CRADLE TO CRADLE CERTIFIED™
PRODUCT STANDARD
VERSION 4

WATER & SOIL STEWARDSHIP
KEY MATERIALS
A key material is defined as a material that is typically produced using a high volume water use process or a pollutant intense process. The production of a key material may also typically include one or more processes that negatively impact aquatic and soil environments (e.g. deforestation, soil erosion, runoff into surface waters). The table below contains the list of key materials and processes that, if applicable to the product seeking certification, must be addressed to meet the Bronze, Silver, and Gold level requirements where key materials are referenced in the Water & Soil Stewardship category.

A pollutant intense process is a process with high potential to negatively affect conventional water quality parameters such as biological oxygen demand (BOD), chemical oxygen demand (COD), and total suspended solids (TSS), and/or result in the release of hazardous chemicals with effluent or run-off. A pollutant intense process is defined broadly to include soil erosion and loss, which, in addition to resulting in reduced topsoil quality and availability on land, also contributes to poor surface water quality.

### Key Materials: Materials Typically Associated with Pollutant Intense and/or High Volume Water Use Processes

- **Cement**
  - Slurry preparation, use of wet kiln instead of dry kiln process
  - High volume water use: ✓
  - Pollutant intense: ✓
  - Chemicals and effluent quality related: -
  - Soil erosion related: -

- **Ceramic tile**
  - Wet process: milling
  - High volume water use: ✓
  - Pollutant intense: -
  - Chemicals and effluent quality related: -
  - Soil erosion related: -

- **Chemicals (i.e. the transformation of organic and inorganic raw materials by a chemical process to form products).**
  - Process cooling and heating (high volume, cleaning/rinsing and process water and sludge disposal (pollutant intense)
  - High volume water use: ✓
  - Pollutant intense: ✓
  - Chemicals and effluent quality related: ✓
  - Soil erosion related: ✓

- **Crops: cotton, maize/corn, soy, sugarcane**
  - Irrigation
  - Use of pesticides (insecticides, herbicides)
  - High volume water use: ✓
  - Pollutant intense: ✓
  - Chemicals and effluent quality related: ✓
  - Soil erosion related: ✓

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<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other crops</strong></td>
<td>Use of pesticides (insecticides, herbicides, fungicides, etc.) and fertilizers, associated chemical runoff to surface water. Deforestation and other unmanaged/poorly managed land conversion to agriculture, excessive tilling and associated soil erosion and siltation of surface water.</td>
</tr>
<tr>
<td>Glass</td>
<td>Float process - cooling, washing recycled material.</td>
</tr>
<tr>
<td>Leather</td>
<td>All wet leather processing steps including curing, prepping, tanning, and dyeing; waste handling.</td>
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<tr>
<td>Material sourced from grazing species/ungulates (leather, wool, etc.)</td>
<td>Deforestation and poor management resulting in soil erosion and runoff.</td>
</tr>
<tr>
<td>Metals (ferrous and non-ferrous)</td>
<td>Primary metal production processes: cleaning, cooling, etc.</td>
</tr>
<tr>
<td>Mined metal ores (includes iron, aluminum, nickel, copper, zinc, and other ores)</td>
<td>Hydraulic mining, Mine dewatering, acid and metalliferous drainage and tailings production, soil erosion and runoff (from surface mining), material separation and transport, etc. Extraction of valuable metals (silver and gold) using mercury and cyanide.</td>
</tr>
</tbody>
</table>

**Note:**

- Use of pesticides (insecticides, herbicides, fungicides, etc.) and fertilizers, associated chemical runoff to surface water.
- Deforestation and other unmanaged/poorly managed land conversion to agriculture, excessive tilling and associated soil erosion and siltation of surface water.

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**Deleted:** Use of pesticides (insecticides, herbicides, fungicides, etc.) and fertilizers, associated chemical runoff to surface water.

**Deleted:** Oil palm, Soy and other crops if sourced from de facto high-risk countries (as defined in...[9])

**Deleted:** Irrigation...

**Deleted:** Other crops: oil palm, Soy and other crops...

**Deleted:** Material sourced from grazing species/ungulates (leather, wool, etc.)

**Deleted:** Deforestation and poor management resulting in soil erosion and runoff.

**Deleted:** Extraction of valuable metals (silver and gold) using mercury and cyanide.

**Deleted:** - DRAFT
| Key Material Category                                    | High Volume: Mine dewatering (if necessary) - potential to lower the water table | Pollutant intense: soil erosion and runoff | Metal finishes (includes chrome, galvanization, etc.) - Finishing/plating, rinsing/cleaning, rectifier cooling | Oil & gas - Hydraulic fracturing/fracking, water injection/waterflooding | Plastics (recycled) - Washing post-consumer plastic for recycling | Pulp & paper (includes all cellulosic pulp e.g., pulp used to make textile fibers) - Debarking, pulping, pulp washing, pulp bleaching, Papermaking: Pulp dilution & dewatering | Semiconductors - Cleaning/rinsing with ultrapure water (UPW) and ultrapure water production, cooling | Textiles (includes fiber and yarn stages) - Wet processing, including scouring, bleaching and other wet pre-treatment steps, sizing and desizing woven textile materials, dyeing, finishing including denim finishing, washing, coatings | Wood/timber - Debarking (high volume), sawmill timber processing (pollutant intense) | Wood/timber - Deforestation, forest management (poor management resulting in soil erosion and runoff, use of pesticides and fertilizers) |
|--------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--|---|
| Pulp & paper (includes all cellulosic pulp e.g., pulp used to make textile fibers) | ![ ] | ![ ] | ![ ] | ![ ] | ![ ] | ![ ] | ![ ] | ![ ] | ![ ] | ![ ] |