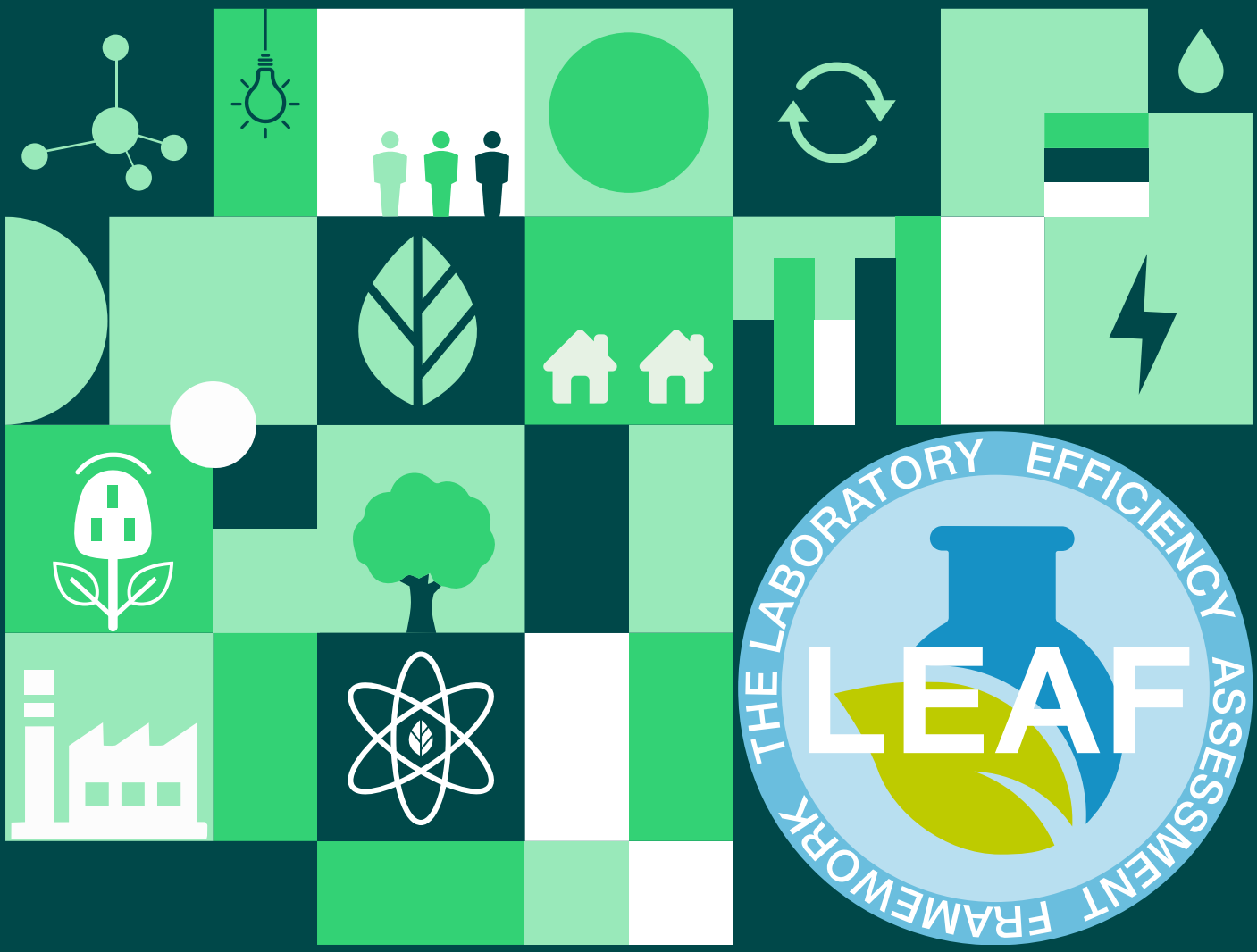
SCIENTIFIC LABORATORY SUPPLIES

eppendorf

HOW TO GET THROUGH THE LEAF ASSESSMENT: PRACTICAL SOLUTIONS FROM SLS AND EPPENDORF



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INTRODUCTION

As sustainability becomes a cornerstone in scientific research, the Laboratory Efficiency Assessment Framework (LEAF) has been gaining traction in academic and other publicly funded laboratories. Developed by University College London, LEAF provides a structured approach to improving laboratory sustainability while maintaining high-quality research output. At the moment, 85 institutions have joined LEAF, demonstrating their commitment to environmentally responsible science.

Participating laboratories can achieve **Bronze, Silver,** and **Gold**, based on their commitment to:

- **Reduce energy and water use**
- **Improve equipment efficiency**
- **Cut down plastic and chemical waste**
- **Encourage sustainable procurement and operations**

However, navigating the LEAF assessment can be a challenge. Many labs struggle with implementation due to limited time, complex requirements, or lack of suitable tools. In this article, we'll guide you through key aspects of the LEAF framework and show how SLS and Eppendorf can support your lab on the journey to sustainability.

WASTE

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WASTE

Managing waste is a key part of creating an environmentally responsible laboratory. The LEAF Assessment Waste category encourages labs to reduce their environmental footprint by improving recycling practices, minimising single-use plastics, and optimising the use of consumables. Implementing these strategies not only supports sustainability goals but also helps labs operate more efficiently, reduce costs.

Bronze
Getting Started with Recycling

The Bronze level is the simplest and quickest step to achieve in the Waste category, making it an ideal starting point for labs. At this stage, the focus is on ensuring that **clearly labelled and accessible recycling bins** are available throughout the laboratory.

This fundamental action helps staff separate waste effectively, fosters good recycling habits, and lays the foundation for more advanced sustainability measures. While easy to implement, it is an essential step in creating a culture of environmental responsibility in the lab.

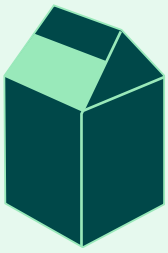
Silver
Reducing Single-Use Plastics

The Silver LEAF accreditation focuses on reducing single-use plastics. Laboratories can progress from Bronze to Silver by:

1. **Replacing plastic consumables with durable glass alternatives.** Replacing single-use plastic items with glass alternatives is a simple yet impactful step towards sustainability. Glass products, such as beakers, bottles, and test tubes, can be reused multiple times, reducing the overall volume of plastic waste generated in the lab.

2. **Prioritising products with minimal or plastic-free packaging.** Labs should also prioritise products with **plastic-free or minimal packaging**. To support you in this effort, we've tailored our sustainability attributes to better match these criteria. Look for products with the **Sustainable Packaging & Distribution Award for plastic-free packaging**, similar to the icon shown here.

The Eppendorf Research 3 Neo pipettes represent a strong example, using packaging made entirely from recyclable cardboard, with no plastic components or laminated materials.



3. Switching to Bio-bins for clinical waste
Replacing plastic non-sharp clinical waste containers with Bio-bins is a practical step towards reducing single-use plastics in the lab. Made of 96% paper and suitable for autoclaving, Bio-bins can be disposed of safely and sustainably. Implementing this change contributes directly to the waste reduction criteria needed to achieve the Silver LEAF accreditation.

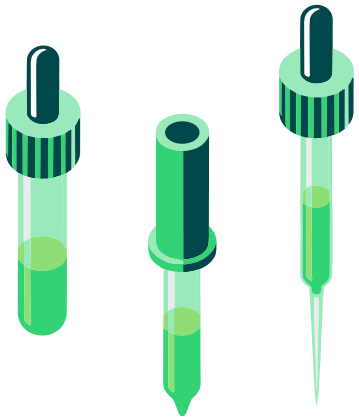
WASTE

Gold
Minimising Waste and Maximising Recycling

The Gold accreditation requires significant improvements in recycling rates or overall waste reduction, reflecting a lab's commitment to advanced sustainability practices.

Strategies to achieve this include:

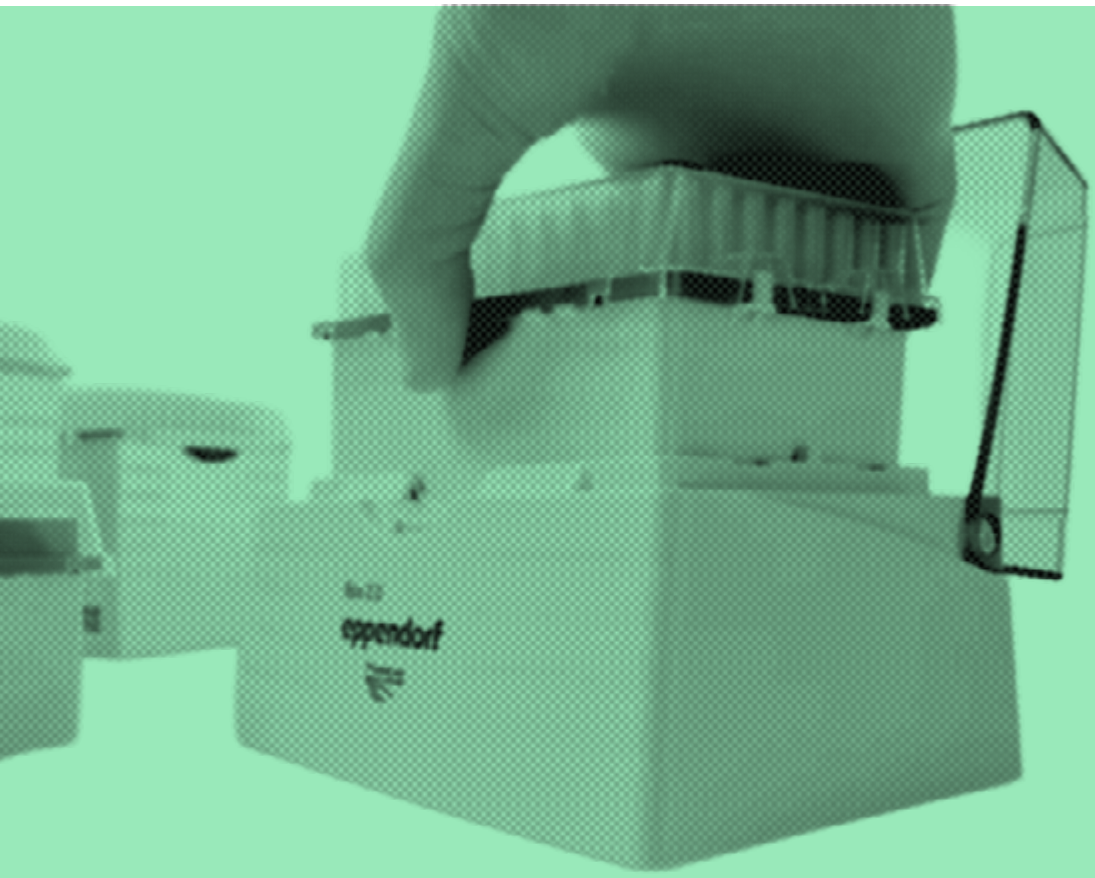
1. Using appropriately sized consumables to minimise excess plastic waste.
2. For items that don't come into contact with hazardous substances, consider biodegradable alternatives like the Unigloves BioTouch Biodegradable Gloves. Unlike traditional nitrile gloves, which can take over 100 years to decompose, BioTouch gloves biodegrade by 81% within 490 days under active landfill conditions, with full decomposition occurring in under five years.
3. Participating in recycling initiatives such as our Plastic to Purpose scheme for SLS pipette tip boxes and the RightCycle™ program for Ansell and Kimtech™ PPE.
4. Reducing waste through Honeywell's returnable solvent container scheme, where containers are collected, cleaned, and reused.
5. Trading in old equipment through manufacturer's programmes such as Sartorius' pipette trade-in programme.
6. Replacing plastic non-sharp clinical waste containers with Bio-bins, and tracking the number used can provide measurable evidence of waste reduction. Curious to see what that means in terms of carbon savings? Check out this calculator.



WASTE

7 Replacing traditional pipette tip racks with more sustainable product choices can significantly reduce plastic waste. Reloads allows the use of refill tips that fit into an existing rack, significantly lowering the volume of single-use plastic while maintaining full functionality.

For an added sustainability benefit, laboratories can switch to Eppendorf Biobased epT.I.P.S., made from renewable, plant-based materials. These products use up to 54% less fossil-based plastic compared to conventional racks, lowering laboratory plastic waste and reducing carbon footprint. Check out the Plastic Savings Calculator from Eppendorf to discover your potential savings.



Eppendorf Biobased epT.I.P.S

Additionally, you can look for products with the following attributes:

Packaging & Distribution: Product reduces the need for packaging OR Packaging return scheme offered for this product.

Disposal: Product is recyclable (excludes packaging), a recycling or repurposing scheme is offered for this product; A feature of this product enhances its biodegradability.

PEOPLE

Engaging and managing people effectively is essential for building a responsible and sustainable laboratory culture. The LEAF Assessment encourages labs to improve accountability, strengthen communication, and embed sustainability within everyday working practices.

Bronze
Establishing Good Laboratory Practices

To achieve Bronze, management must ensure that **samples owned by departing staff are either cleared or properly tracked**. This step maintains accountability, prevents unnecessary waste, and establishes a foundation for stronger lab management practices.

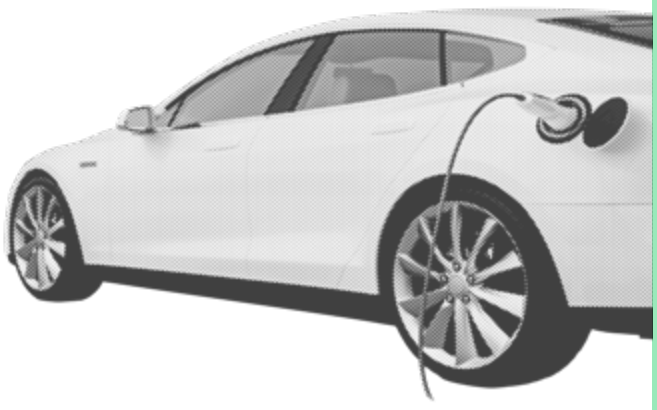
Silver
Strengthening Collaboration and Knowledge Sharing

To move from Bronze to Silver, you need to actively **engage with other labs through LEAF initiatives and sustainability programs**. Collaborating and sharing knowledge with peers helps your lab adopt best practices and strengthens its overall sustainability culture.

Gold
Reducing Travel

Gold represents the highest level of achievement in this framework. To reach this tier, labs should implement **at least one actionable measure to reduce travel or adopt low-carbon travel policies**. This might include consolidating trips, attending virtual meetings where possible, optimising logistics to minimise unnecessary journeys, encouraging the use of low-carbon vehicles such as electric cars, or promoting public transport as a more sustainable option.

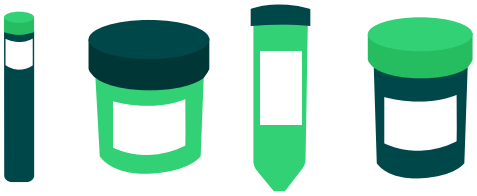
Taking such steps not only reduces the lab's environmental footprint but also demonstrates a tangible and measurable commitment to sustainability.



SAMPLE & CHEMICAL MANAGEMENT

Effective sample and chemical management are essential for maintaining laboratory safety, compliance, and operational efficiency. The LEAF Assessment encourages labs to improve labelling practices, enhance cold-storage preparedness, and strengthen inventory systems. By adopting these measures, laboratories minimise errors, protect valuable research materials, and ensure that resources are used responsibly and efficiently.

Bronze
Establishing Clear and Consistent Labelling



To achieve Bronze, you need to ensure **all labels are legible** and a **consistent labelling system is used** throughout the lab. Clear labelling reduces errors and improves tracking. For more efficient inventory management, label printers are a practical solution — see options here.

Silver
Preparing for Cold Storage Failures

The Silver accreditation focuses on **resilience** and **preparedness**. To progress from Bronze to Silver, labs should implement procedures and tools that protect samples during **equipment failures**.

This includes:

1. Establishing clear protocols for responding to freezer or fridge breakdowns.
2. Introducing data monitoring systems with real-time alarms and alerts, such as the SLS Lab Pro Monitoring System; these products help to maintain temperature compliance and protect the integrity of samples and chemicals by enabling your lab to respond quickly to any errors.

3. Partnering with service providers that offer emergency call-outs and rapid repairs to minimise risk and downtime.

These measures help ensure that the integrity, quality, and continuity of research materials are maintained, even during unexpected disruptions.

Expert advice:

Many labs are raising their ULT freezer temperatures from -80°C to -70°C, which on average reduces energy consumption by about 30%. However, this adjustment also shortens the window of time available to respond to a freezer failure. For example, Eppendorf ULT freezers with high-quality insulation take around **9 hours to warm** from -80°C to -50°C (the temperature where samples become biologically active), whereas warming from -70°C reduces this window to approximately **6 hours**. Other manufacturers' freezers may warm more quickly, which can pose a risk to sample safety at -70°C. Laboratories should ensure their disaster recovery plans account for these changes and consider using alarm monitoring systems to provide early warning of temperature deviations.
for more information or guidance on monitoring solutions.

Gold
Achieving Comprehensive Inventory Control

Reaching Gold requires that at least 80% of all samples and chemicals are clearly catalogued. Using integrated **sample management solutions** streamlines tracking, improves efficiency, and provides full oversight of your lab's resources.

FreezerPro is a web-based inventory system from Azenta Life Sciences that provides a standardised, intuitive interface that supports labs of all sizes. It can integrate with Azenta's cryogenic storage and Ziath barcode systems, enabling a complete and efficient sample management workflow.

EQUIPMENT

Effective equipment management plays a crucial role in improving laboratory sustainability. By ensuring instruments are used efficiently, maintained properly, and shared responsibly, labs can significantly reduce energy consumption, minimise waste, and optimise operational workflows.

Bronze
Turning Off Equipment When Not in Use

To achieve Bronze, make sure instruments are turned off when not in use. To support this, SLS provides **reminder stickers** that can be placed directly onto your lab equipment

These stickers (shown below) serve as visual cues indicating whether an instrument:

Should be turned OFF after use

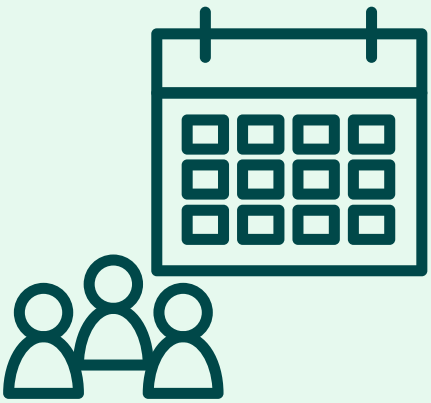
Must remain ON permanently

Needs to be checked before switching off

These small changes can lead to significant energy savings over time. To request a set of SLS stickers, please contact your local representative.

EQUIPMENT

Silver
Implementing Communal Equipment Booking Systems



Progressing to Silver involves implementing a system for **communal equipment booking**. This helps optimise usage, reduces unnecessary duplication, and ensures that instruments are available when needed without wasting energy or resources.

Gold
Extending Equipment Lifecycle Through Reuse and Repair

To reach Gold, laboratories must demonstrate active management of excess equipment by **repairing, selling, or donating** instruments instead of letting them sit idle. It is recommended that you maximise the value of your equipment by choosing products designed to last, with a minimum five-year **warranty** and **available spare parts** or **servicing**.

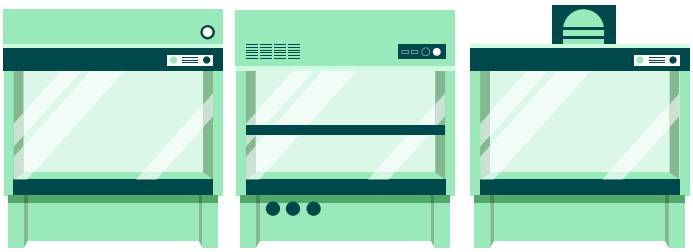
Our Sustainable Use Award highlights products with these features, making it easier to identify durable, repairable equipment. Partnering with trusted service providers can further support these initiatives by simplifying repairs and extending the lifecycle of your instruments.

VENTILATION

Safe and efficient airflow is essential for maintaining a healthy working environment and supporting sustainable laboratory operations. By improving the way ventilation equipment is used and maintained, labs can enhance safety, reduce energy consumption, and minimise environmental impact.

Bronze
Establishing Reporting Systems

For Bronze, begin by establishing a clear reporting system for building issues such as ventilation, room pressure, water leaks, heating & cooling etc. Additionally, you must ensure that the fume cupboards and safety cabinets possess signage encouraging good practice alongside guidance for correct chemical storage. These foundational steps help maintain safety, compliance, and accountability.



Silver
Improving Efficiency Through Good Operational Habits

To achieve Silver, laboratories should adopt operational habits that enhance ventilation efficiency and safety.

Key practices include:

1. Keeping fume cupboard sashes closed when not in use to reduce energy consumption, improve airflow control, and minimise chemical exposure.
2. Ensuring users are trained on when to lower sashes and/or switch off safety cabinets, with a system in place to correct lapses in compliance.
3. Preventing extended storage in fume cupboards or other Local Exhaust Ventilation (LEV) equipment and ensuring nothing obstructs internal airflow.
4. Communicating clear procedures for operating ventilation equipment to all lab users; documenting these procedures for easy reference is strongly recommended.

Following these practices helps laboratories operate efficiently while maintaining safety and sustainability standards.

VENTILATION

Gold
Managing Solvent Vapours, Disposal & Reuse

Achieving Gold requires that solvent vapours are properly condensed and disposed of rather than released into the atmosphere.

To ensure this, you can attach appropriate condensers to equipment that produces solvent vapours, such as rotary evaporators or distillation units. A good example of condenser is the Ecodyst EcoChyll® X1, a powerful, compact, self-cooling condenser compatible with any brand of rotary evaporator. By using direct self-cooling technology, EcoChyll® X1 eliminates the need for coolant liquids, reducing material waste and operating costs compared with traditional rotary evaporators.

Additionally, you can consider switching to water-free condensers. The Findenser™ is an innovative device combines the performance of traditional water-cooled condensers with a sealed design featuring a finned aluminium jacket, providing efficient cooling without a continuous water supply. This not only saves water, but it also reduces the risk of leaks or flooding. At the University of Cardiff, switching to the Findenser™ has reduced laboratory water usage by around 3,000 litres per day, demonstrating its tangible impact for laboratory operations.

Once condensed into liquid form, solvents must be disposed of properly.

This includes:

1. Transferring the condensed solvent to properly labelled waste containers from trusted suppliers such as SCAT and Justrite.
2. Storing the containers in a compatible, sealed, and vented location to prevent leaks or exposure.
3. Arranging disposal through approved chemical waste services.

For a Gold accreditation, labs should also consider solvent sustainability and reuse. Solvent selection can be assessed for “greenness” using resources such as the Chem21 Green Solvent Guide, with substitutions made wherever feasible. In addition, solvent recapture and recycling should be implemented whenever possible. Captured solvents can be condensed, purified if necessary, and made available for reuse, helping to reduce chemical consumption and minimise environmental impact.

FAQ's

1. Which products are considered more sustainable?

'Sustainable' is a broad term and depends on several factors, including social and environmental considerations, ranging from labour rights, to waste, to carbon footprint.

If carbon footprint is a priority, then its best to look for low-carbon products. The carbon footprint of a product extends to raw materials, manufacturing processes, packaging and distribution, use, and disposal. The best way to tell if a product is low-carbon is by looking for a Product Carbon Footprint (PCF) or Lifecycle Assessment (LCA) and compare this to its counterparts. From a social perspective, the best way to check if a product is sustainable is by looking for the supplying business' credentials. If they are members of SEDEX, or have an EcoVadis score, this can be a good way to tell if the organisation is meeting fair labour requirements.

For a more detailed explanation on product sustainability through the various life cycle stages, check out our article: How Much Should You Trust the Green Label on Your Lab Equipment?

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2. What sustainable product swaps can our lab make that are easy and cost-effective?

You can make several easy and cost-effective product swaps to help you navigate the LEAF Assessment. Single-use plastic consumables can be replaced with glass alternatives. Biobased consumables made from renewable, plant-derived resources can be used instead of conventional plastics, and biodegradable gloves can be adopted where possible to reduce environmental impact.

For additional ideas and guidance, check out our sustainability flyer with tips for sustainable procurement.

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3. Do you offer glass-based alternatives, such as glass tubes and vials?

Yes. You can check out our glass alternatives below:
Pipettes → Glass pipettes
Petri dishes → Glass petri dishes
Bijou bottles → Glass bijou bottles
Test tubes → Glass test tubes

FAQ's

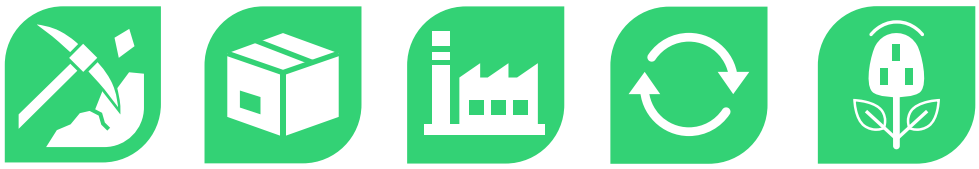
4. What biobased products do you offer?

We offer a wide range of biobased products from ClearLine and Eppendorf. ClearLine's BioBased products use at least 90% certified biobased plastic, whilst the Eppendorf BioBased range is made from second-generation biobased polymers sourced from 100% renewable materials. Both ranges carry the ACT label - awarded by an independent auditor and published by My Green Lab®.

For more information on laboratory plastics and biobased products, watch our webinar in partnership with Eppendorf: The Heritage of Plastics: Which Options Do We Have?

5. Do you provide product filters or attribute icons for features like biobased, recyclable, sustainable, or green-chemistry-improved items?

Yes. Our Sustainability Attributes programme covers all these features (and even more!). You can explore our full list of products with verified sustainability attributes, implemented based on evidence-based data provided by our suppliers, and then review individual products according to the specific sustainability feature you are looking for.



6. Do you take packaging back for reuse or recycling?

No, we do not offer a packaging take-back or recycling service.

7. Do you offer WEEE (Waste Electrical and Electronic Equipment) recycling services?

No, we do not provide WEEE recycling services directly. Please check with the equipment manufacturer, as many offer take-back or recycling programmes for end-of-life electronic equipment.

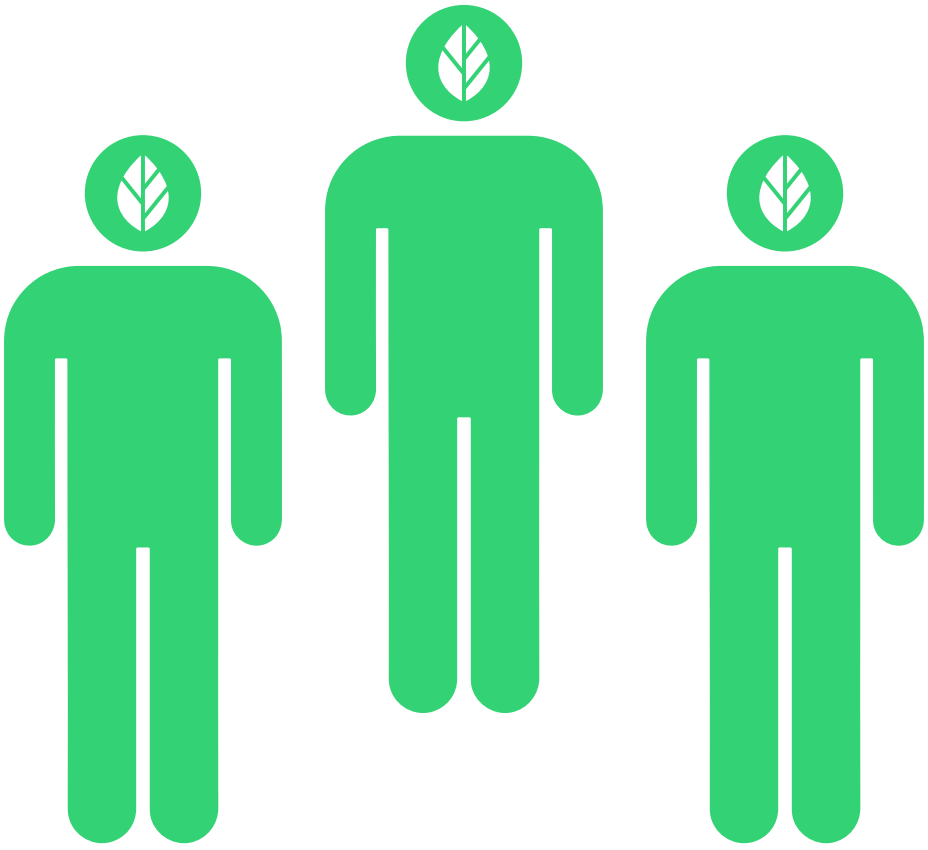
FAQ's

8. Do you offer take-back schemes for gloves, pipette tips, tip boxes, or other consumables?

Laboratory plastics can be recycled through a number of schemes. SLS pipette tip boxes can be returned via our Plastic to Purpose scheme, while Ansell and KIMTECH PPE can be recycled through the RightCycle™ programme. Additionally, laboratory consumables can be recycled through independent organisations such as ENVA, a UK and Ireland-based waste management and recycling provider.

9. Do you offer sustainability training or workshops?

Yes, we are happy to organise sustainability workshops for teams, researchers, and student groups. To arrange a session, please contact our Sustainability Manager at sustainability@scientific-labs.com or reach out to your local SLS Territory Sales Manager.



CONTACT

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For more information please contact sustainability@scientific-labs.com

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Download the Eppendorf Whitepapers for more information

Download the official UCL LEAF Framework Guide for more information