

PHASE 4 ~ MANUFACTURING

Deliverable 18 ~ Bill of Materials

Due Date: <http://rrg.utk.edu/resources/BME469/assignments.html#Deliverable18>

INSTRUCTIONS. Generate a manufacturing bill of materials for your design. Your bill of materials is due electronically to Dr. Jeff Reinbolt (reinbolt@utk.edu) and should be included in your design history file as well.

Purpose

The manufacturing Bill of Materials (BOM) enables the transition from a detailed design concept to a concrete, touchable product. The BOM drives manufacturing, operations, purchasing, and logistics for a product. A detailed BOM is critical to the successful management of manufacturing resources. The more accurate and complete the BOM contents, the better the decisions you can make about how to get the product efficiently and cost-effectively into the stakeholder's hand.

Critical Information

The goal of this deliverable is to generate a manufacturing BOM. The manufacturing bill of materials and the engineering bill of materials are different in their structure and depth. The manufacturing BOM must contain all the parts and assemblies. If an item needs to be purchased, processed, or inventoried to make the product, then it needs to be included in the manufacturing BOM. All of these items are organized into the manufacturing BOM based on how the product is assembled. Manufacturing BOM tend to have more levels to describe each stage of the assembly process in more detail.

Bill of Materials: A Transition from Design for Manufacturing to Manufacturing Itself

Use the part/assembly drawings and supplier identification delivered in the last design phase to generate a BOM and a corresponding Gozinto Chart (a pictorial representation of a product that displays hierarchical levels of detail showing how and in which order the parts on the BOM are put together). The BOM is a list of all of the parts, including quantities of each part required to assemble the designed product. The BOM is a "recipe" that specifies the following:

- All of the ingredients that are needed
- Precise quantities needed to make the working prototype
- Material costs for each ingredient directly used in building the device, as well as intermediate ones used in ways that may not be obvious (e.g., waste, work-in-progress)
- Paired with a Gozinto Chart, the process/order for putting the ingredients together

The importance of the manufacturing plan and BOM in managing the fabrication process cannot be overstated.