

SMASH PACKAGING

2022 Annual Update



Dear Customers, Colleagues, Partners and Stakeholders,

From life-saving therapies, diagnostics and preventative solutions to more sustainable offerings and breakthrough technologies – **together, we impact life and health with science.** Moreover, we further our impact as a **sustainability multiplier** for our customers and collaborators by helping them achieve their own sustainability goals.

As our customers drive scientific progress for their communities, they need our products to arrive quickly, efficiently and safely. Our packaging must meet their requirements for sterile environments, temperature control conditions and protect our products as they traverse the world.

We also know that sustainable packaging remains vital to our customers. That means we strive to reduce environmental impact while maintaining high-quality and high-performance packaging.

We tackle these challenges through the **SMASH Packaging Plan**, which is founded upon three pillars:

- **Optimize resources** by reducing the amount of packaging,
- **Design for circular economy** to maximize recyclability and reduce waste, and
- **More sustainable materials** to achieve zero-deforestation and increase plastic sustainability in packaging

This program takes a holistic approach to the entire life cycle of our products and packaging. It addresses increasing sustainability requirements and helps reduce the environmental impact of scientific research and development globally.

With bold, methodical, needle-moving actions, we can and will continue delivering breakthrough solutions for our customers – creating a more sustainable tomorrow, together.



Matthias Heinzl
Member of the Executive Board
CEO Life Science



The SMASH Packaging Plan is part of our approach to a more responsible business. Let us know how we're doing and stay informed on our progress at sigmaaldrich.com/greener

2022 RESULTS DASHBOARD

Our four-year SMASH Packaging Plan is our approach to drive improvement in the sustainability of our packaging.

Below are the top-level measurements by which we tracked our progress based on our 2022 targets. See more details on our SMASH Packaging webpage.



○ Not Started ● On track ● Focus required ● Off track ● Achieved

OPTIMIZE RESOURCES

Goal 1: Shrink

REDUCE AMOUNT OF PACKAGING

What does it mean?

We will reduce the size and weight of the packaging we use to pack and safely ship our products

2022 TARGETS

New product packaging aligned with our standards for weight and volume.

- Optimize packaging weight and volume
- Investigate reusable or bulk packaging solutions
- Avoid requirement of specific distribution packaging

20 key improvement projects for existing packaging including:

- Elimination of unnecessary packaging components
- Substitution of materials with lighter ones
- Optimization of internal packaging
- Development of bulk packaging solutions

20% reduction of air space in distribution boxes.

- Adjustment of box sizes to better suit common orders
- Optimization of computerized pack-out configuration system
- New processes and training to minimize unused airspace in boxes



RESULTS

On Track: 53% of new product development projects aligned with packaging standards for weight and volume as of 2022.

We're now able to holistically measure sustainability characteristics of new product packaging using our Design for Sustainability scorecard.

Achieved: 20+ product and distribution packaging improvement projects resulting in a total annual reduction of 300+ metric tons of corrugated and plastic packaging.

We have achieved significant improvement in reducing the amount of packaging. As we continue to implement some of these projects, we continue our efforts to focus on key contributors to maximize the impact of each project.

Focus Required: 53% air space reduction on average for 1,300 daily shipments, DUE to several improvement projects.

Our ambitious goal of reducing 20% of our air space shipped in distribution boxes has not been met due to high complexity and diversity of site operations and available data. During this time, however, we have made positive strides towards reducing air space, especially in the packaging of small products through an initiative we call "Packaging for Smalls".

MORE SUSTAINABLE MATERIALS

Goal 2: Secure

ACHIEVE ZERO DEFORESTATION

What does it mean?

We will ensure that the wood and fiber-based packaging materials that we use to pack and ship our products do not contribute to deforestation. We will focus on demonstrating responsible sourcing and increasing recycled content



2022 TARGETS

New product packaging aligned with our zero deforestation standards.

- Use of certified wood and fiber-based packaging materials
- Demonstration of responsible sourcing
- Maximization of recycled content

90% of existing packaging aligned with our zero deforestation standards.

- Use of certified wood and fiber-based packaging materials
- Demonstration of responsible sourcing
- Maximization of recycled content

100% of wood fibers from deforestation-risk countries certified sustainably sourced.

- Materials are certified (FSC, PEFC or SFI) with chain of custody

RESULTS

On Track: 68% of new product development projects aligned with packaging standards for zero-deforestation as of 2022.

We're now able to holistically measure sustainability characteristics on new product packaging using our Design for Sustainability scorecard.

Focus Required: 72.5% of existing packaging materials sourced directly aligned with our zero deforestation standards.

While we haven't been able to achieve our ambitious goal of reaching 90% of existing packaging aligned with our zero deforestation standards, we've made progress. We implemented an annual assessment process to measure the level of alignment of our packaging materials with our zero deforestation standards and we have converted some of our existing packaging to sustainably sourced packaging. We have also implemented zero-deforestation requirements in for new or re-designed product packaging. Moving forward, we will continue to refine our assessment methodology, such that our process goes beyond sustainable forestry certification and using recycled content.

MORE SUSTAINABLE MATERIALS

Goal 3: Switch

IMPROVE PLASTIC SUSTAINABILITY

What does it mean?

We will improve sustainability of the plastic materials used in packaging applications, including increase use of materials with lower environmental impacts and reduce materials of concern



2022 TARGETS

New product packaging aligned with our plastic sustainability standards.

- Use of alternative plastics with lower impacts
- Use of recycled content
- Use of renewable content
- No use of materials of concern

20 improvement projects to replace existing plastic packaging by more sustainable solutions including:

- Replacement of plastics with ones with lower impacts
- Replacement of conventional plastic by material produced from renewable materials
- Introduction of recycled content

20% reduction of expanded polystyrene (EPS) use.

- Replacement of EPS used in secondary and distribution packaging in non-reusable applications
- Minimize introduction of new packaging made of EPS

RESULTS

On Track: 48% of new product development projects aligned with packaging standards for plastic sustainability as of 2022.

We're now able to holistically measure sustainability characteristics on new product packaging using our Design for Sustainability scorecard.

Achieved: 20+ product packaging improvement projects and distribution packaging improvement initiatives with projects at multiple locations.

We've been able to achieve significant progress in switching packaging materials with more sustainable solutions. As we continue to implement some of these projects, we continue to explore and implement new projects, focusing on packaging materials that have the highest carbon footprint.

On Track: 23% reduction of EPS, including ongoing replacement projects.

We have initiated multiple EPS replacement projects in our protective packaging and cold chain shipments since 2019. Upon validation and full implementation of all ongoing projects to reduce EPS, we expect to exceed this target.

DESIGN FOR CIRCULAR ECONOMY

Goal 4: Save

MAXIMIZE RECYCLING

What does it mean?

We will reduce the amount of non-recyclable materials we use, reduce packaging techniques that make it difficult to recycle and improve packaging labelling and education



2022 TARGETS

New product packaging aligned with our standards for recyclability.

- Avoid use of any material or treatments that interfere with recycling of fiber-based materials
- Avoid use of multi-layer plastic or any plastic type that is incompatible with recycling

Replace 100% of fiber-based packaging not compatible with recycling.

- Replacement of any specific treatments that interfere with recycling
- Replacement of multi-layer packaging materials
- Replacement of hot-melt adhesives

100% of products with packaging recycling/disposal guidance.

- Provide recycling/disposal guidance for any primary, secondary and distribution packaging received by our customers

RESULTS

On Track: 53% of new product development projects aligned with packaging standards for recyclability as of 2022.

We're now able to holistically measure sustainability characteristics on new product packaging using our Design for Sustainability scorecard.

Focus Required: Identified and addressed two primary impact areas where and addressed main fiber-based packaging was not compatible with recycling.

We have identified and addressed two primary impact areas where and addressed main fiber-based packaging was not compatible with recycling.

Focus Required: Provided recycling information & disposal guidance for main packaging materials, especially for customers in Italy.

We've made recycling information for our packaging materials available as part of a packaging catalog. Currently available for Italian customers, we are working to expand to main countries in Europe, to the US and to main countries in APAC. In parallel, we will work to make this information available at the product level.

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