
unger
Pure
Nordic
Quality

— Today's Speakers

Christoffer Lund

R&D Manager

Christoffer Lund is a highly accomplished professional with 15 years of experience in the chemical industry. Currently, he serves as R&D Manager at Unger, where he is genuinely passionate about creating value through innovation, sustainability, and open innovation. He has a strong interest in strategic work and holistic solutions to drive innovation processes. He holds a PhD in Biochemistry, highlighting his deep expertise in the field. Throughout his career, he has significantly contributed to the development of innovative and sustainable solutions while focusing on delivering strategic and comprehensive results.

During this webinar, Christoffer will provide detailed information about the UFARYL® EcoSmart product range.

Thor- Erik Nyseth

Sales and Marketing Director

Thor-Erik Nyseth is a highly accomplished professional with over 13 years of experience in the surfactants industry. Currently, he serves as Sales and Marketing Director at Unger Fabrikker AS, where he focuses on anionic surfactants. He holds a Master in Chemistry from Norwegian University of Life Sciences. Throughout his career, he has worked on the use of surfactants within Home & Personal Care, Functional Materials and the Pulp & Paper Industry.

During this webinar, Thor-Erik will share his knowledge and expertise about sustainability in home care industry and LCA dynamics.

Unger's Global Decarbonization Journey – Introducing UFARYL® EcoSmart Product Range

Agenda

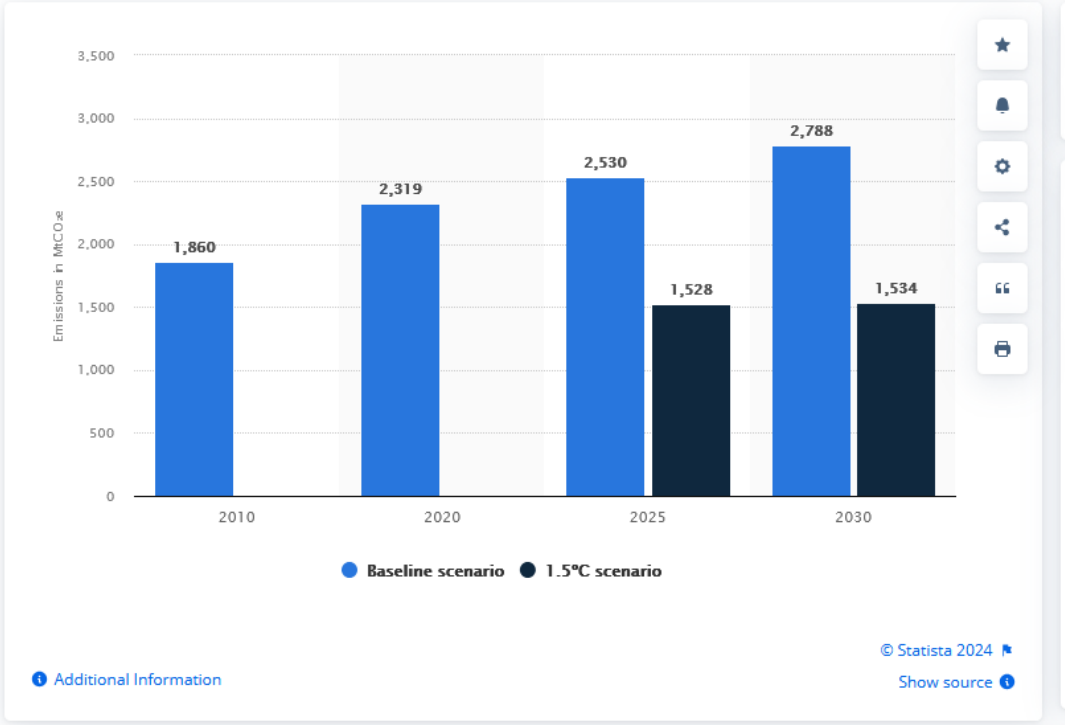
- Global Carbon Emission Problem in Cleaning Industry
  - LCA (Life Cycle Assessment)
- Sustainability at Unger
- First step – UFARYL ® EcoSmart
  - UFARYL ® EcoSmart product range
  - Performance & Sustainability
  - LCA results
  - Value Creation
- Documentation, Ordering and Availability
- Conclusion

Global Carbon Emission Problem in Cleaning Industry

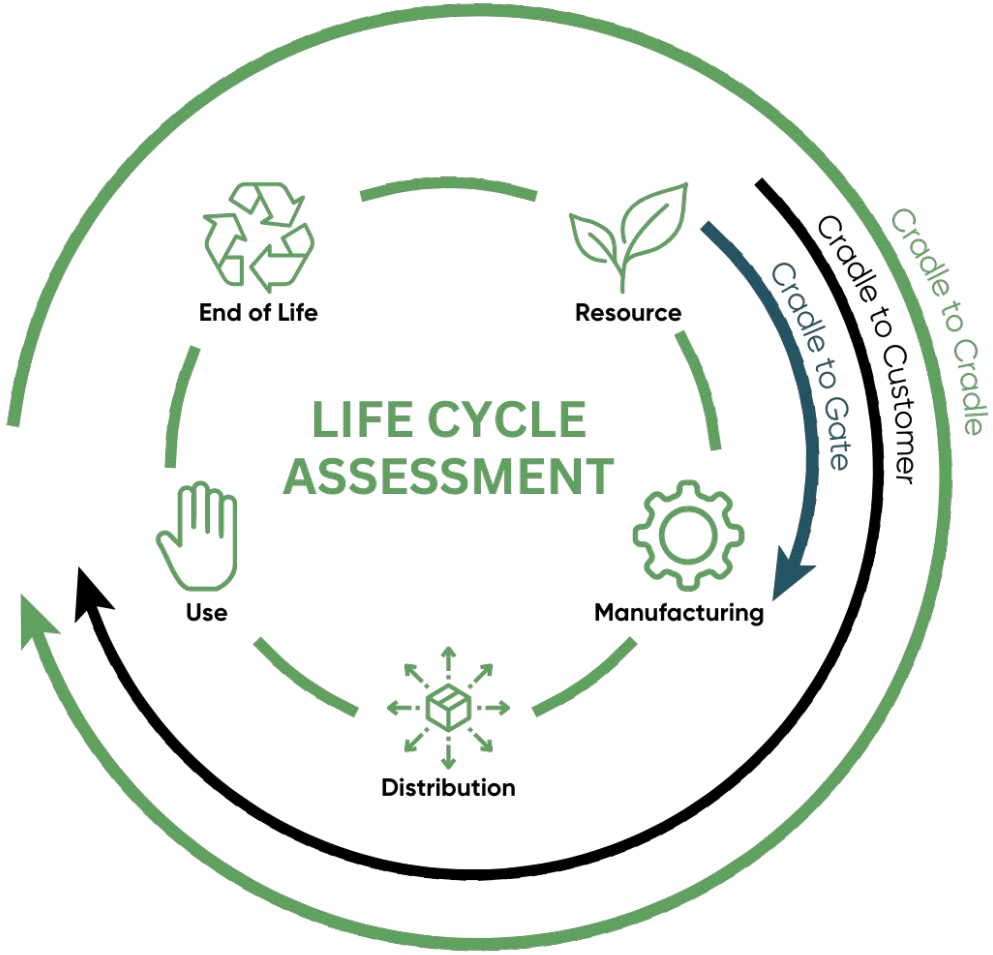
Energy & Environment › Emissions

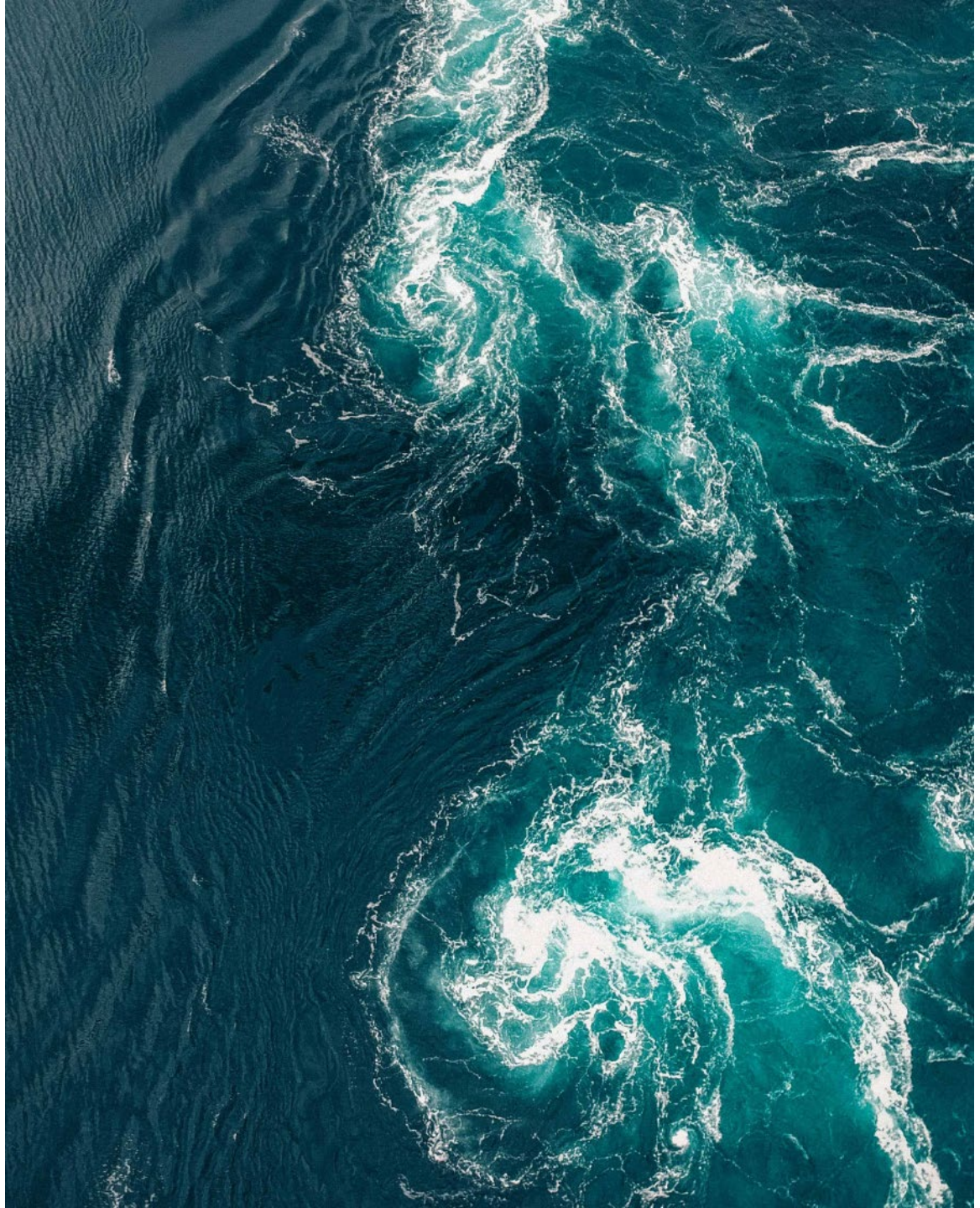
Greenhouse gas emissions of the chemical and petrochemical industry worldwide in 2010 and 2020, with a forecast until 2030, by scenario

(in million metric tons of CO_2 equivalent)



— How did we find out?





LCA (Life Cycle Assessment)

Key Finding: The Dominance of Raw Material Emissions

We discovered that the raw materials used in our products are the largest contributors to the CO_2 emissions, far outweighing the emissions from internal operations. This finding highlights the critical need to focus on the supply chain and raw material sourcing to achieve meaningful reductions in the company's carbon footprint.

Table 1 Impacts on climate change, translated into GHG emissions measured as CO_2-equivalents and divided into scope 1, 2, and 3 for Unger for the operational year 2023.

	Unit	Total emission 2023	Unit	Percentage 2023	Comment
Scope 1					
Heating oil	kg CO2/l	**1 281**	t CO_2	3 %	
Scope 2 Location-based					
Electricity	kg CO2/kWh	**443**	t CO_2	1 %	From NVE
Scope 2 Market-based					
Electricity	kg CO2/kWh	19 634	t CO_2		
Scope 3					
Raw material - petrobased share petrochemical raw matr.		28 491 59 %	t CO_2	56 %	
Raw material - natural		19 986	t CO_2	39 %	
Electricity	kg CO2/kWh	362	t CO_2	1 %	
Heating oil	kg CO2/kg	266	t CO_2	1 %	Density of heat oil: 0,89 kg/l
Waste		292	t CO_2	1 %	
Total Scope 3		**49 397**	t CO_2	97 %	
Total emission (location-based scope 2)		**51 120**	**t CO_2**	100 %	

From the table we can see that the total potential impact on climate change from the study amounts to just over 51,000 tons of CO_2-equivalents. 1,281 tons of CO_2-equivalents falls under scope 1; 443 tons of CO2-equivalents for scope 2; and 49,397 tons of CO_2-equivalents for scope 3. The reduction of GHG emissions from 2022 to 2023 has been largest in connection to the use of

The table shows that the direct emissions from Unger's activities only amount to 3% of the total emissions captured across all three scopes. Knowing that some of the upstream, and all the downstream activities are missing, the impact from the operations at Unger becomes even less important. From the results, Unger can work on raw materials to reduce its potential impacts on climate change.

It is also worth noting the large difference between the location-based and market-based emissions for scope 2. Because Norway's production of electricity is almost solely based on renewable hydro power, and because most of the environmental attributes are sold as guarantees of origin (GOs), there is a large gap between the so-called production mix (the technologies used for generating electricity within the geographical boundaries) and the so-called residual mix (the technologies used for generating electricity in the localities where the GOs are purchased).

Andreas Brekke
Research Manager, NORSUS AS

LCA (Life Cycle Assessment)

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95 % of Unger`s CO_2 emission relates to purchasing of raw materials[1]

[1]Verified by NORSUS (Norwegian Institute for Sustainability Research)

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Andreas Brekke
Research Manager, NORSUS AS

Sustainability at Unger

— Where it all started?

- Sustainability is in the backbone of Unger
  - RSPO (Roundtable on Sustainable Palm Oil)
    - Pioneer in the chemical industry
    - Member since 2012
  - Electrical Forklifts
  - Transport
    - Replace truck deliveries with vessel where possible
    - Replace heavy oil with biofuel
  - Packaging
    - Implement 30% portion of recycled material in small bags
    - Implement 30% portion of recycled materiel in big bags (testing)
    - Implement Green Layer in IBC and drums

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Total Savings;
More than 1500 000 kg CO_2eq

— Our Sustainability Strategy

Overall sustainability strategy

The table below sets out Unger's sustainability strategy. This strategy builds on the strategy in the Olav Thon Group, but is adapted to our own activities at Unger

The strategy is based around the three priority areas and clarifications concerning topics, goals for 2030, ambitions and links to the UN Sustainable Development Goals.

Pillars	Significant topics	Goals for 2030	Ambitions	UN Sustainable Development Goal
Carbon footprint	Develop processes and process control to reduce our footprint.	50% reduction in internally generated CO2 emissions.	The sum total of all internal activities will be climate-neutral.	9
	Reduce waste in all production processes. Reduce energy consumption.	Waste sorting rate of 95%. Less than 10 tonnes of COD to water. 100% renewable energy.	Circulate or utilise all process and energy flows.	12
Respect for others	Inclusive workplace. Increase the proportion of women. Inclusion based on reducing exclusion in working life via arenas for work training and work experience.	30% women in management positions.	Representative management.	3
	Local focus contributes to local skills development in Østfold. Skills development in own organisation (collaborative skills).	A minimum of 10 qualified applicants per job posting. A minimum of 95% of employees confirming that their immediate manager encourages and facilitates skill sharing.	Contribute to a strong competence network in Østfold.	17
	Human rights and transparency.	Map the entire value chain. Transparent.	Full insight into the value chain.	8
Innovative and environmentally-friendly solutions.	Innovation: product innovation, producing and selling services that meet our customers' product and application needs.	Improve our innovation rate to 75 out of 100 points.	Contribute to responsible economic growth for owners, employees and local communities.	9
	Sustainable products: help customers attain their product needs and sustainability goals.	Increase the proportion of products based on renewable and circular raw materials to 70%.	Reduce carbon footprint, maintain biodiversity and a transparent value chain.	12
	Production, technology and services: sustainability (reduce carbon footprint and waste and improve resource recovery and value creation).	Include open innovation in more than 50% of all of our R&D activities.	Smart technology for innovation, better resource utilisation and reduced carbon footprint.	17

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— New Strategy 2024-2028

Purpose;

Develop, produce and sell surfactants which contribute to a safe, functional and clean everyday life for us all.

Today and for the coming generations.

— New Strategy 2024-2028

Vision;

Unger offers products, services and concepts for a safe, clean and functional everyday life using environmentally sound technologies.


First step
UFARYL® EcoSmart

— Meet UFARYL® EcoSmart

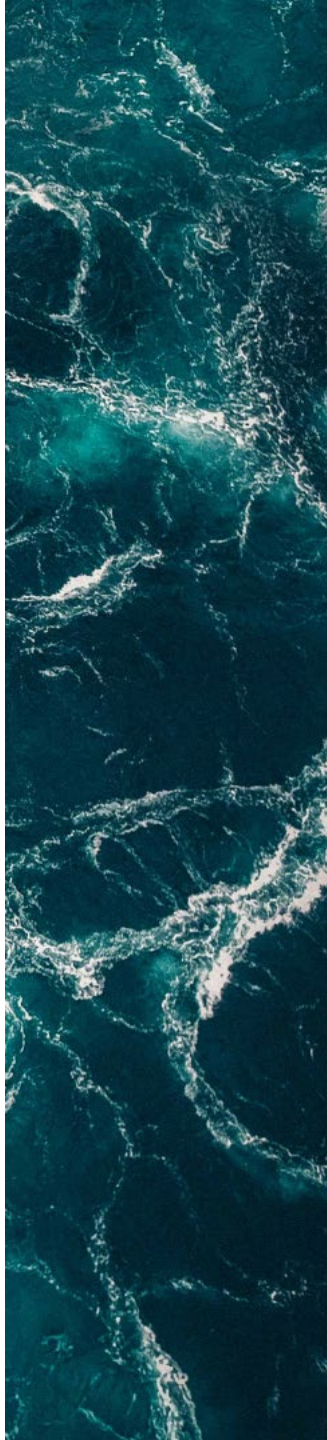
First-ever high active LAS product range designed with 38% reduced fossil-derived content

REDcert²

DL 80
DL 85
DL 90
DL 90C
DL 80CW
DL 85CJ
DL 80 P
G 80C
C3

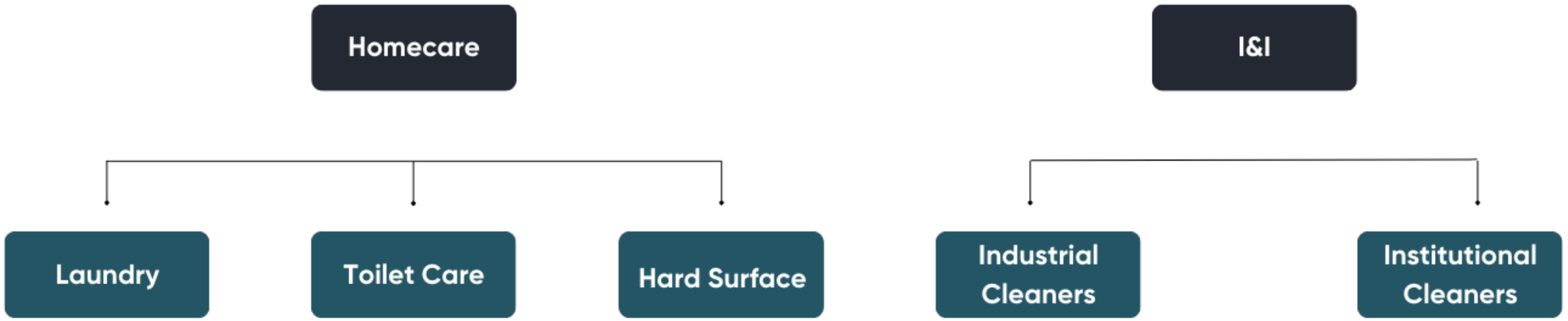
Standard grades

Designed Grades



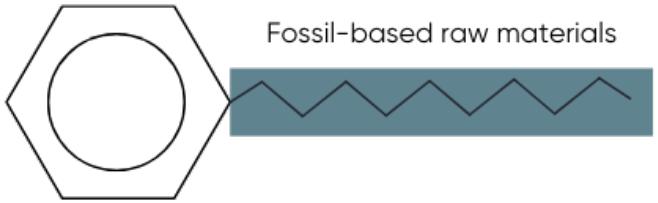
— Meet UFARYL® EcoSmart

Where is UFARYL® EcoSmart Used

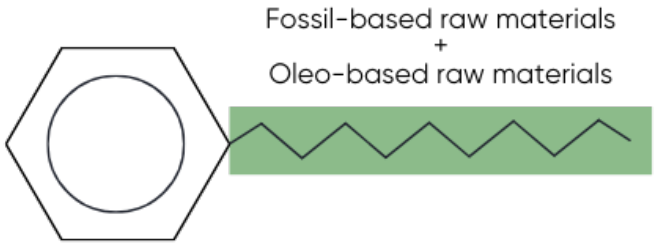


— Meet UFARYL® EcoSmart

UFARYL®



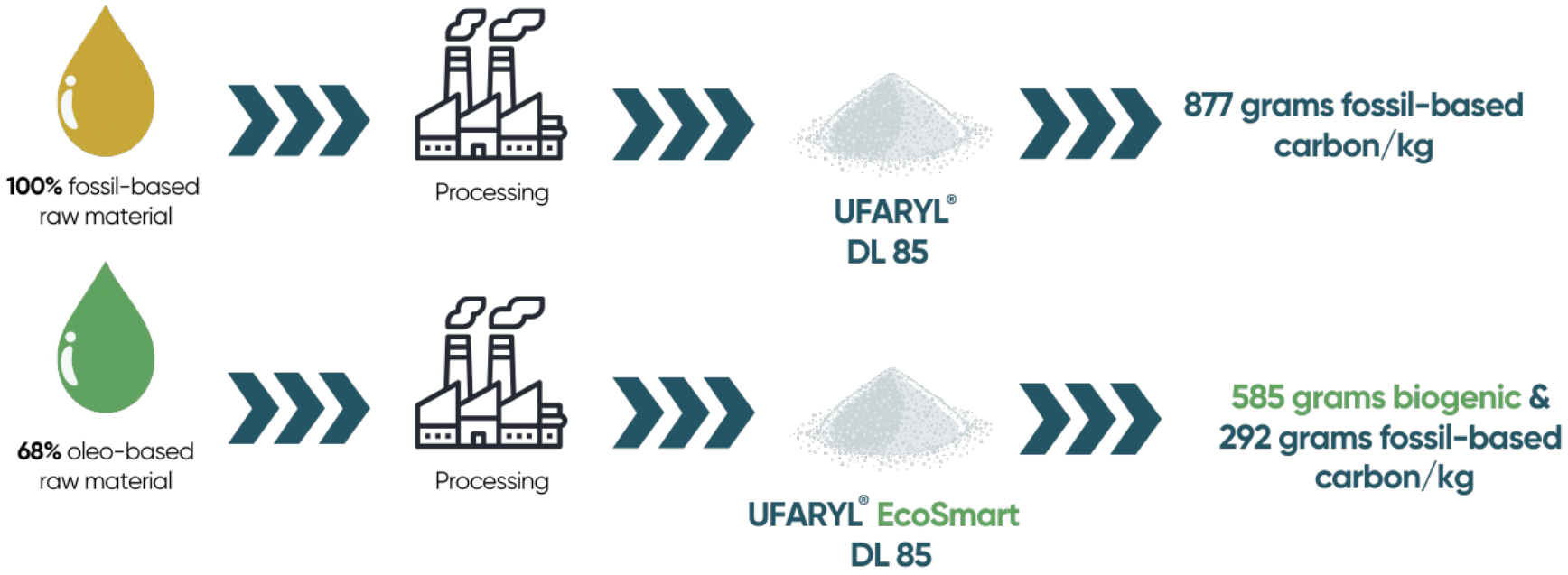
UFARYL® EcoSmart



The hydrocarbon chain in the LAS molecule in UFARYL® EcoSmart, is from renewable sources.

UFARYL® EcoSmart has the same CAS number

— Meet UFARYL® EcoSmart



UFARYL® EcoSmart is partly substituting fossil based raw materials with raw materials from certified renewable sources.

— LCA results

UFARYL® DL 85 vs UFARYL® EcoSmart DL 85

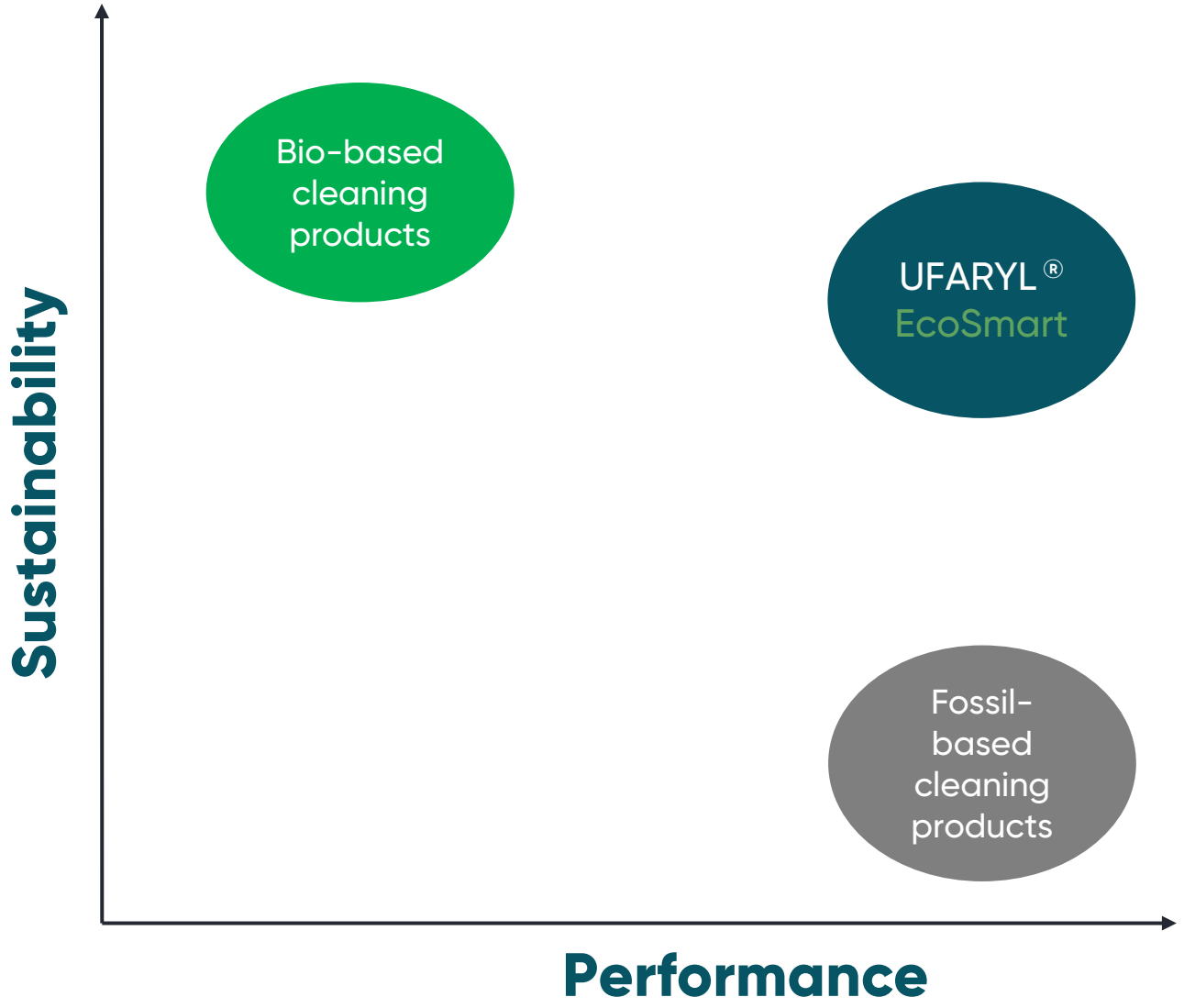
(ISO 14040 and ISO 14044, Cradle to gate)

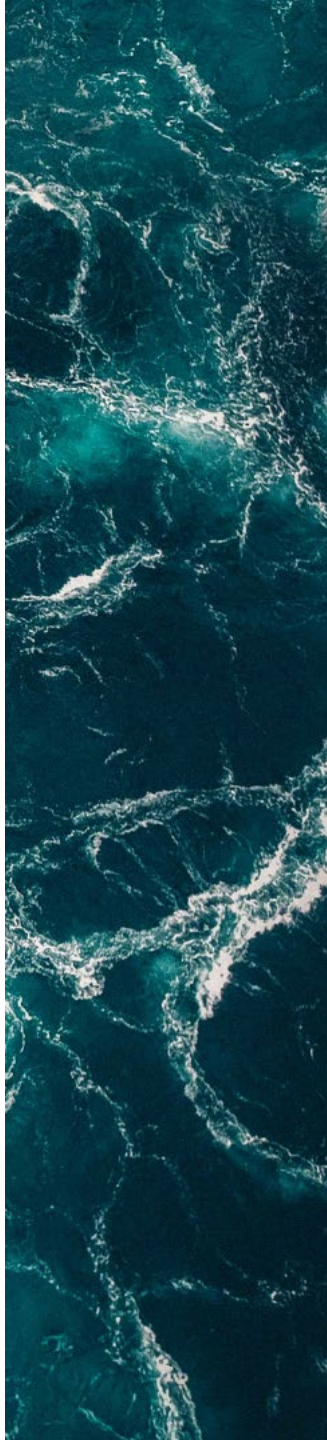
UFARYL® DL 85
2,90 kg CO_2 eq/kg product

UFARYL® EcoSmart DL 85
2,38 kg CO_2 eq/kg product

Up to 20% reduced carbon emission in UFARYL® EcoSmart

— Performance vs Sustainability

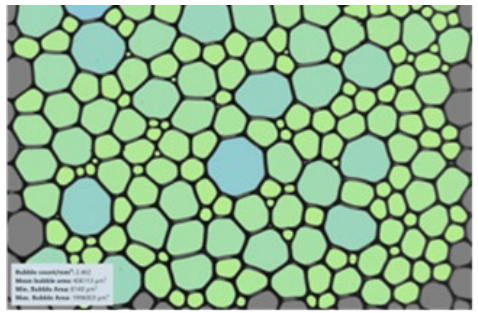


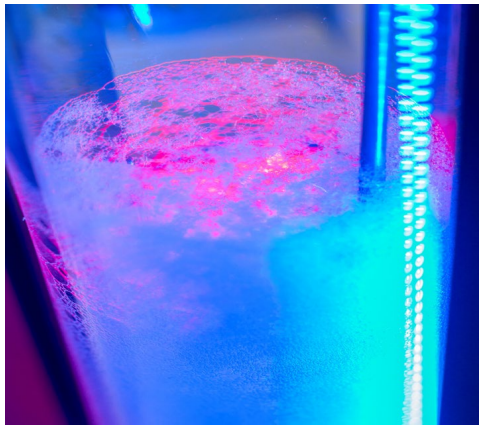


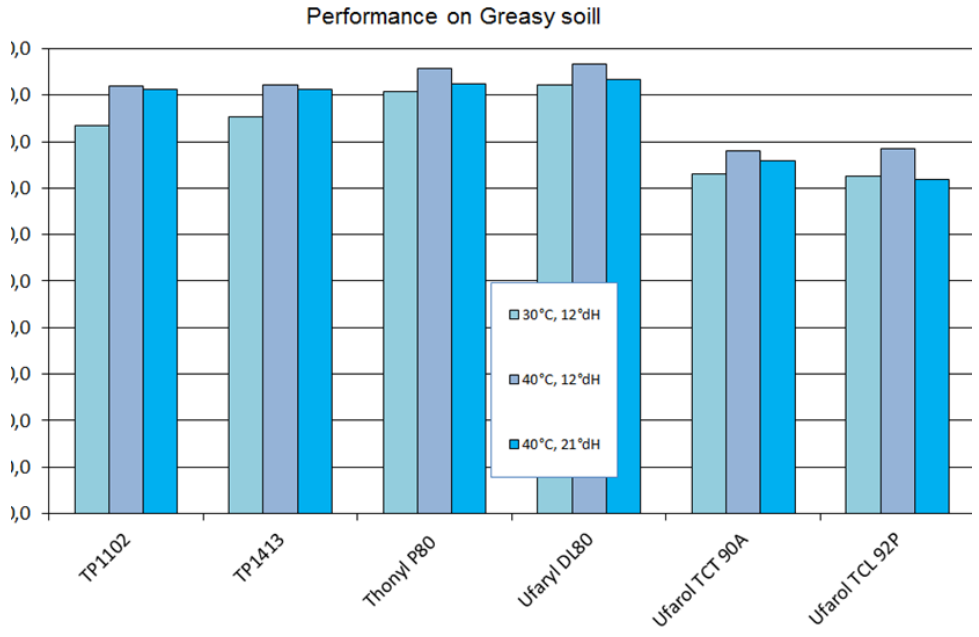
Same quality, same performance, same process, more sustainable

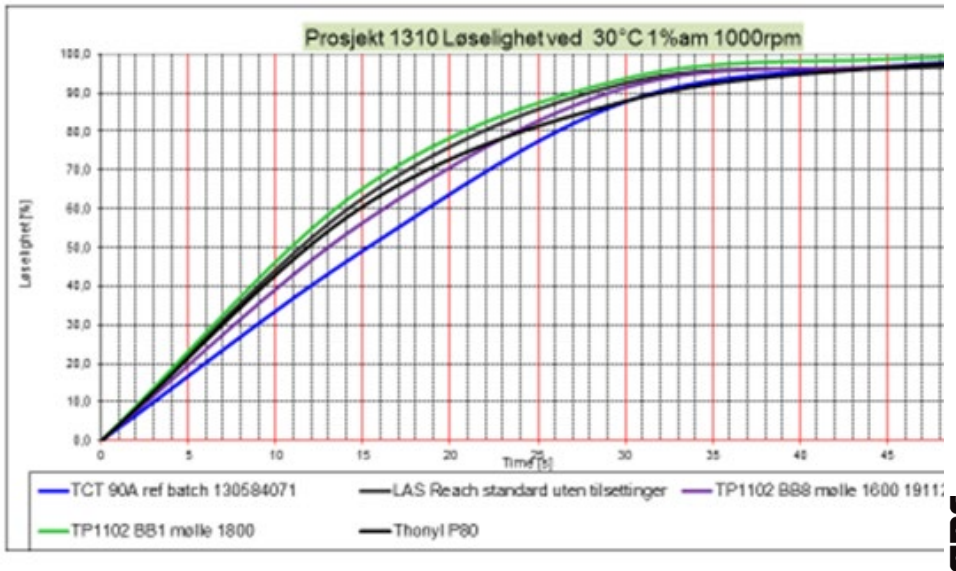
There is no need for any changes on;

- Handling
- Storage
- Production process
- Formulation
- Product performance









— The Value Creation

First-ever high active LAS product range designed with 38% reduced fossil-derived content

Same Excellent UFARYL ® Performance

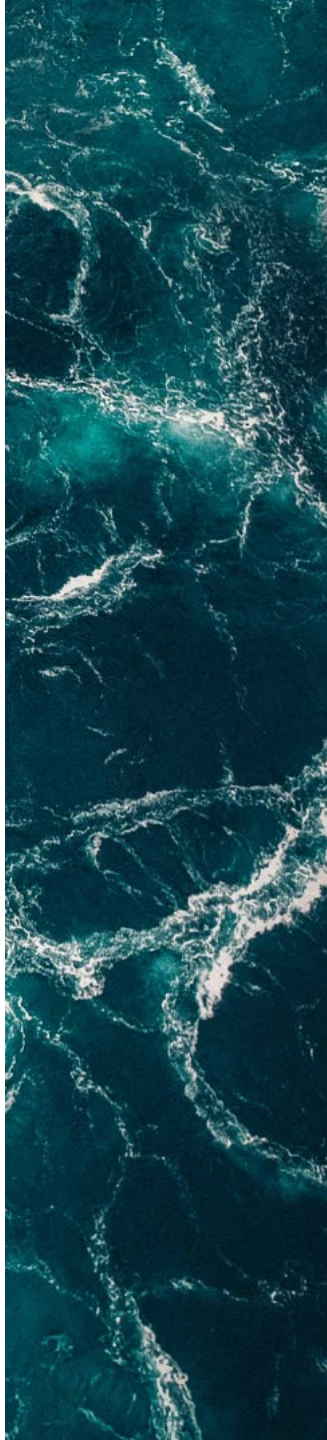
Increased biogenic carbon content (RCI)

Reduced CO_2 emission

Validated numbers through RedCert², ISO standards

UFARYL® EcoSmart - Conclusion

- Dry LAS is a cost-efficient high-performance surfactant with an optimized value chain
- Production of dry LAS has low impact on the environment (LCA analysis)
- New UFARYL® Ecosmart is based on a minimum of 38% renewable raw materials containing biogenic carbon
- The innovation is done- Easy 1:1 replacement in the production
- Same performance, Same UFARYL® quality, more sustainable
- Reduce the product carbon footprint (PCF) with up to 20%/0,6 kg Co2 per kg of UFARYL®
- Innovation continues! We are working on 100% replacement of all fossil-based carbon in the UFARYL®

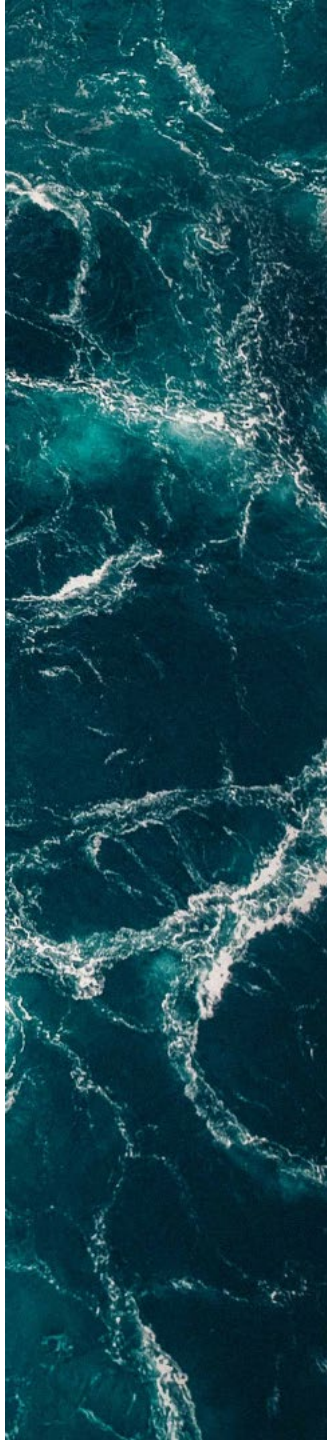


Documentation
Ordering
Availability

Data is verified by a 3rd party

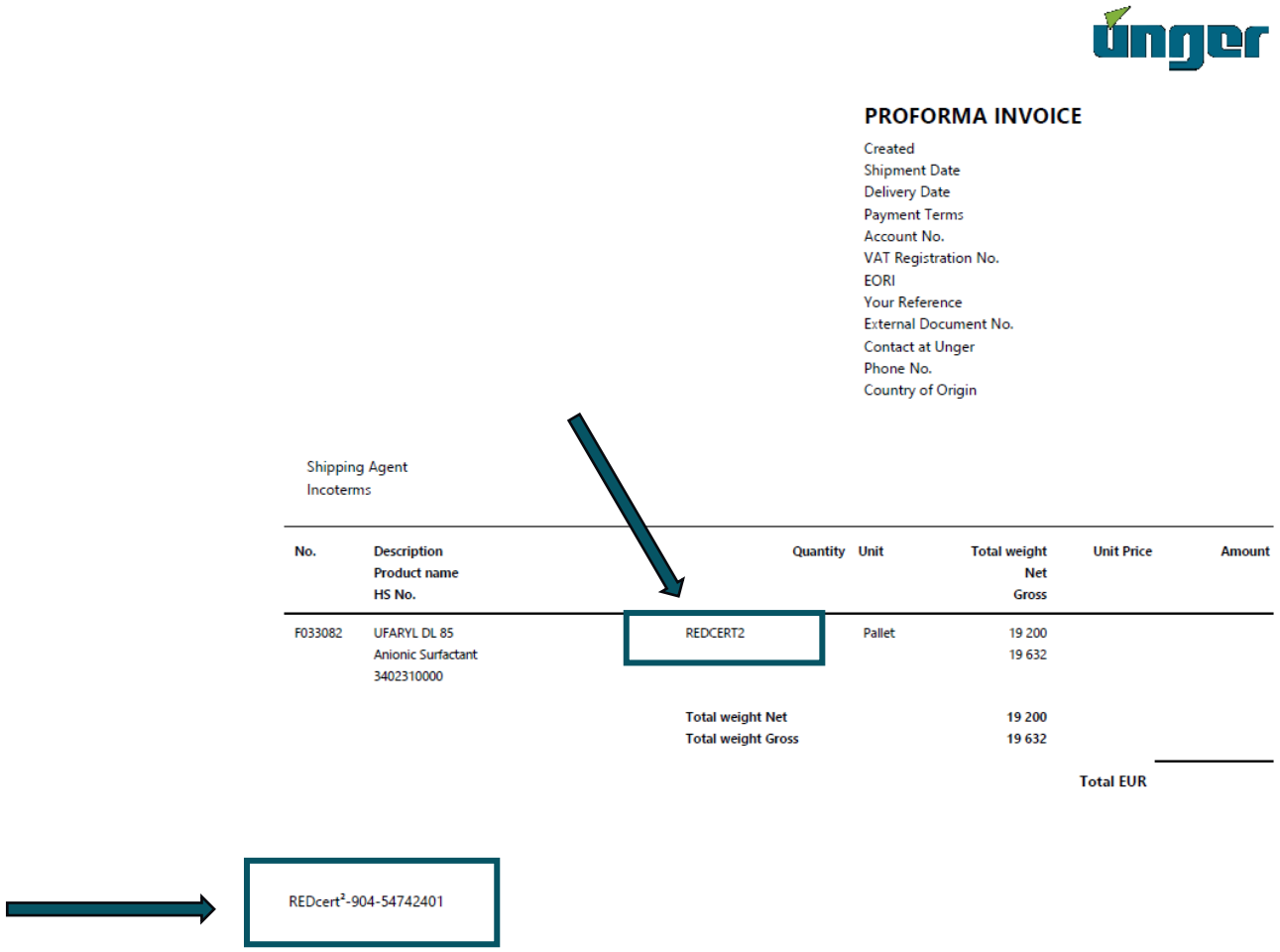
- All CO_2 numbers verified by NORSUS (Norwegian Institute for Sustainability Research)

- Mass Balance approached approved by RedCert^2



UFARYL® EcoSmart

- Mass Balance principle
  - Same as for RSPO MB
  - Book keeping system
- Documention
  - Certificate number on invoices
  - Label on pallets/bags



PROFORMA INVOICE

Created
Shipment Date
Delivery Date
Payment Terms
Account No.
VAT Registration No.
EORI
Your Reference
External Document No.
Contact at Unger
Phone No.
Country of Origin

Shipping Agent
Incoterms

No.	Description Product name HS No.	Quantity	Unit	Total weight Net Gross	Unit Price	Amount
F033082	UFARYL DL 85 Anionic Surfactant 3402310000	REDCERT2	Pallet	19 200 19 632		
			Total weight Net **Total weight Gross**	**19 200** **19 632**		
					Total EUR	

REDcert²-904-54742401

— UFARYL® EcoSmart

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UFARYL® EcoSmart DL 90 C

Toilet Care | Laundry
Hard Surface Cleaning | I&I

02 / Jan 2023

Product description

UFARYL® EcoSmart DL 90 C is an anionic surfactant based on linear alkyl benzene sulphonate. The product is free flowing powder with excellent detergency and wetting properties. UFARYL® EcoSmart DL 90 C is customized to meet performance needs for toilet block/care applications. UFARYL® EcoSmart DL 90 C is a high active powder containing functional additives and anti lime scale agent for enhanced processing and increased detergency performance. UFARYL® EcoSmart DL 90 C is the main active ingredient in toilet blocks. The product is easily biodegradable.

UFARYL® EcoSmart DL 90 C is the first high active LAS product that petroleum hydrocarbon chain has partly replaced with oleo-based hydrocarbon.

Chemical description: Linear Alkyl Benzene Sulphonate, Sodium salt

Properties	Typical	Min	Max
Appearance	Ivory white powder		
Bulk Density (g/l)	420	370	470
Active content (w/w %)	90	88	92
pH (1% a.m. solution)	7,6	7,0	9,0
Inorganic salts (w/w %)	Balance	-	-
Water (w/w %)	1,6	0	2,0

Product	LCA (kg CO2 eq.)	Method	ISO Standard
UFARYL® DL 90 C	3.19	Cradle to gate	ISO 14040 ISO 14044
UFARYL® EcoSmart DL 90 C	2.62	Cradle to gate	ISO 14040 ISO 14044

Packaging, storage and handling

UFARYL® EcoSmart DL 90 C is shipped in 20 kg/30 bags on pallets and in 600 kg bigbags. UFARYL® EcoSmart DL 90 C has a strong hygroscopic character, and will absorb humidity if exposed to open air. Store at room temperature and dry. Stability is 12 months in sealed package at recommended temperature

For further details regarding handling, please see Safety Data Sheet.

Pure Nordic Quality

Application

Markets:
Home Care, Hygiene, Industrial and Institutional cleaning

Market segments:
Hard surface care, Fabric care, Industrial and Institutional cleaning

Typical applications:
Hard surface cleaning, toilet care, rim and in cistern blocks, all purpose liquid detergents, car cleaning, laundry

REDcert²

This information is based upon Unger Fabrikker's expeience and knowledge in this field. The information is only a guide for application of the products and Unger fabrikker gives no guarantee for the results from the application of the product, which lies outside Unger fabrikker's control. Unger fabrikker's responsibility and guarantee in selling this product is covered at all times by the relevant general sales conditions.

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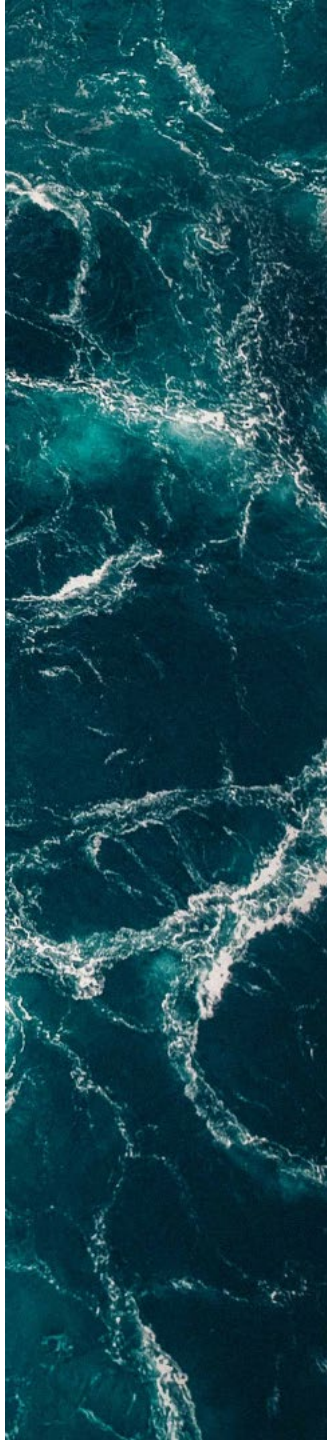
unger

— Global Decarbonization Journey

By choosing UFARYL® EcoSmart, you're not just reducing your carbon footprint — you're driving a change that has a global impact.

With UFARYL® EcoSmart, you are:

- Contributing to a 20% reduction in carbon emissions compared to conventional products.
- Supporting a significant decrease in fossil-derived content — a bold step toward a more sustainable future.
- Joining a global decarbonization effort that challenges the status quo in the cleaning products industry.



— Questions

Christoffer Lund

R&D Manager

Feel free to e-mail for further questions!

christoffer.lund@unger.no

Thor- Erik Nyseth

Sales and Marketing Director

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