5 General requirements

In order to achieve a sustainable carpet rating, a carpet product shall provide environmental, economic, and social benefits while protecting and enhancing the needs of future generations, public health and welfare, and the environment over its full commercial cycle, from raw materials extraction to final disposition. A sustainable carpet shall also provide performance and quality equivalent to those of other carpets. A certified and non-certified product cannot have the same trade name or trademarked designation.

A sustainable carpet may be petrochemical-based or bio-based, but shall demonstrate multiple attributes that protect public health and environment and foster healthy and prosperous conditions for human and ecological systems throughout its supply chain.

5.1 Life cycle assessment (LCA)

Sustainable carpet shall be evaluated over the supply chain for multiple environmental benefits/impacts. LCA is one recognized tool with which to do this. LCA shall be used for communications using the word “sustainable” as part of the competent scientific evidence requirement pursuant to Federal Trade Commission (FTC), USEPA, and Attorneys Generals’ product marketing requirements (see 16 CFR 260.7(a)). LCA is used to identify environmental benefits and areas for improvement in the supply chain for all environmental media (air, water, and land), including local environmental issues in the production of agricultural bio-based products. EPA Final Environmentally Preferable Purchasing Guidance sets forth as a “Guiding Principle: Life Cycle Perspective/Multiple Attributes – A product or service’s environmental preferable is a function of multiple attributes from a life cycle perspective (2002).” Also relevant is ISO 14040.

5.2 Use of sustainably produced bio-based materials in carpet

Sustainably grown agricultural materials used in carpet shall demonstrate sustainable performance attributes throughout their supply chain and production system. Producers should be able to account for and report on these attributes. Sustainable carpet product manufacturers using agricultural raw materials should be able to demonstrate sustainable performance attributes resulting from the use of sustainable agriculturally grown raw materials (see Annex A, section A.2 for guidance).

5.3 Sustainable natural animal carpets

Sustainable carpet may be from natural animal fiber provided that sustainable agricultural best management practices as defined in 3.1 are followed for grazing management, conservation buffers, and animal feeding operation management; that organic feed is used; and that the animal is not harmed to obtain the fiber (see Annex A, section A.2).

5.4 Defining life cycle manufacturing boundaries for reporting toxics and social indicators
For guidance on defining life cycle manufacturing boundaries for the reporting of toxics and social indicators, please see Figure B1 in Annex B.

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6.3.3 Baselines for pollutant reductions and metrics

This section utilizes two different baseline calculations and the reductions against those baselines. The first baseline and calculation are intended to award early action for efforts to reduce pollutants prior to the year 2000. This baseline and calculation can be found in 6.3.3.3.

The second baseline is produced as a part of the inventory generated in 6.3.3.1. This will serve as the baseline life cycle inventory for the reductions in LCA calculations in 6.3.3.4.

6.3.3.1 Inventory of air, water and waste (media) pollutants

The boundary for this credit shall be Annex A, Figure A1. A manufacturer shall receive four points for reporting their baseline year which shall be no older than year 2000 process outflow data (emissions) for compliant products or product lines using the following TRACI (Tool for the Reduction and Assessment of Chemical and other environmental Impacts) life cycle impact assessment methods:

– global warming potential;
– acidification potential;
– critical air pollutants;
– fossil fuel depletion;
– habitat alteration;
– human health;
– ozone depletion;
– smog;
– ecological toxicity;
– eutrophication potential; and
– water intake.

As the TRACI methodology is periodically updated, applicants should consider using the most accurate life cycle calculations.

NOTE - An LCA may use other well-recognized ISO 14044 compliant methods for impact assessment when TRACI is not appropriate.
6.3.3.2 Output PBT emissions and emissions from other chemicals of concern

The boundary for this credit shall be Annex B, Figure B1 for the manufacturing facility or facilities. A manufacturer shall receive one point for documenting that it does not have any PBT emissions at or above USEPA CERCLA reportable quantities as described in Annex B, Table B.1.

6.3.3.3 Reduction of toxic chemicals and media pollutants (for the years 1986-1999)

A manufacturer shall document pollution reductions beyond federal, state, or local regulatory compliance from 1986-1999 through the manufacturer’s environmental management system (EMS) or an ISO 14040 compliant LCA. The baseline is 1986-1999 data (the baseline year may be selected based on year and availability).

A manufacturer may be awarded points for compliance with either 6.3.3.3.1 or 6.3.3.3.2. The manufacturer cannot be awarded points for compliance with both sections.

6.3.3.3.1 Voluntary pollutant reductions beyond compliance

The boundary for this credit shall be Annex B, Figure B1 for the manufacturing facility or facilities. A manufacturer may document voluntary pollutant reductions beyond federal, state, or local regulatory compliance from 1986-1999 for any of the following categories at each range identified in Table 6.1:

- solid and hazardous waste;
- SARA Title III toxic release inventory (TRI) Emissions;
- climate change emissions;
- water use reduction; and/or
- energy efficiency.

A maximum of eight points shall be awarded for demonstrating compliance with this section.

<table>
<thead>
<tr>
<th>Percent Reduction</th>
<th>Point(s)/impact for each of five impact categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 30%</td>
<td>1</td>
</tr>
<tr>
<td>≥ 50%</td>
<td>2</td>
</tr>
<tr>
<td>≥ 85%</td>
<td>3</td>
</tr>
</tbody>
</table>

6.3.3.3.2 Pollutant and toxic chemicals reduction through LCA

The boundary for this credit shall be Annex A, Figure A1. As an alternative to 6.3.3.3.1, if a manufacturer has LCA data available for the years 1986-1999, the manufacturer shall document an average reduction of toxic chemicals and media pollutants, per unit of production, in at least six of the following environmental life cycle impact categories:

- global warming;
- ozone depletion;
- acidification;
6.3.3.4 Reduction of specified life cycle impact categories (for the years 2000-present)

The boundary for this credit shall be Annex A, Figure A1. A manufacturer may achieve an average reduction in at least six of the environmental life cycle impact categories identified in Table 6.3.

Quantification of the impacts shall be determined according to the methodology from the USEPA’s Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI). TRACI’s impact categories and an example of the characterization factors can be found in Table 6.3. As the TRACI methodology is periodically updated, applicants should consider using the most recent version of this impact assessment methodology in order to ensure the most accurate life cycle calculations.

NOTE – LCA may use other well-recognized ISO 14042 compliant methods for impact assessment when TRACI is not appropriate.

To earn points under this section, a manufacturer shall compare an LCA of their product platform undergoing assessment to their baseline year which shall be no older than year 2000 or a recognized and approved industry baseline LCA for carpet, using Table 6.3’s life-cycle impact categories. Points shall be awarded in accordance with Table 6.4. Of these categories, global warming shall be included as one of the six impact categories at each range indicated in Table 6.4 before additional points shall be awarded.

A maximum of eight points shall be awarded for demonstrating compliance with this section.
### Table 6.3 – Baseline assessment life-cycle impact categories

<table>
<thead>
<tr>
<th>Impact category</th>
<th>Scale</th>
<th>Sample LCI data (i.e., classification)</th>
<th>Common characterization factor</th>
<th>Description of characterization factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>global warming</td>
<td>global</td>
<td>carbon dioxide (CO₂), nitrogen dioxide (NO₂), nitrous oxide (N₂O), methane (CH₄), chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), methyl bromide (CH₃Br)</td>
<td>global warming potential</td>
<td>converts LCI data to carbon dioxide (CO₂) equivalents¹</td>
</tr>
<tr>
<td>stratospheric ozone depletion</td>
<td>global</td>
<td>chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, methyl bromide (CH₃Br)</td>
<td>ozone depleting potential</td>
<td>converts LCI data to trichlorofluoromethane (CFC-11) equivalents</td>
</tr>
<tr>
<td>acidification</td>
<td>regional</td>
<td>sulfur oxides (SOₓ), nitrogen oxides (NOₓ), hydrochloric acid (HCl), hydrofluoric acid (HF), ammonia (NH₄)</td>
<td>acidification potential</td>
<td>converts LCI data to hydrogen (H⁺) ion equivalents</td>
</tr>
<tr>
<td>eutrophication</td>
<td>local</td>
<td>phosphate (PO₄), nitrogen oxide (NO), nitrogen dioxide (NO₂), nitrates, ammonia (NH₃, NH₄)</td>
<td>eutrophication potential</td>
<td>converts LCI data to nitrogen (N) equivalents</td>
</tr>
<tr>
<td>photochemical smog</td>
<td>local</td>
<td>nitrogen oxides (NOₓ), formaldehyde, acetaldehyde, ethylene glycol, hexanal, toluene</td>
<td>photochemical oxidant creation potential</td>
<td>converts LCI data to nitrogen oxide (NOₓ) equivalents</td>
</tr>
<tr>
<td>human health</td>
<td>local</td>
<td>dioxins (unspecified), arsenic (As), mercury (Hg), carbon tetrachloride (CCl₄), cadmium (Cd), lead (Pb)</td>
<td>toxicity equivalency potential</td>
<td>converts LCI data to toluene equivalents</td>
</tr>
<tr>
<td>fossil fuel depletion</td>
<td>global</td>
<td>coal, natural gas oil</td>
<td>fossil fuel depletion potential</td>
<td>converts LCI data to surplus MJ equivalents</td>
</tr>
<tr>
<td>criteria air pollutants</td>
<td>global</td>
<td>nitrogen oxides (NOₓ as NO₂), particulates (&gt; PM10), particulates (&lt;10), particulates (unspecified), sulfur oxides (SOₓ as SO₂)</td>
<td>criteria air pollution potential</td>
<td>converts LCI data to microdalys/G</td>
</tr>
</tbody>
</table>
Table 6.3 – Baseline assessment life-cycle impact categories

<table>
<thead>
<tr>
<th>Impact category</th>
<th>Scale</th>
<th>Sample LCI data (i.e., classification)</th>
<th>Common characterization factor</th>
<th>Description of characterization factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>ecological toxicity</td>
<td>local</td>
<td>dioxins, mercury (Hg), cadmium (Cd), naphthalene (C_{10}H_{8}), formaldehyde (CH_{2}O)</td>
<td>ecological toxicity potential</td>
<td>converts LCI data to 2,4-D equivalents</td>
</tr>
<tr>
<td>solid and hazardous waste</td>
<td>local</td>
<td>ash, solid waste, packaging waste, hazardous wastes</td>
<td>waste characterization potential</td>
<td>converts LCI data to equivalent tons</td>
</tr>
</tbody>
</table>

Global warming potentials can be 50, 100, or 500-year potentials.

Table 6.4 – Life cycle points awarded

<table>
<thead>
<tr>
<th>Percent Reduction</th>
<th>Across six impact categories</th>
<th>Across ten impact categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 10%</td>
<td>1 pt</td>
<td></td>
</tr>
<tr>
<td>≥ 25%</td>
<td>1 pt</td>
<td>2 pts</td>
</tr>
<tr>
<td>≥ 50%</td>
<td>1 pt</td>
<td>2 pts</td>
</tr>
<tr>
<td>75%</td>
<td>1 pt</td>
<td>2 pts</td>
</tr>
</tbody>
</table>

– concluded –