



Setting our Direction Toward a Sustainable Future.



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RAW MATERIALS

Reducing impact begins with understanding how the building blocks of our ingredients interact with the environment.

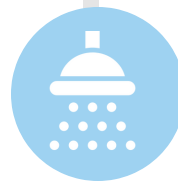


LUBRIZOL'S MANUFACTURING

By finding ways to reduce the footprint of our manufacturing, we pass on the positive impact to our ingredients.

CUSTOMER MANUFACTURING

Enabling our customers with technology that helps to reduce their environmental impact.



POST USE

Understanding the ultimate fate of our ingredients in finished product use means that we help consumers reduce their impact.

UN Sustainable Development Goals

Lubrizol's Personal, Home and Health Care business aligns its goals with the United Nations Sustainable Development Goals (UNSDGs).



With unique manufacturing and ingredients that require fewer raw materials and less water, energy and heat to process we can reduce the impact of making finished products.



By understanding the fate and transport of our ingredients we ensure that our polymers do not harm the marine environment.



With the transition to RSPO certified feed stock and commitment to Mass Balance Certification, we are working with suppliers to reduce palm deforestation and natural habitats.

Support a Sustainable Future with Pemulen™ EZ-4U

The production of a skin care cream is a time- and energy-consuming process in which the emulsifiers play a central role. **Pemulen™ EZ-4U polymeric emulsifier** can improve our customers sustainability profile.

FEATURE

1 Cold Process

Save energy preparing emulsions at room temperature, compared to traditional hot processes (60-80°C).

1

2

2 Fast Dispersion

Reduce mixing time and save energy with rapid aqueous dispersion.

3

3 Multi-functionality

Easily achieve emulsion stability without the need for additional polymeric emulsifiers, co-emulsifiers or fatty alcohols.

In traditional/hot processes, the water phase is known as the most **energy-intensive** and **time-consuming**.

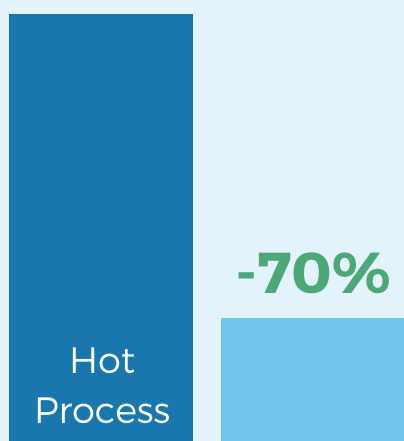
80 % of Total **Energy** Consumption

55 % of Total **Time** Consumption

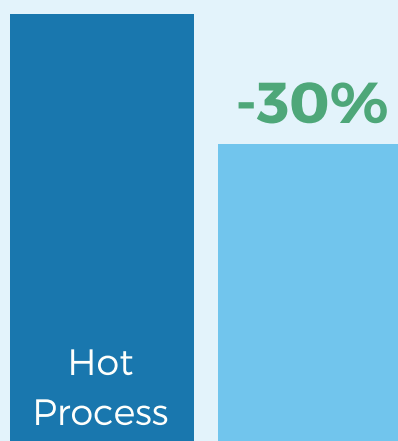


Water
Phase

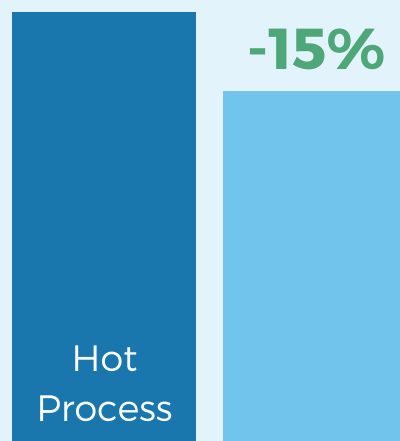
TIME



ENERGY



RAW MATERIAL



Average estimated improvements with Pemulen™ EZ-4U polymeric emulsifier on the water phase based on internal calculation.

For your estimation, contact us.

PHHC-Sustainability@Lubrizol.com

Support a Sustainable Future with Avalure™ Flex-6

Avalure™ Flex-6 polymer is a water-dispersible, multifunctional powder that provides emulsification, co-thickening, film formation, pigment dispersion and soft feel in skin care applications.

FEATURE

Multi-functionality

Decrease both the number and use level of other ingredients with one polymer for emulsification, film forming and rheology control.

1

Enhanced Pigment Dispersion

Achieve same or improved coverage with lower levels of pigment through excellent pigment dispersion.

2

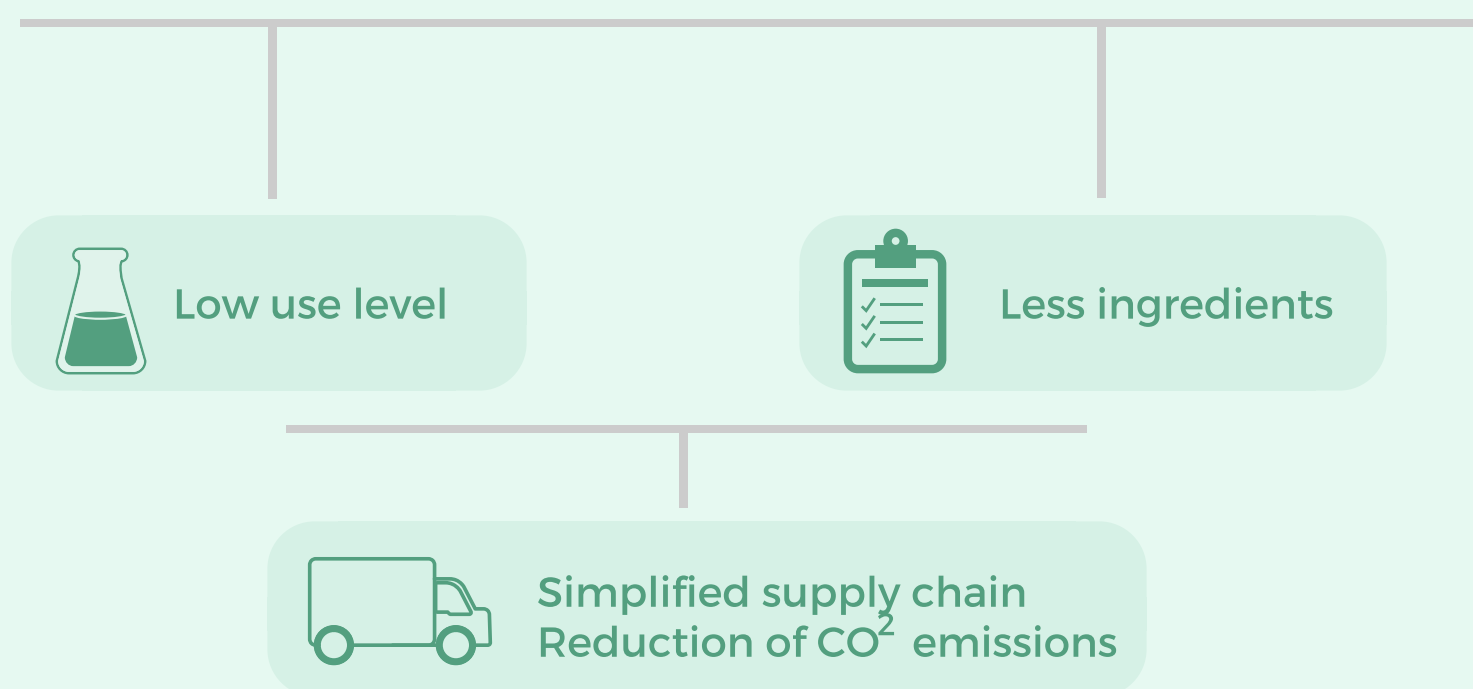
Cold Process

Minimize packaging, simplify shipping and storage, and reduce energy consumption through cold processing.

3

Avalure™ Flex-6 polymer can replace emulsifiers and film formers.

1% AVALURE™ FLEX-6 = 2% EMULSIFIERS + 2% FILM FORMER



Potential improvements with Avalure™ Flex-6 polymer based on internal calculations.

For your estimation, contact us.

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Support a Sustainable Future with Carbopol® SMART

Aside from luxurious feel, exceptional flow and enhanced visual appeal, Carbopol SMART polymers open the door to infinite possibilities by easing formulation, improving process throughput, reducing energy consumption and lowering manufacturing costs..

FEATURE

1 No Neutralization

Ease the production process, save time and avoid multiple pH adjustments.

1

2

2 Order of Addition Flexibility

Allow post-addition to better control batch aeration, reduce the need for vacuum suction and lower energy consumption.

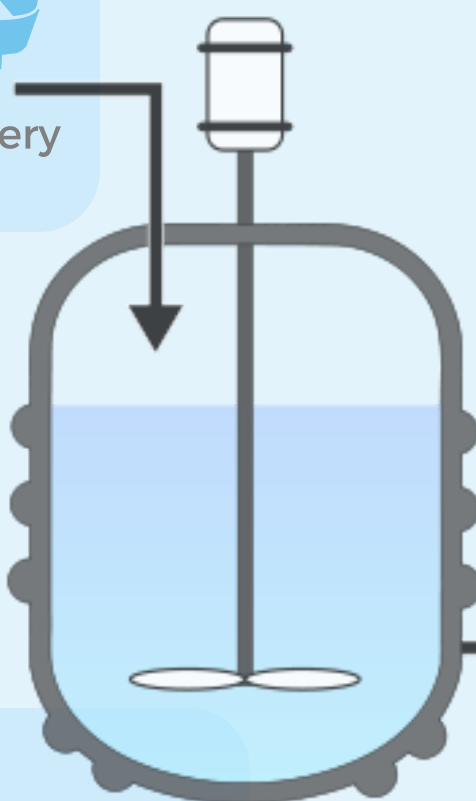
3

3 Multiple Formulations

Save on materials and storage with broad pH compatibility in a variety of applications.



0% wasted batches thanks to the ability to adjust viscosity at every step in the process



From pH 3.5 to 11.0 with one polymer



6-10% time savings and process simplification during production



Enables continuous processing

Potential improvements with Carbopol® SMART polymers based on internal calculations and tests.

For your estimation, contact us.

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TM

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