



CRITERIA FOR VALIDATION/CERTIFICATION
ENVIRONMENTAL INNOVATION: PRODUCTS, SERVICES, PROCESSES,
AND TECHNOLOGIES, GS-20 Edition 1.0 (July 12, 2013)
Sub-Category: Floor Care Pads.

COMPANY INFORMATION:	
Company Affiliation:	Americo Manufacturing, Inc.
Product Name:	Full Cycle Floor Pads – complete line Abrasive and Non-Abrasive pads as listed in Annex A
Website:	www.americomfg.com
Mailing Address:	6224 N. Main St. Acworth, GA 30101

Once all certification criteria listed below are met and evidence for innovation is verified, **Green Seal will be able to certify this product as Environmentally Innovative**, under the categories of

- **Unusual for the market category.** The product shall create increased value for better performance or environmental impacts, in ways that are different from common practice.
- **Beneficial Alternative to an Existing Practice:** The product shall help to avoid, reduce, or eliminate hazards to human health and environment, reduce the use of limited resources (energy, water, land, etc.), and help to reduce or eliminate waste and pollution.

Validation of Environmental Benefits: If the product can demonstrate conformance with the criteria, the following environmental benefits can be validated by Green Seal:

- Made with 100% recycled PET fiber (for select burnishing pads, a combination of 100% recycled PET fiber and natural fibers)
- Made with water based latex, avoiding phenolic based resins
- End-of-life instructions provided to market participants for disposing of used pads
- Biodegradable manufacturing waste is disposed of in methane-capturing landfills
- The plastic pads biodegrade more rapidly in landfills than traditional pads, reducing over time the space occupied in landfills.
- Americo’s floor pads are the first and only pads in the world formulated for rapid biodegradation in a landfill
- In a controlled test simulating landfill conditions, results showed that Americo pads were biodegraded 93% over a time span of 615 days

Statement of Basis for Certification (to accompany the Certification Mark)

“These floor pads are certified by Green Seal™ for Environmental Innovation based on faster biodegradation in landfill conditions and 100% recycled content/natural fiber.
GreenSeal.org/GS20”

Draft Criteria was initially posted for public comments from January 9-23, 2017.

Section A: Certification Criteria

1.0 Criteria for Evaluation for the following products:

Burnishing/Buffering Pads
Abrasive/Stripping Pads

1.1 Functional Performance. Applicant shall demonstrate that the floor pads perform as well as or better than a market leading brand of floor pads under normal use conditions for the following parameters using repeatable test methods on VCT tile.

1.1.1 Durability

1.1.2 Compression / recovery.

1.1.3 For burnishing pads only: Specular gloss

1.1.4 For stripping pads only: Layer removal of floor finish

1.2 Human and Environmental Health

1.2.1 The floor pads shall be made with water based latex resins and not phenolic resins.

1.2.2 The pad skeletons (manufacturing trim) shall be disposed of in a methane-capturing landfill.

1.2.3 Applicant marketing materials for the floor pads shall encourage their purchasers to dispose of the used pads in a landfill that captures methane emissions, where possible.

1.3 Reducing the use of limited resources (energy, water, land, etc.)

1.3.1 The floor pads shall be manufactured from 100% recycled PET fiber, with a minimum of 94% postconsumer content.

1.3.1.1 Select burnishing pads may also include natural fiber.

1.3.2 Evidence shall be provided to indicate that at least half of the other major floor pad manufacturers do not make claims that their pads are made with 100% recycled PET fiber (based on publicly available manufacturers' claims).

1.3.3 When tested according to ASTM D-5511, the applicant shall demonstrate that the floor pads were biodegraded at least 90% (\pm 10%) over a time period of 615 days in a simulated landfill.

2.0 Environmental Innovation

The floor pads shall demonstrate that they are the first and only pads in the world formulated for rapid biodegradation in a landfill.

3.0 Statement of Basis for Certification (to accompany the Certification Mark)

“These floor pads are certified by Green Seal™ for Environmental Innovation based on faster biodegradation in landfill conditions and 100% recycled content/natural fiber.
GreenSeal.org/GS20”

Section B: Analysis of Claims

1.0 Performance/Function/Purpose

1.1 Main function: Clean, maintain, and polish hard floor surfaces in commercial buildings. The floor pads produced by the applicant are used in conjunction with floor machines and in most cases chemicals and/or water to remove dirt, old floor finish, and improve the appearance of the floor.

1.2 Secondary function: - none -

1.3 Alternatives for providing the same function – floor pads made from virgin PET fiber, phenolic (solvent) based resins and/or water based latex, and abrasives (if needed).

1.4 Additional performance issues: Increase in gloss on the floor surface; Abrasivity of the product; Durability of the product; Gloss results, Tensile strength, Weight, Thickness, Composition; Compression and Recovery; layer removal (stripping pads)

1.5 Comparison of performance parameters for the product and the alternatives

All perform the same functions

1.6 Quality Management: Internal QC tests and external biodegradability tests.

The applicant manufactures its products under a Quality Management System emulating ISO in order to consistently and repeatedly meet specifications. The applicant conducts a full range of in-house QC tests to assess conformance to specifications and in-use performance against their own standards and against competitive floor pads. Samples are sent to an independent third party lab for ASTM D-5511 biodegradability tests.

2.0 Environment/Health

2.1 Life cycle health and environment benefits of the product compared to alternatives

2.1.1 Resources and Manufacture Phases:

2.1.1.1 The floor pads are made from 100% recycled PET fiber. Used and discarded beverage bottles are diverted away from landfills and then converted into fiber, which becomes a primary raw material used to produce these floor pads. This source of raw materials turns a waste material into a resource, reduces the burden on non-renewable resources, and reduces the volume of waste that ends up in landfills.

2.1.1.2 The floor pads are made with water based latexes, which are less hazardous than phenolic resins used for other floor pads. Waste materials are not classified as hazardous materials and do not require separate disposal. The use of water-based latexes thus reduces concerns and costs for storage, transportation, use, and disposal of these materials.

2.1.2 Use Phase No difference.

2.1.3 Waste Management and Disposal Phases. The floor pads will biodegrade significantly faster than conventional pads. If the pads are disposed of in a methane-capturing landfill, the methane gas that is released during biodegradation may be captured for use as fuel (in over 500 landfills with landfill gas recovery systems) and converted back into energy (however, see the caveats listed in Section 2.2).

Currently there are no other options for responsible disposal since used floor pads are not recycled. If the floor pads, once used, are disposed of in an active landfill they will biodegrade significantly more rapidly than other floor pads, thus reducing the volume in the landfill.

“It is well known that plastics are a huge contributor to landfill waste and that it can take hundreds, if not thousands of years to biodegrade. It is estimated that 50 million floor pads are used worldwide and subsequently thrown away in landfills every year. By using 100% recycled PET fiber the applicant is redirecting a popular waste stream, namely plastic water

and soda bottles, from going into landfills and instead repurposing the waste into a needed and useful product designed to clean and polish hard floor surfaces. However, they recognized that the floor pads they and other manufactures produce are not able to be recycled and end up in landfills after being used. Given the composition of traditional floor pads it can take hundreds, if not thousands of years to biodegrade once thrown away. The applicant's innovation allows for the rapid biodegradation of their floor pads after being discarded into a landfill. ASTM D-5511 testing, which is a test to determine the rate of biodegradation in a simulated landfill and which was performed by a respected independent testing lab, showed Americo's "Full Cycle" floor pads biodegraded 92.5% in 616 days, as compared to between 0-16% for traditional floor pads."

2.2 Life cycle health and environment drawbacks of the product compared to alternatives

2.2.1 Major concerns: (A) Methane is a potent greenhouse gas which contributes significantly to climate change. When the floor pads biodegrade in landfills, they will generate significant amounts of methane compared to alternative floor pads.

2.2.2 Secondary concerns: Microplastics in the environment may hypothetically be generated more by these pads than conventional ones. No evidence has been presented to support this concern.

2.2.3 Mitigation of concerns:

2.2.3.1 Methane Emissions. The increase in methane emission must be balanced against the limited land available for landfills, and the benefits that will be gained from reduced volume taken up there. This reduced volume due to biodegradation is additional to the reduced volume taken up in landfills due to the use of post-consumer PET as raw materials for Full-Cycle floor pads.

Additionally, there is a steadily increasing trend in the construction of methane-capture landfills, and existing landfills are being retrofitted with methane-capture technology. According to an NC State study (Barlaz & Levis, 2011), an estimated 69% of municipal solid waste goes to landfills that collect methane. Of that amount, roughly half is flared and half is used for beneficial purposes. Therefore it is reasonable to assume that roughly 70% of the floor pads will be buried in landfills where methane is captured. There has been an increase of 44% in the number of active methane-capture landfills from 2009 to 2016, according to the EPA Landfill Methane Outreach Project.

Looking towards the future, the EPA's newly issued guidelines and standards for LFG emissions are expected to reduce methane emissions by 334,000 metric tons by 2025 by increasing even further the number of methane-capture facilities. The guidelines are part of the *President's Climate Action Plan: Strategy to Reduce Methane Emissions*. The EPA has determined that LFG collection and control systems are the best vehicle for LFG emissions reductions from landfills. These new rules will require installation of such systems in landfills that reach a certain emission threshold within 30 months of doing so. They also require the system stay in place for 15 years after the landfill is closed (or until emissions decrease below a given threshold). This trend towards increasing methane capture will reduce the long-term negative impacts of methane released from floor pads degrading in landfills.

Third, biodegradable floor pads are expected to contribute a relatively small amount to the existing emissions of methane from landfills. Therefore, during the transition to widespread capture of methane in landfills, this product is not expected to make a measurable change in climate changing emissions.

Finally, the manufacturer alert purchasers to this issue and encourage them to take steps to dispose of the used pads in methane-capturing landfills; this will help mitigate this concern. The manufacturer sends the process waste of pad skeletons for disposal in a methane-capturing landfill.

2.2.3.2 Microplastics. Microplastics in the environment are a subject of recent concern. According to Duis & Coors (Environ Sci Eur (2016) 28: 2), “Given the large amount of macroplastics entering the environment, it is generally assumed that most microplastics in the environment are secondary microplastics, i.e. a result of weathering of larger plastic debris ... Other sources such as losses of pre-production plastics during transport and spills (approx. 5 %), abrasion from ship paints, other protective paints, house and road paints (approx. 17 %), release of textile fibres during household and commercial laundry (approx. 8 %) and, especially, abrasion from tyres (approx. 54 %) were considered ... relevant.” Within this context, the amount of microplastics stemming from all kinds of floor pads should be minimal. Furthermore, the criteria for this certification consider that in the US, cleaning materials would mostly be disposed of in a controlled manner in properly managed landfills, which are covered over each day. Landfill leachate is, usually treated before release, and the sludge from these treatment plants is a trap for most microplastics (Magnusson, et. al., 2016, report number C183 by IVL to the Swedish EPA).

The minimum size of the PET fibers in the applicant’s floor pads is calculated to be 50 to 500 microns up to much larger fibers. These are at least a few times larger than textile fibers, which are a much more significant source of microplastics than discarded floor pads and represent a much greater concern.

Assuming that microparticles would be released from both conventional floor pads and the applicant’s floor pads, which biodegrade more rapidly, a comparison should focus on the difference between the two. The biodegradation tests showed that both the binders and the PET fibers in the applicant’s floor pads were biodegraded, and not only the binders. Therefore it would be reasonable to expect that – if hypothetically released into the environment – microparticles from Full Cycle pads should not be more persistent than those from conventional pads. If there is a concern about the persistence of hypothetical microparticles in the environment, the applicant’s floor pads should not present a greater hazard than conventional pads.

3.0 Comments on the performance of the product vs. the alternatives

Both perform the same function at equivalent levels of performance

4.0 Comment on the health and environment aspects of the product relative to alternatives

The issues of Recycled Content and Biodegradation in Landfills have been addressed in section 2.