The ACT label: enabling more sustainable purchasing decisions

Key words

Sustainability, greener products, ACT label, My Green Lab, general labware, purchasing decisions

Goal

This technical note provides information on how to make environmentally conscientious decisions using the ACT label when purchasing products for the laboratory.

Introduction

Thermo Scientific™ Nalgene™ and Matrix™ products are included in a program run by the nonprofit organization My Green Lab (**mygreenlab.org**) to pilot an environmental assessment label for laboratory products—the ACT label (Figure 1). Products are assessed and scored by Sustainability Made Simple, an independent third party, on a number of different environmental impact factors such as product recyclability, energy use, and sustainable manufacturing practices. My Green Lab uses the scores to produce an ACT label for each product that can be used to help inform a potential purchaser about a product's environmental impact. The ACT label is a virtual label that is published on My Green Lab's website for public access. In the spirit of sustainability, paper labels and their adhesives are avoided in favor of electronic distribution.

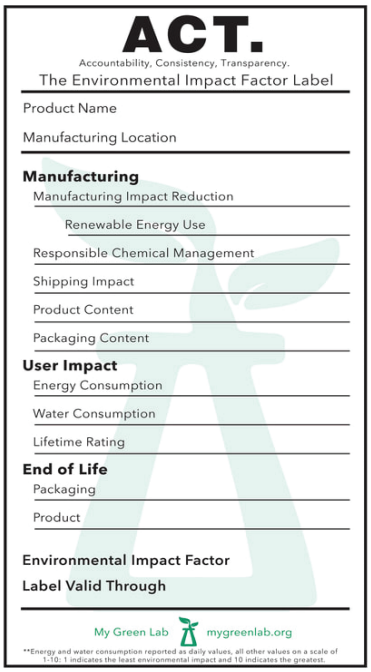

Figure 1. The ACT label.

The virtual ACT label is like an eco-nutrition label for lab products. By emphasizing accountability (A), consistency (C), and transparency (T) around manufacturing, energy and water use, packaging, and end-of-life disposal, ACT labeling is designed to make it easy to compare and choose more sustainable products. ACT labels can be used to compare products before purchasing something new, or to evaluate the impact of a product currently in use. Reading the ACT label is simple: the lower the score, the lower the impact on the environment. Most categories are rated on a scale of 1–10.

The benefits of having an ACT label

Research labs are resource intensive—billions of pounds of plastics are discarded globally every year [1]. The opportunity to reduce the environmental impact of labs through smarter purchasing power should be an option, but it has been difficult to determine which products are the greener choices. The ACT label provides the transparency needed to make informed purchasing decisions based on environmental sustainability. In addition, the label provides detailed information about the score and offers helpful tips including how best to dispose of the product and its packaging.

The data that drives the ACT label

ACT labels are based on data from the supplier on the manufacturing, shipping, use, and end of life for the product. The data is independently audited by Sustainability Made Simple, and verified and published by My Green Lab. The criteria for the ACT label are represented as Environmental Impact Factors (EIF), which were developed with input from scientists, sustainability directors, procurement specialists, and manufacturers to provide a comprehensive product labeling program for life science products. Verification of the data by a third party helps the ACT label remain an unbiased and credible way to score laboratory products.

The ACT label

The label contains categories for manufacturing, user impact, and end of life. The subcategories within each of the main categories are linked to the product page on the My Green Lab website and provide specific details on the scoring process for the product.

Nalgene and Matrix products from Thermo Fisher Scientific with ACT labels

Here are three examples of ACT labels for Nalgene and Matrix products (Figure 2) and the criteria used to generate the scores. Note that as Thermo Fisher Scientific strives to make continuous advancements in product sustainability, it is still our responsibility to manufacture Nalgene and Matrix products that meet the stringent quality requirements of scientific research. For this reason, careful assessment is used in choosing opportunities for sustainability improvement.

Thermo Fisher Scientific sources materials made from 100% virgin plastic resin to make Nalgene labware and Matrix tubes in order to help ensure product performance and low leachable content. Therefore, the score for these products are high in the Product Content category.

Sustainability improvements center around using postconsumer recycled content in product packaging, using energy-saving manufacturing and warehousing practices, reducing manufacturing wastes, purchasing locally made raw materials, and exploring recycling programs to assist customers with responsible end-of-life product disposal.

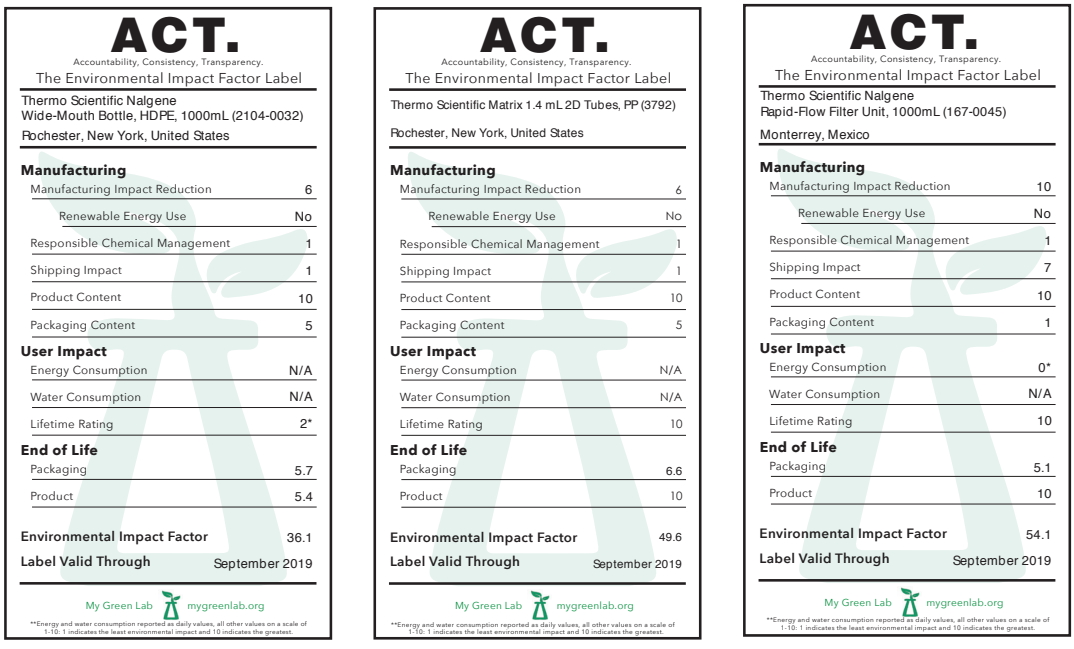

Figure 2. ACT labels for the Thermo Scientific™ Nalgene™ Wide-Mouth Lab-Quality HDPE Bottle (Cat. No. 2104-0032), Matrix™ 2D Barcoded 12 mL Open-Top Storage Tubes (Cat. No. 3792), and Nalgene™ Rapid-Flow™ Sterile Disposable Filter Unit (Cat. No. 167-0045).

Manufacturing Impact Reduction

This category evaluates the steps that have been taken to reduce energy, water, and waste at Thermo Fisher Scientfic manufacturing facilities over the past 5 years. A score of 6 was given in this category to the Nalgene Wide-Mouth HDPE bottle and Matrix 2D Barcoded tube because the manufacturing plant in Rochester, NY has motion-detection lighting in its warehouse, which reduces the amount of electricity used. A score of 10 was given to the Nalgene Rapid-Flow filter unit because the plant in Monterrey, Mexico has not implemented any new measures that reduce energy, water, or waste in the last 5 years.

Renewable Energy Use

No renewable energy is used at the manufacturing facilities in Rochester, New York or Monterrey, Mexico.

Responsible Chemical Management

Thermo Fisher Scientific was required to provide evidence of processes and procedures that mitigate risk of exposure to hazardous chemicals and products based on regulatory requirements. My Green Lab scores this subcategory based on an ISO 140001 environmental management system (EMS) or equivalent EMS that incorporates the highest standards. The evidence that Thermo Fisher Scientific provided was containted in the safety data sheets (SDS) and Chemical Abstract Service (CAS) numbers for the raw materials used in products. The chemicals were screened and scores were assigned based on the presence of carcinogens, mutagens, and reproductive toxins in the products. The score of 1 in this category reflects proof that Thermo Fisher Scientific uses an active environmental health and safety program (EHS) and regularly assesses the supply chain for proper storage and use of hazardous chemicals. In addition, none of the products contain carcinogens, mutagens, reproductive toxins, persistent bioaccumulative toxins, Red List chemicals (a list of hazardous chemicals identified by the International Living Future Institute), or GreenScreen List Translator™ 1 (LT-1) chemicals at or above 95% by weight of the product.

Shipping Impact

The Shipping Impact score is based on transporting products to the US, so a higher score is given to manufacturing facilities outside the US. The Nalgene Wide-Mouth HDPE bottle and Matrix 2D Barcoded tube are manufactured in Rochester, NY and both received a score of 1 because they are manufactured in the United States (US). The Nalgene Rapid-Flow filter unit is manufactured in Monterrey, Mexico and received a score of 7 because it is manufactured outside of the US.

Product Content

This category refers to the use of responsibly sourced materials in the making of the product. The Nalgene Wide-Mouth HDPE bottle, Matrix 2D Barcoded tube, and Nalgene Rapid-Flow filter unit are made with virgin materials and received a score of 10 because no sustainable content is used to manufacture the products.

Packaging Content

This category refers to the use of responsibly sourced materials in packaging the product. The Nalgene Wide-Mouth HDPE bottle and Matrix 2D Barcoded tube received a score of 5 because the Rochester, NY manufacturing site uses 50% postconsumer recycled material in the cardboard box used for shipment. The Nalgene Rapid-Flow filter unit received a score of 1 because the Monterrey, Mexico manufacturing site uses 100% postconsumer recycled material in the cardboard used for shipment.

Energy Consumption

The Nalgene Wide-Mouth HDPE bottle and Matrix 2D Barcoded tube do not consume energy when in use. The Nalgene Rapid-Flow filter unit typically uses a vacuum, but the amount of energy consumed when the product is in use is very small. Note that the amount of energy used to create the vacuum will depend on the type of vacuum being used, and the assumption for this category is that the vacuum is turned off once the product has been used.

Water Consumption

None of the products consume water when in use.

Lifetime Rating

Most laboratory equipment and consumables have a shelf life. The longer a product is intended to last, the less likely it is that someone will need to replace it. The lifetime of the Nalgene Wide-Mouth HDPE bottle depends on how it is being used, which is reflected in its score of 2. In most labs the bottle is reused many times, but in other cases it could be used only once. The score of 2 in this case reflects the average of a range of storage applications. The Matrix 2D Barcoded tube and Nalgene Rapid-Flow filter unit both received a score of 10 because they are disposable products made for a single use.

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Packaging End of Life

Packaging from life science products remains a sizable waste stream for most organizations. Packaging is assessed and scored based on its most likely end-of-life scenario: landfill, recyclable, compostable, biodegradable, or part of a take-back program. Recyclable specifically refers to the fact that the product can be recycled in at least 60% of communities where the product is sold, and has been defined by the Federal Trade Commission. The Nalgene Wide-Mouth HDPE bottle received a score of 5.2 because the box is recyclable, but the bag and the label are not readily recyclable. The Matrix 2D Barcoded tube received a score of 6.6 because the outer box is recyclable, but the coated box and the bag are not readily recyclable. The Nalgene Rapid-Flow filter unit received a score of 5.1 because the box is recyclable, but the bag and the label are not readily recyclable. These scores have numbers in the tenths place because they are calculated by the percent weight of each packaging material.

Product End of Life

The Nalgene Wide-Mouth HDPE bottle is recyclable, but the cap is not readily recyclable. Therefore, the product received a score of 5.4. Both the Matrix 2D Barcoded tube and the Nalgene Rapid-Flow filter unit received a score of 10 because the entire product system is not readily recyclable.

Environmental Impact Factor (EIF)

Taking the sum of all the scores from the previous categories, the Nalgene Wide-Mouth HDPE bottle received an EIF of 36.1. The Matrix 2D Barcoded tube received an EIF of 49.6, and the Nalgene Rapid-Flow filter unit received an EIF of 54.1. These labels are valid through September 2019 and will be reassessed at that point.

Why ACT labels can matter

Thermo Fisher Scientific is demonstrating its commitment to sustainability through participating in My Green Lab's program and bringing the ACT label to the laboratory community for a selection of Nalgene and Matrix products. Through inclusion in this program and transparency into manufacturing procedures necessary to make the program meaningful, Nalgene and Matrix products are paving the way for laboratories to make sustainable purchasing a reality.

Using the ACT label, customers can compare environmental impact scores for the categories that matter most to them before each purchase and make informed and educated decisions based on sustainable manufacturing, use, and disposal practices.

In summary, the ACT label:

- Provides the transparency needed for labs to be able to make more sustainable purchasing decisions
- Motivates product development to introduce more sustainable new products and product packaging options
- Encourages manufacturers to make process improvements to operate more sustainably
- Supports customers in efforts to reuse and recycle products whenever possible
- Demonstrates a commitment to invest in sustainable business practices

Summary

As a consumer, you can make more environmentally informed purchasing choices for your labware by consulting ACT labels found at **act.mygreenlab.org**. By doing so, you become part of the movement driving demand for products to be characterized by ACT labels in support of sustainable purchasing decisions.

Reference

1. Bistulfi, G (2013) Reduce, reuse and recycle lab waste. *Nature* 502:170.

Find out more at **thermofisher.com/sustainability**

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