Table 2
LCI data for the Raw Materials life cycle stage.

Material	LCI source data	Ecoinvent process used, when relevant	Comments
Epoxy resin	Ecoinvent v3.4	Epoxy resin {GLO}| market for epoxy resin | Conseq, U	The commercial polymeric resin used for the production of the biocomposite panel, contains the flame retardant agent. From the chemical analysis carried out for the commercial resin (detailed in the SI-3), a 1.63 epoxy/flame retardant ratio was determined.
Ammonium Polyphosphate (APP)	Ecoinvent v3.4	Nitrogen fertilizer, as N {RER}| monoammonium phosphate production | APOS, U (Used as proxy with modifications)	Since no consequential process were available, the one mentioned herein was used as starting point and adjusted with consequential data. A detailed description of the modifications is available in the SI-4.
Decabromodiphenyl ether (decaBDE)	Ecoinvent v3.4	Decabromodiphenyl ether {GLO}| market for decabromodiphenyl ether | Conseq, U	From Vidal et al. (2018), the flame retardant agent used in the conventional panel is identified as decaBDE.
Methylamine	Ecoinvent 3.4	Methylamine {GLO}| market for | Conseq, U (Used as proxy)	From the chemical analysis of the commercial hardener used for the biocomposite panel (detailed in the SI-3), three main substances were identified: isophorone diamine, alkylether polyamine and methylamine. Only the production of methylamine is present in the Ecoinvent database. As the toxicity of the three molecules is highly similar, this process was used as proxy.
Flax fibre technical textile	Gomez-Campos et al. (2020)	Flax fibre technical textile {FR} | Conseq	This dataset comprises all activities from the agricultural phase to the weaving of the textile, and includes land use changes.
Glass fibre	Ecoinvent v3.4	Glass fibre {GLO}| market for | Conseq, U	
Aramid fibre	Ecoinvent v3.4	Nylon 6-6 {GLO} | market for | Conseq, U (Used as proxy)	The most commonly used material in honeycomb core structures is known as NOMEX (Morton-Jones and Ellis 1986) and is described as a type of nylon. Based on this and on literature work involving the production of aramid fibre (Wilhelm 2018), the production process of nylon was used as a proxy for aramid fibre production.
Phenolic resin	Ecoinvent v3.4	Phenolic resin {GLO}| market for | Conseq, U	

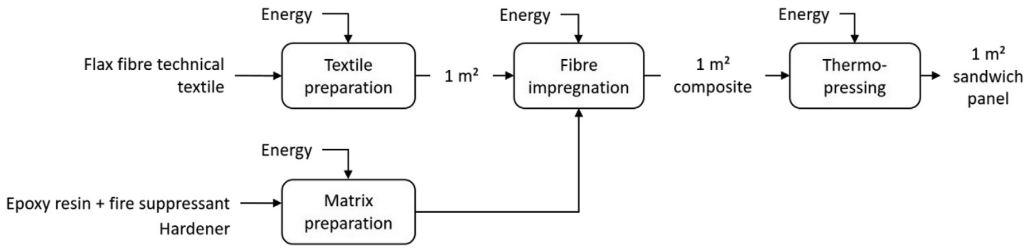

Fig. 2. Biocomposite panel manufacture process.

Table 3
Manufacturing process of 1 m^2 of the biocomposite panel.

Production stage	Energy consumption (Wh/m^2)
Textile preparation	Considered negligible
Matrix preparation	15
Fibre impregnation	160
Thermo-pressing	525
TOTAL	**700**

The range of the aircraft makes it possible to assume that it will be used for intracontinental flights within Europe. The "Transport, passenger, aircraft {RER}| intracontinental | Conseq, U" process from the Ecoinvent v3.4 database was therefore taken as reference for the estimation of direct emissions linked to the kerosene consumption on a medium haul aircraft. The kilograms of kerosene consumed per m^2 of panel per the lifetime of the aircraft (KCP) were calculated through the following equation:

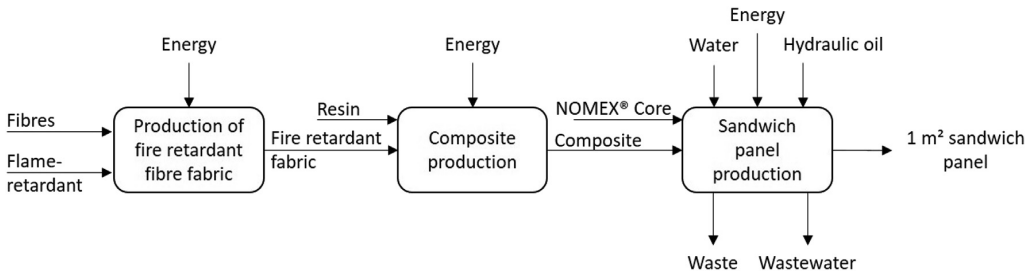

Fig. 3. Conventional panel manufacture process.