



NETL Life Cycle Inventory Data

Process Documentation File

Process Name: Pushoff Trailer, 60m³, Tractor Propelled, Construction
Reference Flow: 1 piece (pcs) of Pushoff Trailer, 60m³, Tractor Propelled
Brief Description: Based on a single pushoff trailer manufactured by Fliegl, with a 60-cubic-meter capacity and pulled by a separate tractor. This unit process quantifies the amount of steel plate needed to construct a single trailer.

Section I: Meta Data

Geographical Coverage: US, Europe **Region:** N/A
Year Data Best Represents: 2009
Process Type: Manufacturing Process (MP)
Process Scope: Gate-to-Gate Process (GG)
Allocation Applied: No
Completeness: Individual Relevant Flows Recorded
Flows Aggregated in Data Set:
 Process Energy Use Energy P&D Material P&D
Relevant Output Flows Included in Data Set:
Releases to Air: Greenhouse Gases Criteria Air Pollutants Other
Releases to Water: Inorganic Emissions Organic Emissions Other
Water Usage: Water Consumption Water Demand (throughput)
Releases to Soil: Inorganic Releases Organic Releases Other

Adjustable Process Parameters:

Tracked Input Flows:

Steel Plate, BF (85% Recovery Rate) [Metals] *Steel plate from blast furnace (BF), assumes 85% recovered/recycled steel*

Tracked Output Flows:

Pushoff Trailer, 60m³, Tractor Propelled [Construction] *Single pushoff trailer construction, 60-cubic-meter capacity, tractor propelled*



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Section II: Process Description

Associated Documentation

This unit process is composed of this document and the data sheet (DS) *DS_Stage1_C_Pushoff_Trailer_60m3_Tractor_Propelled_2010.01.xls*, which provides additional details regarding relevant calculations, data quality, and references.

Goal and Scope

The scope of this unit process covers the materials required for the construction of a single pushoff trailer needed to haul wood chips from the harvester/chipper to the wood chip storage area. The pushoff trailer hauls wood chips in support of the short rotation woody crop (SRWC) pathway, within Life Cycle (LC) Stage #1. After the wood chips are hauled and stored in the wood chip storage area, a front loader is used to load the wood chips for transport under LC Stage #2. Wood chip processing is included in LC Stage #3. This unit process is combined with other LC Stage #1 construction unit processes for the SRWC pathway under an assembly unit process, *DF_Stage1_C_Assembly_SRWC_Cultivate_2010.01.doc*, which quantifies the fraction of a pushoff trailer needed to move 1 kg of wood chips.

The pushoff trailer is assumed to be constructed entirely of steel; other materials are assumed to be negligible. By default, all steel within this study was assumed to be steel plate, based on available GaBi profiles, unless other steel types were specified per available data, or a higher grade of steel would be required, per NETL engineering judgment. Therefore, all steel considered in this unit process was assumed to be steel plate.

Boundary and Description

Figure 1 provides an overview of the boundary of this unit process. Emissions related to the physical assembly of the pushoff trailer (e.g., emitted while putting together the components of a pushoff trailer, including transport of those components) are not considered in this study. Upstream emissions from the production of raw materials used for the construction of the pushoff trailer (e.g., steel plate) are calculated outside the boundary of this unit process, based on proprietary profiles available within the GaBi model. As shown in Figure 1 and discussed above, the pushoff trailer constructed in this unit process is incorporated into the LC Stage #1 construction assembly process for the SRWC pathway.

The total weight of a pushoff trailer was readily available, but reliable data for the material breakdown of trailer subcomponents were not. Therefore, the pushoff trailer was assumed to be composed entirely of steel plate (Steel plate, BF (85% Recovery Rate) [Metals]).

Table 1 shows relevant properties and assumptions used to calculate the amount of steel plate contained in a single pushoff trailer. Total weight for one pushoff trailer is estimated to be 11,900 kg (26,235 lbs) (Fliegl Agrartechnik 2009), which was assumed to be composed entirely of steel plate, as discussed previously. **Table 2** provides a summary of modeled input and output flows. Additional details regarding input and output flows, including calculation methods, are contained in the associated DS.

Figure 1: Unit Process Inputs, Outputs, and Boundaries

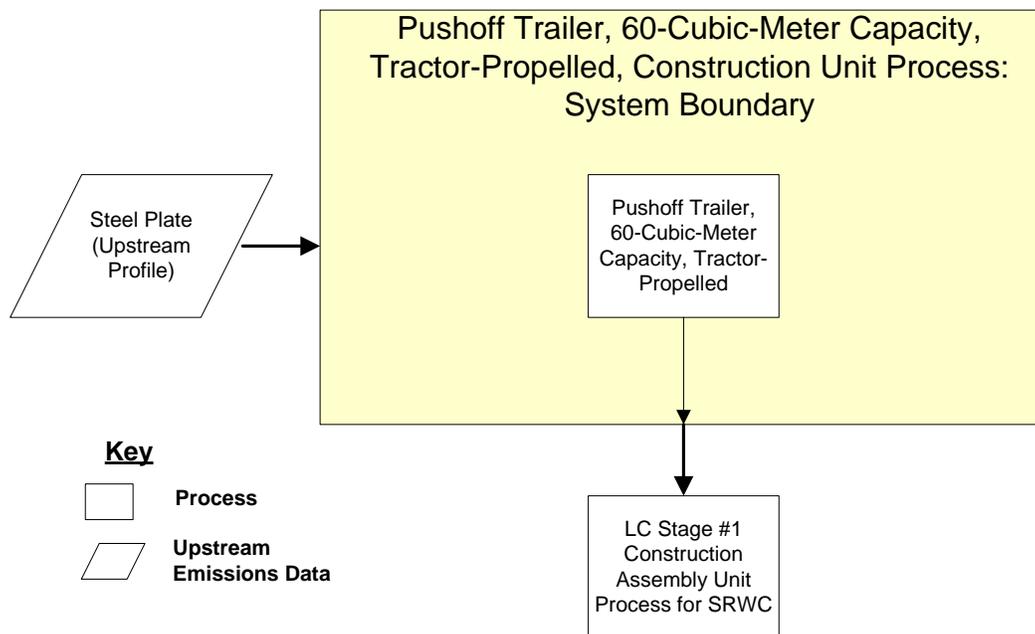


Table 1: Properties of the Pushoff Trailer

Pushoff Trailer Property	Value	Reference
Capacity, m ³ (ft ³)	60 (2,119)	Fliegl Agrartechnik 2009
Pushoff Trailer Weight, kg (lbs)	11,900 (26,235)	Fliegl Agrartechnik 2009
Percentage of Steel Plate	100%	NETL Engineering Judgment
Total Steel Plate in One Pushoff Trailer kg (lbs)	11,900 (26,235)	NETL Engineering Judgment

Table 2: Unit Process Input and Output Flows

Flow Name*	Value	Units (Per Reference Flow)
Inputs		
Steel plate, BF (85% Recovery Rate) [Metals]	11,900	kg
Outputs		
Pushoff Trailer, 60m ³ , Tractor Propelled [Construction]	1	piece

* **Bold face** clarifies that the value shown *does not* include upstream environmental flows. Upstream environmental flows were added during the modeling process using GaBi modeling software, as shown in Figure 1.

Embedded Unit Processes

None.

References

Fliegl Agrartechnik 2009 Fliegl Agrartechnik. 2009. *Push-Off Trailer*. Fliegl Agrartechnik. <http://www.rsbiomass.com/Fliegl%20-%20Gigant%20push%20off%20trailer.pdf> (Accessed January 4, 2010).

Section III: Document Control Information

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