《Soalon™ Sustainable Program calculation》

Soalon™ Sustainable Program calculation boundary : cradle to gate(finished textiles)

In-house CFP calculation

Our factory

Raw material production

Soalon™ yarn production

Resources

resource extraction

energy

transportation

Textile production by VC
(PT in production area)

Twisting

Preparation

Weaving/Knitting

Dyeing

Soalon™ Textiles

Raw material production

Resources

Composite yarn production

Other factories

DB, literature values, etc.
Utilization of secondary data

Note
If you wish to have the details of each calculation disclosed, we assume that you separately conclude an NDA with us.

Soalon™ Sustainable Program Calculation Method

Functional unit: 1 roll (each textile standard, width x length)

I. Composition of yarn: (Own products) Calculate in-house with due consideration of ISO
(Other companies' products) Utilize secondary data such as databases and literature values (Appendix a)

II. Textile manufacturing: Energy consumption by utility resource in each process of the value chain is calculated from a simulation using the method described below. The values are multiplied by the GHG emission factor to work out CO2e. The above I. and II. per functional unit is integrated for each individual textile product to obtain the estimated emission value.

*For GHG calculation factors, refer to the list of emission factors based on the Cabinet Order and the Calculation Ministerial Ordinance in accordance with the "Guidelines for Calculating Total Greenhouse Gas Emissions" Ver. 1.0 of the Environmental Planning Division, Environmental Policy Bureau, Ministry of the Environment.

*For the electricity coefficient, we used the "Emission Factors by Electric Utility" published by the Ministry of the Environment and the Ministry of Economy, Trade and Industry. (for calculating GHG emissions of specific emitters) published by the Ministry of the Environment and the Ministry of Economy, Trade and Industry.

【Appendix a】

Fiber type	Emission factor source	Fiber type	Emission factor source	Fiber type	Emission factor source	Fiber type	Emission factor source
Plant fiber (cotton)	IDEA;GWP100	Silk, etc.	IDEA;GWP100	Polyester fiber	Estimated from literature values	Other synthetic fibers Ny 6	IDEA;GWP100
Same as above Certified Yarn	IDEA;GWP100	Same as above Certified Yarn	IDEA;GWP100	Material recycled yarn	Estimated from literature values	Ny66	IDEA;GWP100
Plant fiber (linen)	IDEA;GWP100	Viscose filament	IDEA;GWP100	Chemical Recycled yarn	Estimated from literature values	PP	In-house calculated value
Same as above Certified Yarn	IDEA;GWP100	Same as above Certified Yarn	Corrected above from literature values	Bio-derived	Estimated from literature values	Acrylic fiber	In-house calculated value
Animal fiber (animal hair)	IDEA;GWP100	Cupra/Tencel filament/staple	IDEA;GWP100	Metallic and inorganic fibers	IDEA;Reference	Vinylon (vinyl-nylon)	IDEA;GWP100
Same as above Certified Yarn	IDEA;GWP100	Same as above Certified Yarn	Corrected above from literature values			Polyurethane	IDEA;Reference
						PE	In-house calculated value

Calculation method of each process value

***As mentioned above, GHG emissions are calculated using a conversion factor based on the amount of each energy resource used, so the following is explicitly stated as a calculation method for energy consumption.**

twisting

The energy resource in this process is electricity. No consideration is given to differences in power consumption capacity by twisting machine model. (Assuming current representative models)

Special twisted yarns: For special twisted yarns, we conducted comprehensive monitoring of actual electricity consumption for each type of yarn. The electricity consumption is calculated and used as a basic unit per weight.
Normal twisted yarns: Electricity consumption is assumed based on the number of revolutions of twisting machines, operating hours, and production volume, which vary depending on the yarn type, thread fineness, and twisting conditions. Calculations are made by setting up a simulation-capable algorithm based on twist coefficients. The algorithm also incorporates a correction value calculation to minimize deviations from the calculated values after confirming actual power consumption values by monitoring and verifying the data for representative twisted yarn types.

preparation

The energy resources in this process are electricity and heat source boilers.

Sizing and beaming: Per unit of production (per length of yarn) is calculated based on the actual use of each resource and the actual volume.

Weaving/Knitting

The energy resource in this process is electricity. As with twisting process, capacity differences due to the power consumption design of each weaving machine-model are not taken into concideration. (Assuming current representative models)

Weaving: Monitoring and measurement of electricity consumption during production of representative products at multiple weaving plants. After verifying the data, we set up an algorithm that can calculate approximate values based on the assumed volume of fabrics that correlate with the power consumption standard (number of revolutions and time).
Knitting: As with woven fabrics, an algorithm was set up to enable calculation based on the wale, course, knit gauge, and knit type (single, double, or tricot) of fabrics that correlate to the power consumption standard (number of revolutions and time).

Dyeing

The energy resources in the process concerned are electricity and heat source, steam, and water. Since the process and the origin of utilities are different in each dyeing factory, they are systematized by dyeing factory and by processing flow. The deviations due to dyeing conditions (color, lot, and reprocessing) are excluded, and calculated by standard modeling as the appropriate LOT.

After organizing and systematizing the dyeing process flow of (1) each dyeing factory (2) each product group by Soalon™ textile type, each flow is subdivided for each process. Resource consumption for each of these processes is monitored and calculated as energy consumption for standard model processing. The energy consumption load generated at the time of processing switching etc. was allocated on average. In the Soalon™ Sustainable Program calculation, the resource consumption of the subdivided process is integrated by selecting the applicable dyeing factory/process flow for each textile product.