VOLVO

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Volvo Cars position on sustainable materials

Purpose of this document

The overall intention of Volvo Cars position papers is to provide clarity to stakeholders in areas of high relevance to the company considering its ambitions and long-term strategies. This position paper addresses the sustainability challenges of the materials we use to build our vehicles.

Definitions

Materials

When we talk about materials at Volvo Cars, we talk about the durable and resilient materials we use in our vehicles (e.g. steel, aluminium, polymers). These materials contain additives, reinforcements, alloying elements, stabilizers, coatings, and other performance enhancing solutions to ensure that their properties will be maintained throughout the lifespan of our vehicles.

Sustainable materials

At Volvo Cars we define sustainable materials as material that fulfil the requirements of our three sustainability pillars[1]. The material should be responsibly sourced, non-hazardous, have lower environmental impact than its primary reference[2] and it should be recyclable. We are aiming for materials that can be produced at high volumes without adversely affecting the environment or local communities. These materials can be made from different types of feedstocks, like recycled, bio-based, or greenhouse gas derived raw materials.

Background and challenges

- A substantial part of Volvo Cars sustainability impact comes from the supply chain. This is because the components used in our vehicles are made from materials that are mined/farmed, refined, manufactured, and transported before we assemble them into our products. Material related supply chains may have different sustainability risks:
    - Environmental risks: CO_2 emissions, deforestation, biodiversity loss, pollution, water scarcity etc.
    - Social risks: Human rights abuses such as child labour, forced labour, impact on local and indigenous communities, animal cruelty etc.

[1] Volvo Cars three sustainability pillar: Climate Action, Circular Economy and Responsible Business (https://www.volvocars.com/intl/v/sustainability/)

[2] Primary near-zero emission materials can qualify as sustainable materials.

  - Governance risks: corruption, funding of conflicts, land grabbing etc.
  - Geo-political and business risks: Raw material supply chains are prone to business risks, such as land-grabbing, national trade trade barriers, legislation, energy (access & costs), scarcity, and price volatility.

- In 2023 Volvo Cars produced more than 824.000 vehicles. To build these, we estimate that we used more than 1.5 million tonnes of materials[3], even more if we count the waste generated at each process step, including our supply chain.
- In a modern vehicle we find more than 50 metals and minerals, as well as a large number of plastic materials, elastomers, natural materials and fluids. A majority of the metals and minerals are present in low quantities; <100 grams.

Future challenges

- To make sustainability improvements in our supply chain, we need to know the origin[4] of our raw materials. Achieving full traceability and transparency is a challenge, and we rely on 3rd party certifications for some of this work, including through sustainable material certifications e.g. ResponsibleSteel and FSC.

Volvo Cars position

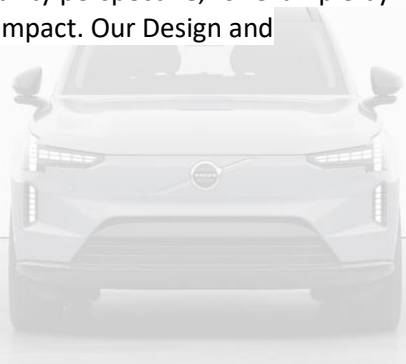
- We aim to be pioneers in protecting people and the planet by working towards net zero, embracing the circular economy and improving people's lives.
- We have high sustainability ambitions for 2030, e.g. 65-75% reduction of CO2 emissions per average car and 35% recycled and bio-based materials in new vehicles. To reach our 2040 climate action ambitions all materials in the car will need to be near-zero emission primary or recycled.
- Circular business practices are an important aspect of our environmental strategy. We therefore believe it is important that materials do not get downgraded when our vehicles reach end of life. To ensure circularity, materials need to be durable and tolerant to reuse and recycling with no or low degradation.

  We do not use biodegradable polymers in our vehicles, due to the risks of degradation during the component's lifetime.
- Volvo Cars aims to ensure responsible business conduct throughout the value chain. We conduct risk-based due diligence to identify, assess, and address ESG[5] risks as well as to detect opportunities for and promote performance improvements across our supply base. We aim to source responsibly by tracing raw materials of concern to their origin and perform basic and enhanced due diligence activities to ensure supplier compliance with our responsible sourcing requirements.

Volvo Cars actions

- At Volvo Cars we evaluate the materials we use from a sustainability perspective, for example by durability and carbon footprint, as well as responsible business impact. Our Design and

[3] Volvo Cars Annual Report 2023
[4] Mining location or choke-point
[5] Environmental, Social & Governance



Engineering departments work hard at selecting the right material for the right application in order to use less. They also strive to minimize primary metals and fossil-based polymers.

- We produce life cycle assessments (LCAs) of all our new car models, and they can be found on our website.
- We aim to be specific in communication regarding sustainable materials and use clear justification as to why the claim is being made and on what basis.
- To reduce our sustainability impact, we set CO_2 and recycled content requirements on vehicles. We then break down the targets and cascade them, tailored to key components and systems. This results in requirements on the sustainability performance of key materials, like carbon footprint, recycled content, material utilization degree, 3rd party certifications, and traceability.
- At Volvo Cars we have a list of Substances of Concern that we are proactively phasing out of our vehicles. The automotive industry has used the Global Automotive Declarable Substance List (GADSL) since 2005 to communicate threshold levels for different substances and which substances are prohibited. Our ambition towards EU taxonomy alignment is now accelerating the removal of substances of concern. For circular economy aspects, a proactive phase out of hazardous substances is important.
- We know that there are materials that can be associated with higher risks of sustainability issues. Therefore, we have categorized some materials as RMoC (Raw Materials of Concern). These demand a higher degree of awareness and proactive work with due diligence activities. The following materials are on the list: aluminium/bauxite, cobalt, copper, gold, graphite (natural), lead, leather, lithium, magnesium, manganese, mica, natural rubber, nickel, phosphorous, rare-earth elements (Nd, Dy, Pr, Tb), steel/iron, tantalum, tin, tungsten, and wool.
- To reduce the impact from the materials we use, we aim to ensure that our waste is high value recycled. We have e.g. partly implemented closed loop recycling of steel and aluminium scrap generated by our stamping operation.
- We also try to minimize the resources used to build our vehicles, like energy and water. We have an ambition to reduce our per car water withdrawal in all of our operations by 50% between 2018 and 2030.
- We take an active role in groups and global organisations working to reduce the impact of materials and accelerate the implementation of lower impact variants e.g. World Economic Forum's First Movers Coalition, ResponsibleSteel, SteelZero, IAI Aluminium Forward 2030, Responsible Mica Initiative, Better Mining and Drive Sustainability.
- Our internal experts consult and validate conclusions externally with NGOs, Research Institutes or other types of organizations, on a regular basis to identify potential risks in our supply chains and understand how we best mitigate them.

Volvo Cars proposed suggestions to make materials more sustainable

1. Policymakers

- Policymakers need to secure the expansion of renewable electricity, green hydrogen[6] and green methanol. There is otherwise a risk that material producers continue to rely on natural gas, coal, crude oil, and if so, we cannot secure near-zero emission materials in the future.
- We also need a new view of waste in current legislation. Waste should be seen as a resource that can be utilized for other applications, instead of rapidly needing to be disposed of. This also includes the need to make proper waste management available throughout the globe.
- To increase the transparency of sustainability reporting for the automotive sector we also would like to see a harmonization of standards for calculating recycled content and life cycle assessments for vehicles. This will enable consumers to compare the sustainability performance of vehicles.

2. Material certifications

- Volvo Cars believes that material certifications can help to drive improved performance in supply chains. In order for a material certification to be relevant it should cover multiple ESG areas and engage with different stakeholder groups to capture the perspective of different parts of society. Material certifications should require 3rd party audits to give credibility and provide some level of transparency of the audit results. Certification schemes should preferably cover multiple materials and be adapted to a large number of industry sectors, to reduce workload for companies with products containing multiple materials.

3. Traceability solutions

- We use blockchain to trace our battery raw materials. Having a robust traceability solution is key for driving transparency. Today more digital solutions are being developed to trace the carbon footprint of a long value chain. We believe that these solutions need to be able to trace multiple sustainability issues. At the same time, we promote standardisation to enable interoperability and comparison.

[6] Green hydrogen refers to hydrogen produced with renewable energy.