EFI Lighting develops backlighting surfaces for car lighting

EFI Lighting uses Lightex® technology, an optical fiber weaving principle. This innovative process provides homogeneous luminance over the entire backlighting surface. The optical fibers are connected to light-emitting diodes (LEDs) that deliver all colors of the visible light spectrum. Lightex® products and processes are protected by a number of international patents.

WHAT DO WE MEAN BY “QUALITY OF LIGHT”?
- Color consistency matching designer requirements
- Color consistency throughout production
- Controlled distribution of light over the entire surface
- Color consistency over time

KEY FEATURES
- Integrated light-emitting solution:
  Innovative light-emitting textile using Lightex® technology
  LED module including LED sources, opto-coupler, power controller and connector
- Flexible design
  Customizable geometry (flexible, bendable or rigid)
  Complexing possible with other materials (metal, glass, composites …)
  Small space requirement and very low weight
  (thickness <1 mm, weight <600 g/m²)
  Customizable luminance effect
  Large color diversity: white, monochromatic or RGB
- Reduced number of LED sources
- Single LED source on one side
- Perfect homogeneity
  High luminance stability over the surface (up to several m² with imperceptible attenuation)
- Quality of light
  High quality of light
  Full control of light parameters for a perfect and reproducible quality of light
- Reliability
  High reliability level
LUMINANCE HOMOGENEITY

Lightex® technology provides perfect stability of the luminance over the whole lighting surface.

LIGHT SURFACE – PRODUCT DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backlighting textile material</td>
<td>PMMA optical fiber, polyester yarn</td>
</tr>
<tr>
<td>Textile density</td>
<td>600 g/m² - 500µm fiber (standard density)</td>
</tr>
<tr>
<td></td>
<td>300 g/m² - 250µm fiber (standard density)</td>
</tr>
<tr>
<td>Other densities</td>
<td>(available on request)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Up to 3 m wide</td>
</tr>
<tr>
<td>Bending radius</td>
<td>10 mm – 500 µm fiber</td>
</tr>
<tr>
<td></td>
<td>5 mm – 250 µm fiber</td>
</tr>
</tbody>
</table>

LED MODULE – PRODUCT DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED sources (all automotive qualified)</td>
<td>Monochromatic, RGB and white</td>
</tr>
<tr>
<td>LED controller</td>
<td>Integrated</td>
</tr>
<tr>
<td>Heat spreader</td>
<td>Integrated</td>
</tr>
<tr>
<td>Luminance dimming</td>
<td>Customer specific</td>
</tr>
<tr>
<td>Color dimming</td>
<td>Customer specific</td>
</tr>
</tbody>
</table>

PERFORMANCE DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luminance range</td>
<td>Customer specific</td>
</tr>
<tr>
<td></td>
<td>Indicative range: 5 – 2000 cd/m²</td>
</tr>
<tr>
<td>Luminance consistency over sur-</td>
<td>Luminance ratio ≤ 1.3 / m</td>
</tr>
<tr>
<td>face</td>
<td>Homogeneous luminance: no jumps, smooth diffusing light effect</td>
</tr>
<tr>
<td>LED source</td>
<td>One side or both sides</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-40°C to 100°C</td>
</tr>
<tr>
<td>Color diversity</td>
<td>White (warmW, neutralW, coldW)</td>
</tr>
<tr>
<td></td>
<td>RGB: red, blue, green, amber,...</td>
</tr>
<tr>
<td>Color consistency</td>
<td>No visible color shift over surface</td>
</tr>
<tr>
<td></td>
<td>No visible color shift throughout production</td>
</tr>
</tbody>
</table>

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