

Since there are no relevant changes in the basic conditions, the producers and the reference products, this review is valid for the new calculated life cycle assessment until further notice.

**TRANSLATION:**

The translation of this peer review is provided by climatop with the aim of reflecting the original German text in the most accurate way. In case of interpretation difficulties, please consult the original, valid German text.

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**Peer review of the study****“LCA of brooms”**

dated 28.07.2010, conducted by Silvia Marton and Thomas Kägi, myclimate

**Initial situation and assignment**

In this project the foundation myclimate examined on behalf of Swiss Brushes Ebnat-Kappel Ltd. the environmental and climate charge of brooms. Thereby, emissions through the whole life cycle were evaluated. The aim of the study was to find out if there are products out of the assortment of Swiss Brushes Ebnat-Kappel Ltd. that cause significantly lower climate relevant emissions than comparable products.

If the products with less climate relevant emissions also have an overall environmental impact that is at least not higher than the one of the compared products, the requirements for the recommendation with the climatop label are met. Carbotech AG was assigned with the conduct of a concomitant critical review.

**Criteria and procedure of the critical review**

The experience shows that the critical points of life cycle assessments are the definition of constraints, goal of the study, system boundaries, etc. Accordingly, especially these points are verified in a peer review. Additionally the used data, assumptions, calculations, data communications, etc. were reviewed on consistency and adequacy by means of a relevance based methodical sample.

According to ISO 14040ff, the process of a peer review shall ensure, that

- the applied methods are consistent with the international standard,
- the applied methods are scientifically and technically valid and applicable,
- the used data are appropriate and reasonable in relation to the goal of the study,
- the conclusions consider the goals and limitations of the study and
- the report is transparent and consistent.

Within this review all of these points were examined as well as additionally the plausibility of the results was reviewed.

The review was conducted concomitantly to the study; by discussing the most important decisions such as the definition of the functional unit or of the system boundaries and the intermediate results as well as their plausibility. The results of these discussions have been integrated in the calculations and the final report.

This review is based on these discussions on the one hand and on the other hand on the final report of 8<sup>th</sup> June 2010.

## Statement on the final report of the study

### Aims and parameters

In each case the following products of Swiss Brushes Ebnat-Kappel Ltd. were compared within the product group:

Brooms	Brushes	Scrubbing-brushes
<ul style="list-style-type: none"><li>- Classic Clean</li><li>- Coop Horsehair</li><li>- Migros natur</li><li>- OEKO Horsehair</li><li>- SWISS Horsehair</li></ul>	<ul style="list-style-type: none"><li>- Classic Clean</li><li>- Coop Horsehair</li><li>- OEKO Horsehair</li><li>- SWISS Horsehair</li></ul>	<ul style="list-style-type: none"><li>- Classic Clean</li><li>- Coop Union blend</li><li>- OEKO Union blend</li><li>- SWISS Union blend</li></ul>

Additionally the handheld scrubbing-brush OEKO Union blend was balanced as the only handheld scrubbing-brush.

The chosen parameters such as functional unit, system boundaries and the considered indicators are adequate for the imposed goal definition. In each case a brush of the product group (brooms, brushes, scrubbing-brushes) was chosen as functional unit for the comparison. For each product group additionally an average product of the Swiss market was conservatively estimated and integrated in the comparison. The description of system boundaries includes a clear definition of what was and what was not considered.

The results of the study are valid in Switzerland.

Although, the primary aim of the study was to evaluate the climate relevant emissions, also the overall environmental impact was considered using the Swiss method of ecological scarcity (Environmental Impact Points, UBP 06). This is considered as extremely desirable, as experience shows that the results on climate impact do not have to be in accordance with those on overall environmental impact. Due to this additional evaluation of the overall environmental impact, the climatop label is conferred on criteria which ensure that the labelled products also come off well regarding overall environmental impact.

### Methods and data

The procedure and methods used within this study are scientific, comprehensive and consistent with aims and constraints of the study.

The relevant data, gathered by the authors of the study, was examined regarding plausibility. Especially that from the authors created inventory on horsehair from China was intensively discussed regarding the approach of allocation, the intensity of horse husbandry and the choice of main and side scenario. Due to the relevance of the topic on the end result, a in depth conducted collection of data resulted in a more precise data basis and permitted to diverge from certain worst case assumptions to the calculation of results with low uncertainty. Generally a high replicability is given due to the transparent allocation of primary data to the data from ecoinvent used for calculations. This allocation was reviewed by means of samples and considered as accurate.

The results of the comparison of the processes out of the ecoinvent data inventory were supported by the calculation of scenarios and sensitivity analyses.

### Results and discussion

According to the present study for review, the following products of Swiss Brushes Ebnat-Kappel Ltd. have a significantly lower impact on the climate than the main product made of plastic: Broom OEKO Horsehair, COOP Horsehair and SWISS Horsehair, Brush OEKO Horsehair, COOP Horsehair and SWISS Horsehair, Scrubbing-brush OEKO Union blend.

The results were reviewed regarding their plausibility. In the course of this; the transparent description of the different steps of the life cycle was helpful. The in the software integrated data as well as the results outlined in the report were examined by means of different samples. Due to these examinations and the review of the input data I consider the results

regarding impact on climate and environment in general as correct. The description of the uncertainty of the results, which permit a better interpretation of the differences between the results, needs to be pointed out positively. The results answer the initially defined questions.

### **Summary**

The results regarding impact on climate on the one hand and environment on the other hand are plausible and seem to be correct according to the performed examinations. The procedure is scientifically correct and corresponds to the initially defined objectives. The discussion of the relevant magnitudes of influence on the results and the sensitivity analyses need to be pointed out positively.

The resulting recommendations to climatop are comprehensible and conclusive.

Basel, 19<sup>th</sup> November 2010

Emil Franov

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