

Handprint evaluation of Evonik products

1. Introduction

We define handprint as positive sustainability impacts that Evonik products enable along the value chain compared with other established products and applications on the market. Often this positive contribution occurs downstream of Evonik's production processes (i.e. in customer's production processes or during consumer use). These products make a relevant contribution to a direct (measurable) improvement regarding one or more environmental and/or social indicators. This can lead to a strong or weak positive rating in the sustainability analysis and more precisely in the PSA's (Portfolio Sustainability Assessment) Signal Category 5 (environmental and social performance compared to alternative solutions)¹ and consequently in a positive sustainability profile that we describe as our Evonik "Next Generation Solutions". As a result, evaluating our handprint is an integral part of our sustainability analysis.

These evaluations can be a full quantification of one or more environmental categories by a Life Cycle Assessment (LCA) or a semi-quantitative description (e.g. when the handprint is about a health benefit). Quantitative evaluation of our handprint enables us to gain deeper knowledge of our product benefits and transparency as well as enhancing the quality of our sustainability evaluation in Signal Category 5.

For the Next Generation Solutions PARCs (Product Application Region Combination) whose environmental benefit has been extensively quantified, avoided greenhouse gas emissions or any other relevant impact categories will be reported as an overall saving potential for a specific reporting year to describe our handprint.

¹ <https://corporate.evonik.com/de/nachhaltigkeit/nachhaltigkeitsanalysen/nachhaltigkeitsanalyse>

The goal of this documentation is to provide a transparent explanation on our scope, methodology and process for quantifying and reporting our handprint (including our greenhouse gas avoided emissions).

2. Scope of handprint evaluation

We have been reporting avoided greenhouse gas emissions for selected product applications since 2008 and are following the chemical sector guidance "Avoiding Greenhouse Gas Emissions" guidelines published jointly by the World Business Council for Sustainable Development (WBCSD) and the International Council of Chemical Associations (ICCA)².

In 2022, we reported avoided greenhouse gas emissions for six product applications in the Next Generation Solutions brochure³. Our avoided emissions calculations are yearly verified within the scope of our auditors' limited assurance engagement of the sustainability report.

On the one side, our intention is to increase the number of product applications included in our avoided emissions calculations. On the other side, we want to extend our calculation approach to other relevant impact categories within the four Sustainability Focus Areas that bundle our sustainability strategy: Fight Climate Change, Drive Circularity, Safeguard Ecosystems and Health & Wellbeing.

² World Business Council for Sustainable Development (WBCSD) und International Council of Chemical Associations (ICCA), 14 Avoiding Greenhouse Gas Emissions – Guidelines: Accounting for and Reporting Greenhouse Gas (GHG) Emissions Avoided along the 14 Value Chain based on Comparative Studies, Version 2, December 2017.

³ <https://files.evonik.com/shared-files/evonik-ngs-broschu-re-a4-gb-2023-8579.pdf>

We use the following indicators to describe our handprint (non-exhaustive as our product applications are very diverse):

Fight Climate Change	Drive Circularity
<ul style="list-style-type: none"> • Avoided greenhouse gas emissions 	<ul style="list-style-type: none"> • Avoided waste • Avoided resource used
Safeguard Ecosystems	Health & Wellbeing
<ul style="list-style-type: none"> • Avoided water consumption (m³) or reduced water footprint • Avoided land use • Reduce eutrophication, acidification, marine biodiversity, etc. 	<p>Indicators for handprint are still under development regarding the dimension Health & Wellbeing. Those KPIs could describe the following effect:</p> <ul style="list-style-type: none"> • Reduce hazard exposure or exposure to disputed chemicals (e.g. VOC, microparticulate matter, disputed chemicals) • Enabling more efficient therapies

Following rules have been defined to evaluate our handprint:

- Handprint is evaluated at the PARC level and the corresponding(s) PARC(s) must be a Next Generation Solution with a positive scoring in the Signal Category 5.
- According to the recommended eligibility criteria of the new WBCSD guidance on avoided emissions⁴, we exclude solutions involving exploration, extraction, mining and/or production, distribution and sales of fossil fuels i.e., oil, natural gas and coal.
- If any material negative side effects exist for the related PARC, it will be communicated in the handprint brochure.

Avoided emissions and any other quantified indicators to evaluate our handprint will always be reported separately from our greenhouse gas or water inventory footprint. Moreover, they will be communicated always together with the percentage of total revenue the solutions generating those handprint evaluations represent.

⁴ <https://www.wbcsd.org/contentwbc/download/15909/229494/1>

Handprint can be evaluated for our current product portfolio and in this case, year-on-year sales volumes are considered to assess the overall impact. In addition, an handprint can also be calculated for innovative solutions and in this case, forward-looking sales volumes will be considered (at least 5 years after market entry). The handprint from innovative solutions will be reported separately.

3. Process and methodology for handprint evaluation

The process of handprint calculation is fully integrated in the process of the sustainability analysis of our business.

Handprint indicators are calculated with a comparative Life Cycle Assessment (LCA). Life cycle emissions and impacts are typically calculated in LCAs in accordance with DIN ISO 14040ff. Comparative LCAs are used to directly compare products with each other. In this case the idea is to quantify the reductions that Evonik products provide compared to the market and therefore reductions in greenhouse gases emissions or any other emissions or impact categories are calculated over the whole lifecycle. It is not meant to directly compare products of Evonik with competitors, therefore no critical review is performed.

A PARC can have an handprint in several impact categories and consequently have a positive contribution to several focus areas. LCAs results are yearly checked, if necessary amended, and recalculated, as the background data regularly change. LCAs are performed by the internal life cycle management experts (LCM group) who are working in close cooperation with experts from the responsible business lines.

The following steps are followed to calculate an handprint:

- Firstly, the selected indicators (LCA impact categories or any other indicators presented above) of the specific Evonik product application is calculated
- Then, the same indicators are calculated for the market reference
- The difference in emissions or impact between the Evonik solution and the market reference corresponds to the handprint (per functional unit).
- Knowing the required amount of the Evonik product in the product application (or per functional unit) to achieve the saving potential, the handprint per

kilogram of sold product can be calculated (specific handprint per kg of sold product).

– Finally, the absolute handprint is multiplied by the overall sales volume of the respective product(s) in the corresponding reporting year to obtain the overall handprint of the product application.

While sales volumes are defined at the PARC level, it will be checked and documented whether the LCA is representative of the whole PARC or only for a part of the PARC (and consequently for specific products of the PARC). This will enable that correct and realistic sales are used for calculating the overall handprint

The simplified calculation methodology as mentioned in the "Avoiding Greenhouse Gas Emissions" guidelines is applied, so that identical steps and corresponding emissions over the life cycle for the reference and Evonik solution are excluded from assessments. This approach has no impact on the final amount of calculated greenhouse gas emission reductions.

Regarding the solution to compare, we are following the rules defined by the WBCSD and ICCA guideline (WBCSD and ICCA, 2017):

- Both solutions shall be at the same level in the value chain
- Both the emission-saving product and the reference solution shall deliver the same function to the user and be used for the same application.
- Additionally, the reference solution must be available on the market, interchangeable for the typical customer in the selected market, and as similar as possible to the emission-saving product in terms of data quality, methodology, and assumptions.
- The established solutions shall either be one solution with high market share (>20%) in the considered application or be a weighted average based on shared of all currently implemented technologies for the same user benefit depending of the level of the comparison.
- Finally, data quality, methodology and assumption regarding the established solution shall be as consistent as possible with the ones of the Evonik solution.

Leader and Driver PARCs with a positive score in Signal Category 5 are PARCs with a “fundamental” (Leader), “extensive” (Leader and Driver) or “substantial”

(Driver) contribution regarding their environmental and or social performance and their emissions–saving potential in the value chain. The significance of the contribution is described in the WBCSD and ICCA sectoral guideline (WBCSD and ICCA, 2017) based on the functionality approach.

In the sustainability analysis, a detailed description of the handprint is required for Leader and Driver PARCs when they have a positive impact in SC 5. A quantitative description of handprint by a LCA is usually the best approach to ensure that Leader PARCs have the high data quality required for the best sustainability class's rating.

The function Sustainability is in charge of organizing the selection and conduction of new handprint analyses together with the Business Lines and the Life Cycle Management group. It is also in charge of checking the overall consistency of handprint analyses with the sustainability analysis.

Our in-house life cycle management experts are responsible for checking the quality of the analyses: completeness in term or scope, transparency of documentation and assumptions, consistency and validity of the data used.

In the yearly published Next Generation Solutions brochure, a brief description of each solution will be provided as well as main LCA results of the selected product applications.

A description of the reference solution, functional unit, boundaries, main parameters and assumption as well as material trade-offs will also be reported.

In accordance with the WBCSD and ICCA sectoral guidance on avoided emissions, the results of the handprint calculations are indicated for the value chain of the entire application, because the contribution of a single product to all savings in the value chain is usually difficult to quantify and can therefore be based on assumptions. In contrast to the specifications of the avoided emissions guidance, handprint calculations are not reported individually for each selected product application for confidentiality reasons but as an aggregated figure for the company.