
Silox
A new generation
of activators

Table of contents

1. Who is Silox?

1.1. Overview

1828 — Foundation of **the Société Métallurgique d'Engis**

Foundation of **Prayon** in Engis — **1882**

1932 — Foundation of **Silar** in Paris

Foundation of **Silox** — **1983**

1997-2001 — **Establishment of international subsidiaries**

Acquisition of **Prayon** sodium hydrosulfite and sulfur dioxide activities, as well as **JGI-Hydrometal Group** — **2002**

2021 — Set up of **Hydrometal France**

Launch of **ActiECO+** and **ActiECO+ Green** concepts — **2022**

Before Silox was established, zinc hydroxides produced by Prayon in the Engis region were partially sold to the French company Silar. In 1983, the two companies partnered to form Silox, making it the exclusive producer of zinc oxides derived from Prayon's sodium dithionite production. Building on the experience of its predecessors, Silox quickly established itself in the technical rubber and tire sectors. Over the years, the company expanded and diversified significantly, becoming a global leader in three key sectors: performance chemicals, anti-corrosion solutions, and trading & recycling.

Performance chemicals

A renowned producer of reducing agents for bleaching, textile dyeing, and polymerization processes, Silox is also a global leader in "active" zinc oxides, which are highly effective activators in rubber and tire applications.

Anti-corrosion

A world leader in anti-corrosion pigments that extend the lifespan of infrastructure, as well as marine, aerospace, and household equipment. These products also help reduce the use of non-renewable resources.

Trading & Recycling

Internationally recognized for its expertise in sourcing, trading, recycling, and recovering complex non-ferrous metal residues.

Rubber industry

Used as a transparent activator in rubber applications.

Oil drilling

Used as an oxygen scavenger in oil drilling fluids.

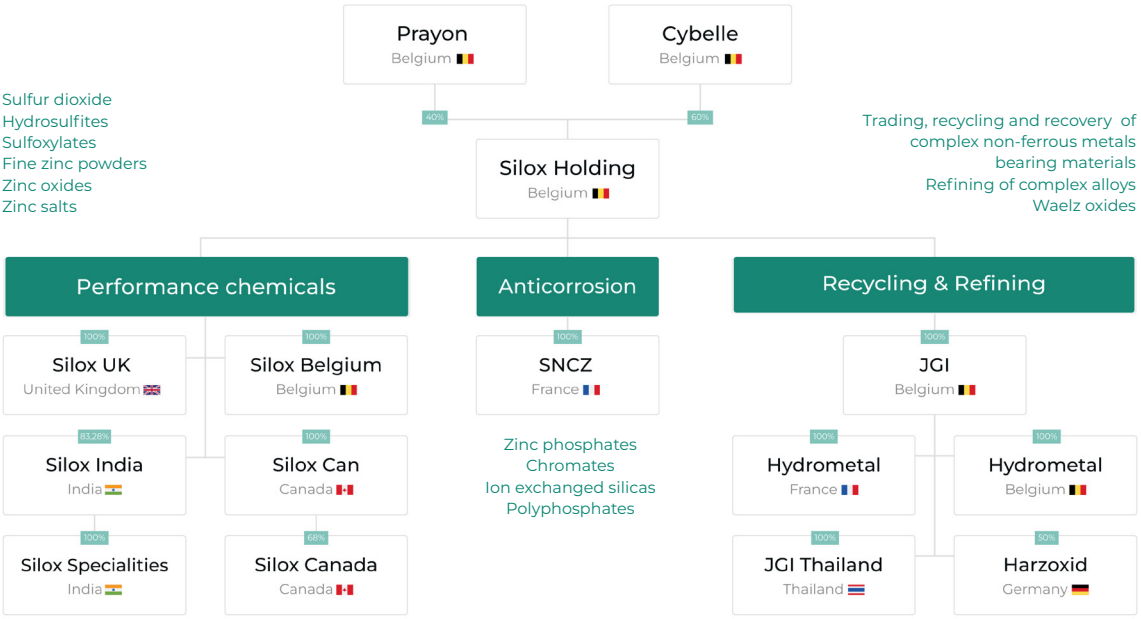
Cosmetics

Applied in beauty care and cosmetic/pharmaceutical products.

Metallization & Chemicals

Used as a sulfur absorber in desulfurization catalysts.

1.2. Group structure



1.3. Values, Ambition & Commitment

Our Values

- **Safety**: Safety is at the heart of our concerns, at all times, in all our actions and all our decisions.
- **Sustainability**: As our vision and our mission imply, we feel it is our responsibility to consider all our actions in terms of sustainable development. We strive to reduce the short- and long-term impact of our operations and to provide sustainable solutions to our customers.
- **Respect**: Respect is the basis of everything. At Silox, we ensure that all our actions are carried out with respect for our customers, our suppliers, and our partners, as well as for society at large. We pay particular attention to our employees by working for their well-being and fulfilment, by cultivating a healthy work-life balance, and by promoting active participation, respectful relationships in the workplace, team spirit and creativity.
- **Innovation**: Remaining at the cutting edge of innovation in our areas of expertise is one of the strengths of our corporate strategy. We are constantly working, together with various partners, to develop and improve our products, technologies, and working methods.
- **Excellence**: Driven by our desire to establish long-term relationships with our customers and to be considered a preferred value-added partner, we have set ourselves the goal of satisfying their expectations efficiently. Our international structure is an undeniable asset that allows us to provide global and coordinated solutions to meet the demands of a clientele that spans the entire planet.

Our Ambition

To make societal and environmental challenges the cornerstone of our corporate strategy, in harmony with the values that guide us: sustainability, openness, efficiency, agility, and team spirit.

Our Commitment

To achieve a demanding transition towards a new economic model, enabling us to create more value through our solutions, while reducing the environmental impact of our activities. All this while ensuring the safety and well-being of our employees and the consumers of our products.

€482M in revenue in 2023

2,000 employees worldwide

10 production sites in **6** countries

5 centers of excellence
(application development and customer support)

3 R&D centers
(development of innovative products and processes)

2. ActiECO+ and Process

2.1. ActiECO+ and ActiECO+ Green Product overview

Acti ECO+

- 5 phr formulation
- Improved blending
- Cost effective
- Non-ecotoxic
- Limitless shelf life
- High purity

Acti ECO+ GREEN

- 5 phr formulation
- Improved blending
- Cost effective
- Non-ecotoxic
- Limitless shelf life
- High purity
- Circular and low carbon footprint

Acti ECO+ C

- 3 phr formulation
- Improved blending
- Cost effective
- Non-ecotoxic
- Limitless shelf life
- High purity

Acti ECO+ GREEN C

- 3 phr formulation
- Improved blending
- Cost effective
- Non-ecotoxic
- Limitless shelf life
- High purity
- Circular and low carbon footprint

In 2022, Silox introduced two new zinc oxide products: ActiECO+ and ActiECO+ Green, along with their derived versions ActiECO+ C and ActiECO+ Green C. These innovations bring several key advancements:

1. Traditional zinc oxides contain particles that produce dust, are difficult to disperse, and pose health risks. This is not the case with ActiECO+, which is dust-free, offers better dispersion, and is safer for operators.
2. The production process involves precipitating zinc-based solutions into zinc oxide. The precipitate is dried or calcined to remove water and/or carbon dioxide, resulting in a wider variety of zinc oxide morphologies.
3. Zinc oxide efficiency during vulcanization is enhanced by maximizing contact between zinc oxide particles and the formulation components. Higher efficiency is achieved with small, high-surface-area particles uniformly dispersed throughout the rubber matrix.

Additionally, the product is set to undergo further improvements, as Silox is finalizing a new technology for processing used zinc oxides at its hydrometal France subsidiary. Developed within the Silox group, this innovation will enhance the properties of the ActiECO+ and ActiECO+ Green product lines even further.

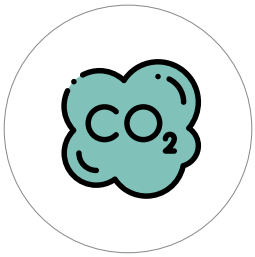
2.2. Product grades comparison

	Standard	Active			Acti^{ECO+}		Acti^{ECO+} Green	
Grade	2C	Actif	Actif Free-Flowing®	ZINECO	Acti^{ECO+}	Acti^{ECO+} C	Acti^{ECO+}*Green*	Acti^{ECO+}*Green C*
Form SSA (m^2/g) phr	Powder 5-8 5	Powder 30-50 3	Micro balls 40-50 3	Powder 40-50 3	Powder N/A **5**	Powder N/A **3**	Powder N/A **5**	Powder N/A **3**
Purity Blending/dispersion	+++ =	+++ Improved	+++ Improved	+++ Improved	+++ Best	+++ Best	+++ Best	+++ Best
Ecotoxicity Formulation CFP Circularity/natural Stability	Yes = + +	Yes Low + +	Yes Low + +	No Low + +	No Very low ++ +++	No Very low ++ +++	No Very low +++ ++	No Very low ++ ++
Formulation cost	=	Low	Low	Low	Low	Low	Low	Low

ActiECO+ and ActiECO+ Green products outperform competitors in terms of stability, natural circulation, and CFP formulation, while being completely non-ecotoxic.

Tires

ActiECO+ offers improved rheological and mechanical properties, equivalent to or better than traditional zinc oxides like the Gold Seal reference. It also provides better moisture resistance and delivers superior long-term performance.

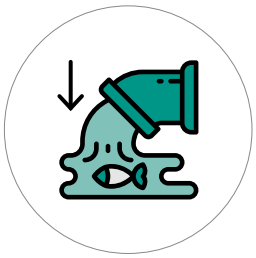


Carbon footprint

ActiECO+ has a significantly lower carbon footprint (1.57 kg CO_2 eq./kg) compared to traditional Gold Seal zinc oxide (3.90 kg CO_2 eq./kg). ActiECO+ Green performs even better (1.36 kg CO_2 eq./kg). These figures are valid for a cradle-to-gate scope according to the ISO 14067 standard.

Circularity

The ActiECO+ and ActiECO+ Green product ranges provide a substantial increase in material circularity compared to competitors, greatly reducing their ecological impact.



Low toxicity

ActiECO+ has harmful metal levels equivalent to the Gold Seal and Pharma references.

2.3. Contribution of Hydrometal

HYDROMETAL FRANCE

Recently, Silox set up Hydrometal France in dunkirk to handle the hydrometallurgical treatment of complex non-ferrous materials. The goal is to provide a circular alternative while reducing the depletion of natural resources.

Hydrometal France has developed a new low-carbon zinc source, ZincOPALE, which surpasses all competitors. ZincOPALE will further drastically reduce the ecological impact of Silox ActiECO+ and ActiECO+ Green products.

Product	CO_2 eq/kg product
Gold Seal	3,90
ActiECO+ Green	1,36
ZincOPALE	1,18
ActiECO+ Green ZincOPALE	0,45

These figures are valid for a "Cradle-to-gate scope" according to the "ISO 14067" standard.

Silox

ActiECO+

ActiECO+ GREEN

> A new generation of activators

Conclusion

Today, Silox has established itself as the global leader in anti-corrosion pigments and sulfoxylates used in textile printing, as a specialist in high-performance active zinc oxides for rubber applications, and as the only company in its sector operating across three continents. Additionally, Silox is internationally renowned for its expertise in non-ferrous metal recycling.

Choosing ActiECO+ or ActiECO+ Green means selecting high-quality materials at the cutting edge of innovation, with increasingly advanced technologies, a continually reduced ecological footprint, and internationally recognized expertise. Most importantly, it offers an economical solution with lower costs and less price volatility.