Manufacturers of rubber products sought for co-development of sustainable and circular devulcanization of waste materials

Summary

Profile type
Technology request

Company's country
Switzerland

POD reference
TRCH20260608023

Profile status
PUBLISHED

Type of partnership
Commercial agreement with technical assistance
Investment agreement
Research and development cooperation agreement

Targeted countries
• All countries

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Term of validity
8 Jun 2026
8 Jun 2027

Last update
8 Jun 2026

General Information

Short summary

A Swiss startup offers an eco-friendly chemical additive for rubber devulcanization. The product efficiently transforms vulcanized rubber (gloves, tires, auto or bike inner tubes etc) into reusable material through a chemical-mechanical process. The technology is at prototype stage. The company seeks industrial partners with manufacturing expertise and testing capabilities to validate the integration of recycled rubber into technical or consumer products under R&D or commercial agreements.

Full description

Founded with the mission to accelerate the transition to a circular economy, a Swiss startup specializing in sustainable industrial chemistry and eco-friendly additive development leverages advanced material science to transform industrial waste streams into valuable manufacturing inputs. Operating with a lean structure and cutting-edge vision, the organization focuses on developing scalable, green chemical solutions that mitigate the environmental footprint of traditional manufacturing materials. The company seeks manufacturers of rubber goods or industrial organization to co-develop and scale up rubber recycling through a more sustainable devulcanization process.

The global vulcanized rubber industry faces a severe waste management challenge. Traditional vulcanization creates permanent, crosslinked sulfur bonds within the rubber matrix. These bonds make the material durable but also difficult to recycle. Standard mechanical grinding merely downgrades the material into low-value filler, while incineration and landfilling create significant environmental liabilities.

To solve this problem, the startup offers a high-performance eco-friendly chemical additive for rubber devulcanization. The product functions via a gentle chemical-mechanical process that targets and breaks down the sulfur-sulfur crosslinks while preserving the integrity of the main polymer chains. The resulting material acts as a functional secondary raw material that retains the inherent elastomeric or abrasion properties of the original feedstock. While not all recovered rubber is highly formulated, preserving the original compound's existing additives in highly compounded inputs - like tires - allows manufacturers to optimize formulations and reduce the volume of new chemical inputs.

While the chemical formulation is available, the core problem to be solved lies in its end-user application. The startup requires advanced end-user technical manufacturing know-how and material testing capabilities. Specifically, the technology requested involves the practical application, compounding, and performance validation of the devulcanized material when it is blended back into new product lines.

Collaboration with manufacturers of technical rubber goods, consumer rubber products or industrial organization seeking sustainable technologies to recycle their rubber waste would allow to determine how the treated rubber behaves during industrial molding and production, ensuring it seamlessly integrates into new technical rubber goods or consumer products without compromising final structural integrity.

Transitioning a chemical formulation into a successful, commercial-grade end product requires a collaborative feedback loop between the chemical developer and the material manufacturer. Technical cooperation or joint venture with manufacturers of technical rubber goods, consumer rubber products or industrial organization is thought: to co-develop optimized blending guidelines and successful manufacture market-ready consumer or technical rubber goods containing high percentages of recycled material.

Unlike conventional high-temperature devulcanization methods, our chemical-mechanical process operates efficiently under reduced thermal requirements without demanding high-heat inputs, lowering energy consumption. By providing a substitute for resource-intensive virgin materials, this method inherently drives a substantial reduction in the overall process carbon footprint.

Cooperation throught: commercial agreements, or joint development projects (Eurostars or Horizon Europe) if mutually beneficial. Partners are expected to provide industrial testing environments, product compounding expertise, and quality assurance evaluation for the final rubber products.

The start up is also open to joint venture or partnership that support both the validation of the innovation and the integration of recycled rubber materials into new goods or consumer products.

Advantages and innovations

• Active re-vulcanization: unlike traditional recycled rubber fillers, the devulcanized rubber can be re-vulcanized,

allowing it to actively bond with new compounds to maintain product integrity.
• Low carbon footprint: delivers an 82% reduction in CO2 equivalents compared to standard virgin rubber compounds.
• Zero infrastructure changes: functions entirely on conventional, standard rubber processing equipment (extruders, open mills, mixers) with zero modifications required.
• High processing safety: the additive is safe, biocompatible, eco-friendly, and fully compliant with the EU Regulation on Deforestation-free Products (EUDR).
• Operational cleanliness: the chemical-mechanical pathway creates zero side products and completely eliminates hydrogen sulfide ("rotten egg") odors.
• High process efficiency: the formulation features a fast processing cycle and operates via an energy-efficient pathway requiring no high-temperature inputs and thus lower energy costs.
• Flexible dosing: the additive is a fluid designed for simple, manual or basic premixing, completely eliminating the need for automated liquid dosing systems.

The integration of this devulcanization technology directly addresses several SDGs:
SDG 9: Industry, Innovation, and Infrastructure: By introducing a novel chemical solution that retrofits existing material manufacturing into a modern, sustainable paradigm.
SDG 12: Responsible Consumption and Production: By significantly reducing industrial reliance on virgin rubber and establishing a closed-loop recycling pathway for scrap rubber assets.
SDG 13: Climate Action: By lowering the carbon footprint and environmental degradation associated with rubber waste disposal and standard virgin rubber extraction.

Technical specification or expertise sought

Performance, Ease of Use, and Quality Required
The startup offers a high-performance chemical additive that transforms scrap rubber into a reusable asset. We require technical partners to test the product and evaluate the devulcanized material to optimize blending ratios within their product lines. The primary technical objective is verifying how the material behaves during industrial molding and production, ensuring it integrates into new technical rubber goods or consumer products without compromising final mechanical properties.

Capability and Equipment Requirements
End-user partners must have operational facilities utilizing conventional, standard rubber processing equipment (such as standard extruders, open mills, or internal mixers). The partner must possess internal material testing capabilities, compound formulation expertise, and final product quality validation workflows. The partner will be responsible for evaluating the mechanical tolerances, durability, and dimensional stability of the final rubber products containing the recycled material.

Sustainability and Compliance Standards
Because the additive and its supply chains are fully compliant with the European Union Regulation on Deforestation-free Products (EUDR), partners must be capable of maintaining matching environmental tracking and quality assurance standards throughout their compounding trials.

Sustainability and Compliance Standards
A key environmental capability of this process is that the resulting recycled rubber produced by the partner can fully comply with the European Union Regulation on Deforestation-free Products (EUDR). While not strictly mandatory for initial testing, it would be an advantage if partners possess the quality assurance tracking and environmental standards necessary to maintain this regulatory compliance throughout their compounding and manufacturing trials.

Stage of Development Needed
Partners at the prototype, pilot, or commercial stage are welcome. Ideally, the partner has the flexibility to perform pilot-scale compounding runs or help translate initial test results into commercial-grade production logic, though we

are open to discussing different scales of cooperation.

The ideal partner is an end-user manufacturer or sustainability-driven organization looking to test the startup's chemical additive within standard rubber processing setups to achieve devulcanization. They will collaborate with the startup to evaluate how the additive integrates, optimize compounding mixtures for their specific products, and provide feedback on the final product's performance.

Stage of development

Lab tested

Sustainable Development goals

- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 12: Responsible Consumption and Production**
- **Goal 13: Climate Action**

IPR Status

IPR Notes

Partner Sought

Expected role of the partner

The specific area of activity of the partner:
Manufacturer of technical rubber goods, manufacturer of consumer rubber products, product compounder, or industrial organization seeking sustainable technologies to recycle their rubber waste. Target applications and feedstocks include:

- Commercial & consumer goods: protective gloves and consumer rubber products
- Post-industrial waste: production scrap rubber directly from the rubber manufacturing industry
- Automotive & transport: tires, automotive and bicycle inner tubes, and vehicle mats (truck and car mats)
- Industrial components: Heavy-duty conveyor belts and technical rubber components

The tasks to be performed by the partner sought:
Once a collaboration is reached, the partner is expected to perform one or both of the following tasks based on their capabilities:

- Additive testing: introduce the chemical additive into their standard, existing rubber processing equipment to achieve devulcanization internally.
- Material testing: take the ready-to-use devulcanized rubber and blend it directly into their end-product formulations.
- Optimize and validate: perform pilot-scale compounding runs to evaluate blending ratios and assess the mechanical tolerances, durability, and re-vulcanization performance of the final products.
- Provide feedback: share performance data with the startup to help co-develop optimized application guidelines.

The startup aims to have a technical collaboration, joint venture or a partnership that support both the validation of the innovation to devulcanize rubber waste and the integration of recycled materials into new rubber goods or consumer products.

Type of partnership

Commercial agreement with technical assistance

Investment agreement

Research and development cooperation agreement

Type and size of the partner

- **SME <=10**

Dissemination

Technology keywords

- **03004010 - Special chemicals, intermediates**
- **02007016 - Rubber**
- **10003004 - Recycling, Recovery**
- **03004008 - Plastics and Rubber related to Chemical Technology**
- **10002013 - Clean Production / Green Technologies**

Market keywords

- **09001005 - Motor vehicles, transportation equipment and parts**
- **08001009 - Speciality/performance materials: producers and fabricators**
- **08004002 - Chemical and solid material recycling**
- **07004008 - Other consumer products**
- **08003007 - Other industrial equipment and machinery**

Targeted countries

- **All countries**

Sector groups involved

- **Energy-Intensive Industries - Materials**
- **Energy-Intensive Industries - BioChemTech**