### Eco-Conscious Products

#### Safe and environmentally friendly products
Okamura’s environmental priorities in product design and assessment ensure the delivery of safe, eco-conscious products that give consumers peace of mind.

#### Keeping clean air
The furniture is a critical part of any office space. This is another factor that motivates Okamura to protect the air quality of offices by positively using raw materials and paints free of volatile organic compounds (VOCs).

#### Designs for easier reuse and recycling after use
Okamura designs products that can be easily broken down into homogeneous materials to facilitate the reuse of parts recovered from post-use products and material recycling. The materials used in major components are clearly identified.

#### A harmony of design, ecology, and economy
Okamura reduces raw material inputs during manufacture by analyzing finite elements with CAE and adopting other leading-edge methods. We harmonize design, ecology, and economy.

### Developing eco-conscious products

<table>
<thead>
<tr>
<th>Customer needs</th>
<th>Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social requirements</td>
<td>Industrial standards</td>
</tr>
</tbody>
</table>

#### Our responsibility

- **Motto**
  - “Quality pays for itself”

- **Long-term environmental vision**
  - GREEN WAVE 2010

- **Action principles**
  - The 3Rs (Reduce, Reuse, and Recycle)

### Product planning assessment

- Functions, performance, design
- Product safety
- Environmental consciousness
- Price
- Responses to regulations

### Product assessment

- Material selection
- Efficiency in material use
- Energy efficiency
- Ease of disassembly
- Recyclability

### Eco-conscious production

- Conserving energy
- Mitigating harmful emissions
- Zero emissions

### Requirements in product design

- Conserving resources and reducing volume
- Using recycled materials
- Reusing materials and product parts

### Design for the environment

Muffle’s resins panel, a design based on a simulated analysis of finite elements, bespeaks the outstanding efforts behind Okamura’s eco-conscious designs. Okamura’s product developers optimize the use of resources by minimizing the amounts of materials used without sacrificing the outstanding quality, strength, and safety of the products.

### Product testing

- Measuring the volumes of VOCs emitted
- Testing durability and load bearing strength
- Testing stability
- Testing for transport
- Measuring the volumes of specific harmful substances
Total control of every material used
Okamura collects thorough information on the materials, surface finishing methods, and other aspects of the parts used in its products, from the main components of its office equipment to individual screws. Detailed data on materials are provided upon request.

Recycled materials: 52%
Recycled materials are used in aluminum and wood quality parts. These materials make up about 52% by product weight.

Recyclability: 100%
With future recyclability firmly in mind during the design stage, we use homogeneous materials as much as possible. After use, our products can be collected and disassembled into homogeneous materials.

Indicating materials
Okamura indicates the materials used to facilitate recycling after use.

- Wood quality
- Resins
- Steel

Polyamide resins is used to ensure recycling in the future. Resins recovered after use are reprocessed and reused by resin manufacturers. Okamura is an active user of recycled resins for its products.
Reducing Chemicals

GREENGUARD certificated

GREenguard is an indoor environment air quality standards used to certify products with low chemical emissions for the protection of interior environments. Certification is granted only to products that pass the pollutant emissions testing conducted in process-controlled dynamic environmental chambers following test protocols developed by Air Quality Sciences, Inc. The test protocols comply with ASTM, U.S. EPA, LEED, and BIFMA standards and requirements. Muffle received GREenguard certification in May 2014.

Reducing VOCs to safeguard health

Okamura minimizes the use of formaldehyde, toluene, xylene, and other VOCs, which can result in sick building syndrome and allergic dermatitis. Environmental load can be reduced while achieving outstanding comfort and strength.

Minimizing environmental load

Amid calls to limit the use of the earth’s resources, the reuse and recycling of post-use products are now a global agenda. To ensure safe and sure progress in recycling, manufacturers must limit the use of substances with environmental loads. The latest round of enhancements in the regulatory framework started with the European Parliament’s Restriction of Hazardous Substances (RoHS) directive. Though office furniture is not currently included among the targets of this regime, Okamura is working to reduce substances with environmental impacts in response to customer demand and in anticipation of future legislation.

GREenguard Emission Criteria

<table>
<thead>
<tr>
<th>Emission Types</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual VOCs</td>
<td>&lt;0.1TLV</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>&lt;0.025ppm (&lt;0.03mg/m3)</td>
</tr>
<tr>
<td>4-phenylcyclohexene</td>
<td>&lt;0.0033mg/m3</td>
</tr>
<tr>
<td>Total VOCs</td>
<td>&lt;0.25mg/m3</td>
</tr>
<tr>
<td>Total aldehydes</td>
<td>&lt;0.05ppm</td>
</tr>
</tbody>
</table>

Reductions in VOCs

Toluene
Xylene
Formaldehyde
Aldehydes
4-phenylcyclohexene

Reductions in VOCs

Lead
Mercury
Cadmium
Chromium VI
PBB (Polybrominated biphenyl)
PBDE (Polybrominated diphenyl ether)

*1 These standard values contain exemptions set in the RoHS directive.
*2 Directive put into effect in European Union member states in July 2006 to restrict the use of hazardous substances in electronic and electrical equipment.
## LEED Credit Summary

<table>
<thead>
<tr>
<th>Program</th>
<th>Category</th>
<th>Item</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEED 2009 for Commercial Interiors</strong></td>
<td>Materials &amp; Resources</td>
<td>MR 3.2 Resource Reuse</td>
<td>This product (Muffle) is designed to be refurbished and easy replacement. And it can be used any longer by having proper maintenance. Product can contribute to this point by reusing. In Japan, Okamura has a service network by its subsidiary, Okamura Support and Service.</td>
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<td></td>
<td></td>
<td>MR 4 Recycled content</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MR 5 Regional materials</td>
<td></td>
</tr>
<tr>
<td>Indoor Environmental Quality</td>
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<td>IEQ 8.1 Daylight and Views-Daylight</td>
<td>A part of low partition items to help achieve these points (depending on the height).</td>
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<td><strong>LEED 2009 for New Construction and Major Renovations</strong></td>
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</tr>
<tr>
<td><strong>LEED 2009 for Existing Buildings, Operations and Maintenance</strong></td>
<td>Materials &amp; Resources</td>
<td>MR 1 Sustainable Purchasing-Ongoing Consumables</td>
<td>59.7% (1/2 Pre-Consumer: 0.9%, Post-Consumer: 59.2%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MR 2 Sustainable Purchasing-Durable Goods</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>IEQ 2.4 Daylight and Views</td>
<td>A part of low partition items to help achieve this point (depending on the height).</td>
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Global Sales Network

Visit the Okamura website for the latest updates on Okamura products.
http://www.okamura.jp/