[Meta description: Pressure is high for lab planners & designers to leverage sustainable lab products without compromising lab grade performance. Consider these essentials for durable, sustainable labs.]

Durable vs. Sustainable Lab Materials

We have recently discussed important considerations for sustainable labs, including this article covering the impact of embodied carbon on sustainable lab design. Concern about embodied carbon tends to land primarily on structural and building envelope materials.

However, *interiors* are often renovated multiple times during the lifespan of a building. That means the impact of embodied carbon from interior materials may be much higher than previously believed.

The result: increased pressure on interior designers and lab planners to leverage sustainable lab products and materials – without compromising durability.

Durability vs. Sustainability

When a lab planner or designer identifies lab materials that will meet their standards for low embodied carbon and help reduce the Global Warming Potential (GWP) and Ozone Depletion Potential (ODP) of the build, they must also ensure the materials are durable enough to meet the heavy demands of the lab sector.

The good news is, *sustainable* lab products and *durable* lab products are not mutually exclusive.

Sustainability should not – *and does not* – require a compromise in lab grade quality. Nor does it require an expensive price tag. Thus, the durability vs. sustainability question shouldn't really be a question at all, as it is possible to identify materials that meet your durability requirements while also being highly sustainable with low GWPs and ODPs.

Identifying Sustainable, Durable Lab Products

Material transparency plays a large role in identifying materials qualified for use in sustainable labs. The SEFA 3 Recommended Practices (and specifically, the chemical resistance independent test data) are commonly used, particularly for lab work surfaces. In addition, consider the following physical attributes to aid in identifying durable lab products.

Abrasion and Scratch Resistance

With more equipment being used in the lab, the likelihood of scratches increases. Also, as harsher cleaning chemicals are introduced and cleaning cycles increase, lab work surfaces can be impacted. Therefore, consider testing scratch resistance and abrasion resistance.

Heat Resistance

How much heat can the work surface endure without blistering or discoloration? Can a naked flame be held to the surface? Along with heat resistance comes the thermal shock element. Consider the range of temperatures (hot and cold) to which the material will be subjected, as well as the duration of exposure and if rapid changes in temperature may be encountered.

Flammability/Flame Spread

Is the material Class A fire rated? What other code requirements are needed for the intended use?

Load Bearing Capability

Consider the maximum loads the lab work surfaces will have to bear and the extent of support required underneath the work surface.

Ease of Cleaning

A regular schedule of maintenance and housekeeping is needed in any lab environment. Some laboratories, like those working with pathogens and radioactive isotopes, may be required to select non-porous materials for their lab work surfaces. Consider how easily the surfaces can be cleaned and the ability to withstand frequent contact with aggressive disinfectants.

Lightfastness

With more natural light being used in labs, the importance of color fastness and fade resistance has also increased. Additionally, consider whether a material will degrade under regular UV exposure.

Weight

Consider the material weight per square foot and its impact on loading, cantilevered tops, and structural engineering capacities. Weight also plays a role in freight costs and installation costs.

Water Absorption

Consider the effects of moisture on lab work surface materials. For instance, is there a minimal level of dimensional change in percentage of length and width?

Machinability

Consider the ease with which a given material can be worked with onsite, as well as the ability to perform repairs if needed.

These considerations, combined with requesting test data and results for critical functionality, provide assurances on the durability (and corresponding longevity) of a material. These, in turn, offer strong guidance for your sustainable material selections.

Durable Options for Sustainable Labs

Without a doubt, there are a host of potential materials available for use in laboratory design. Both environmental and cost savings goals can be met by selecting sustainable lab products that meet specified durability requirements and provide a level of adaptability – allowing for use beyond work surfaces, for instance.

In addition, materials with a high level of recycled content and low GWPs and ODPs (like Fundermax lab grade phenolic panels with 100% recycled core paper) are becoming increasingly prevalent.

Plus, with a wide variety of color choices and color through core options, it is no surprise that phenolic resin panels (specifically, Max Compact Interior Plus and Max Resistance[2]) are a popular choice in sustainable lab design.

Lab Grade, Sustainable Materials

At Fundermax, there are three material options for laboratory interiors from base level to superior lab grade. With a wide range of thickness options, our phenolic resin panels are perfectly suited for lab work surfaces, casework, fume hood decks, and more.

As mentioned above, Fundermax lab grade phenolic panels are produced sustainably and contain a core of 100% post-consumer recycled product, resulting in 65% recycled content in the finished panels. Fundermax is currently the ONLY manufacturer sustainably sourcing and sustainability manufacturing a lab grade material under the phenolic spectrum.

In current recycling processes, a variety of waste paper and fiber sources can be used. These variations result in significant limitations to the overall quality of the materials produced. For this reason, Fundermax only uses high quality paper fibers that are being recycled (upcycled) for the first time. Our holistic approach in the supply chain allows us to guarantee the quality of our product while making a huge contribution to the environment.

Recycle vs. Upcycle

Upcycling refers to reusing an object or material in a way that creates a product or material *of higher quality or value than the original.* So, we say that we are *upcycling* those post-consumer paper fibers because of the incredibly valuable long-term storage of CO_2 offered by the longevity of Fundermax compact panels (in excess of 50 years!).

Through this upcycling process, an equivalent quantity in excess of 22,000 tons of CO_2 can be 'bound' (embodied) annually. To store this amount of CO_2 in a year, you would need a forest with 1.8 million trees. In addition, by reusing the paper fibers, we are saving approximately 20,000 trees each year. All other fibers sourced by Fundermax are FSC certified, further solidifying our commitment to sustainability.

For further information on the range of durable and sustainable lab products manufactured by Fundermax, contact us today. We are committed to helping designers and architects create freely and sustainably.