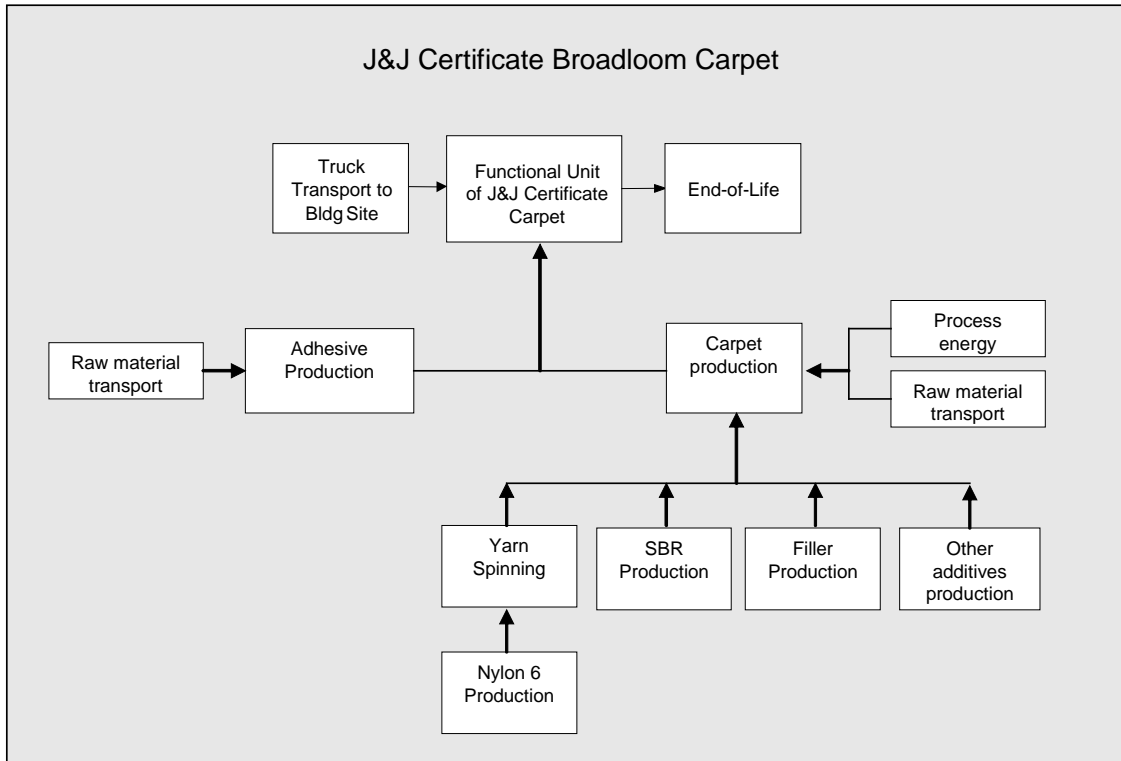
# J&J Industries Carpet

## Product Selection and Description

J&J Industries is a privately-held manufacturer of commercial carpet, primarily for corporate interiors but also for healthcare, retail, education, and government facilities. The company provided data on one of its 0.8 kg (28 oz) products: Certificate with Styrene Butadiene Resin (SBR) Backing.

## Flow Diagram

The flow diagram below shows the major elements of the production of this product as it is currently modeled for BEES.



*Figure 1: J&J Certificate Broadloom Carpet System Boundaries*

## Raw Materials

The following Table presents the constituents of the J&J product and their relative quantities.

*Table 1: J&J Certificate Broadloom Carpet Constituents*

<i>Constituent</i>	<i>Mass Fraction</i>
Yarn (Nylon 6)	32 %
Styrene Butadiene Resin (SBR)	10 %
Limestone	41 %
Other Additives	16 %

The yarn consists of Nylon 6, which is produced from the polymerization of caprolactam and whose data come from EcoInvent which is based on the Eco-profiles of the European plastics industry (PlasticsEurope). The

butadiene and styrene in the SBR come from the Plastics Division of the American Chemistry Council.<sup>1</sup> Limestone filler production data come from the U.S. LCI Database.

## **Manufacturing**

**Energy Requirements and Emissions.** Certificate's manufacturing process consists of tufting the nylon yarn and joining the yarn to the backing. This process uses purchased electricity, natural gas, and other fossil fuels. The production of one unit of carpet (0.09 m<sup>2</sup>, or 1 ft<sup>2</sup>) requires 1.2 MJ (0.34 kWh) of electricity, 1.58 MJ (0.439 kWh) of natural gas, and less than 0.03 MJ (0.01 kWh) of other fossil fuels. Energy production and combustion data are modeled based on the U.S. LCI Database.

**Transportation.** Transportation distances for shipment of the raw materials from the suppliers to the manufacturing plant are provided by J&J. The materials are transported by diesel truck, based on the U.S. LCI Database.

## **Transportation**

The distance for diesel truck transport from the J&J manufacturing plant in Dalton, Georgia to the building site is modeled as a variable in BEES, and transportation burdens are based on data from the U.S. LCI Database.

## **Installation**

Certificate broadloom carpet is assumed to be installed using a low-VOC adhesive. The average application is assumed to require 0.03 kg (0.07 lb) of adhesive per unit of carpet (0.09 m<sup>2</sup>, or 1 ft<sup>2</sup>). On average, 7 % of the carpet and 5 % of the adhesive are lost during installation.

## **Use**

The lifetime of the carpet is assumed to be 11 years, consistent with lives for other broadloom carpets in BEES, and meaning it is replaced 4 times after initial installation over the 50-year BEES use period. As with all BEES products, life cycle environmental burdens from these replacements are included in the inventory data.

## **End of Life**

At end of life, it is assumed that Certificate is sent to the landfill.

## **References**

### **Life Cycle Data**

National Renewable Energy Laboratory (NREL): *U.S. Life-Cycle Inventory Database*. 2005. Golden, CO.

Found at: <http://www.nrel.gov/lci/database>.

PRé Consultants: *SimaPro 6.0 LCA Software*. 2005. The Netherlands.

EcoInvent Centre: *EcoInvent data v2.0* (Dübendorf: Swiss Centre for Life Cycle Inventories, 2007). Found at: [www.ecoinvent.org](http://www.ecoinvent.org).

Franklin Associates, a Division of ERG, for the Plastics Division of the American Chemistry Council: *Cradle-to-Gate Life Cycle Inventory of Nine Plastic Resins and Four Polyurethane Precursors* (Prairie Village, KS, 2010).

## **Industry Contacts**

Howard Elder, J&J Industries (2002)

---

<sup>1</sup> Franklin Associates, a Division of ERG, for the Plastics Division of the American Chemistry Council: *Cradle-to-Gate Life Cycle Inventory of Nine Plastic Resins and Four Polyurethane Precursors* (Prairie Village, KS, 2010).