

Radia Bollards unite the best of two worlds with solar-powered and hardwired designs that make it easy to carry high-performance LED illumination across a property. Self-contained solar-powered bollards are sleek in appearance and predictively adapt to their surroundings. Hardwired bollards are ideal for settings where access to wired power already exists or site conditions don't allow for a solar-powered bollard. Both configurations contain recycled content.

Recycled Content & Certifications

Configurations	Pre-Consumer Recycled Content	Post-Consumer Recycled Content	Total Recycled Content	3 rd Party Certifications
Radia Bollard – hardwired	15%	3%	18%	International DarkSky Approved*
Radia Bollard – solar	19%	2%	21%	International DarkSky Approved*



* Radia Bollard 3000K is International DarkSky Approved

Green Building Standards

LEED® v3
<p><i>SS8: Light Pollution</i> – full light output data is available on Product Data Sheets. Contact for details.</p> <p><i>EAp2/EA1: Optimize Energy Performance</i> - the low power consumption of the LEDs used in this product reduces energy consumption. LEDs also produce a more uniform, directional form of illumination allowing lower levels of light to meet lighting requirements. Solar-powered options further reduce energy use.</p> <p><i>EA2: On-site Renewable Energy</i> – solar-powered options reduce environmental impacts associated with fossil fuel energy use.</p> <p><i>MR2: Construction Waste Management</i> – packaging is designed to be reusable or recyclable. See below for details.</p> <p><i>MR4: Recycled Content</i> – this product contains recycled material. Recycled content is shown above for all standard options.</p> <p><i>MR5: Regional Materials</i> – this product is manufactured in Pittsburgh, PA. Extraction information unavailable.</p>
LEED v4
<p><i>SS6: Light Pollution Reduction</i> - full light output data is available on Product Data Sheets. Contact for details.</p> <p><i>EAp2/EA2: Optimize Energy Performance</i> - the low power consumption of the LEDs used in this product reduces energy consumption. LEDs also produce a more uniform, directional form of illumination allowing lower levels of light to meet lighting requirements. Solar-powered options further reduce energy use.</p> <p><i>EA5: Renewable Energy Production</i> - solar-powered options reduce environmental impacts associated with fossil fuel energy use.</p> <p><i>MRp2/MR5: Construction Waste Management</i> – packaging is designed to be reusable or recyclable. See below for details.</p> <p><i>MR3: Sourcing of Raw Materials (recycled content)</i> – this product contains recycled material. Recycled content is shown above.</p> <p><i>(regional materials)</i> – this product is manufactured in Pittsburgh, PA. Extraction information unavailable.</p>
Green Globes™
<p><i>2.6 Exterior Light Pollution</i> - full light output data is available on Product Data Sheets. Contact for details.</p> <p><i>3.1 Energy Performance</i> - the low power consumption of the LEDs used in this product reduces energy consumption. LEDs also produce a more uniform directional form of illumination allowing lower levels of light to meet lighting requirements. Solar-powered options further reduce energy use.</p> <p><i>3.4 Renewable Sources of Energy</i> - solar-powered options reduce environmental impacts associated with fossil fuel energy use.</p> <p><i>5.4 Sustainable Materials Attributes (recycled content)</i> - this product contains recycled material. Recycled content is shown above.</p> <p><i>5.6 Waste (Construction Waste)</i> – packaging is designed to be reusable or recyclable. See below for details.</p> <p><i>5.7 Resource Conservation (Design for Deconstruction)</i> – this product can be disassembled to separate recyclable components</p> <p><i>6.3 Lighting Design and Systems (Lighting Sustainability)</i> – please contact for details.</p>

Green Building Standards continued

<p>Estidama Pearl Rating System: Design & Construction, Version 1.0</p> <p><i>LBo-10: Light Pollution Reduction</i> – full light output data is available on Product Data Sheets. Contact for details.</p> <p><i>RE-R1/RE-1: Energy Performance</i> - the low power consumption of the LEDs used in this product reduces energy consumption. LEDs also produce a more uniform, directional form of illumination allowing lower levels of light to meet lighting requirements. Solar-powered options further reduce energy use.</p> <p><i>RE-6: Renewable Energy</i> - solar-powered options reduce environmental impacts associated with fossil fuel energy use.</p> <p><i>SM-R1: Hazardous Material Elimination</i> – product contains no ACMs and no CCA-treated timber</p> <p><i>SM-R2/SM-13: Construction Waste Management</i> - packaging is designed to be reusable or recyclable. See below for details.</p> <p><i>SM-4: Design for Disassembly</i> - this product can be disassembled to separate recyclable components</p>
<p>SITES v2 Rating System</p> <p><i>Materials C5.3: Design for adaptability and disassembly</i> - this product can be disassembled to separate recyclable components</p> <p><i>Materials C5.5: Use recycled content materials</i> - this product contains recycled material. Recycled content is shown above for all standard options.</p> <p><i>Materials C5.6: Use regional materials</i> - this product is manufactured in Pittsburgh, PA. Extraction information unavailable.</p> <p><i>HHWB C6.8: Reduce light pollution</i> - full light output data is available on Product Data Sheets. Contact for details.</p> <p><i>Construction C7.5: Divert construction and demolition materials from disposal</i> - packaging is designed to be reusable or recyclable. See below for details.</p> <p><i>O+M C8.5: Reduce outdoor energy consumption</i> – the low power consumption of the LEDs used in this product reduces energy consumption. LEDs also produce a more uniform, directional form of illumination allowing lower levels of light to meet lighting requirements. Solar-powered options further reduce energy use.</p>

Product Materials

Material	Description	Maintenance (0-5)*	Inherent Value (0-5)**	Biodegradable	Corrosion/Wear Resistant	Rapidly Renewable	Recyclable	Scratch Resistant
Acrylic	Thermoplastic, petroleum-based polymer often used as a substitute for glass because of its high impact strength and clarity.	4	0		x		x	
Aluminum	Corrosion-resistant metal that is suitable for many fabrication methods.	3	3		x		x	
<p>*Maintenance ratings are assigned as follows: 0 – High level of maintenance required to keep up product performance and aesthetics; 5 – Absolutely no maintenance required to keep up product’s visual appearance and performance characteristics;</p> <p>**Inherent value ratings are assigned based on the material’s scrap value: 0 – No scrap value, or negative scrap value, and/or no scrap market; 5 – High scrap value, accompanied by robust scrap market</p>								

Processes

Process	Description
Aluminum Making	A two-step process by which the aluminum is first dissolved in a caustic bath and then precipitated out in crystals. This two-step process can be circumvented by using recycled scrap that is melted down to form new parts.
Casting	The process of creating a solid object by pouring molten metal into a mold and allowing it to cool.
Cutting	A variety of methods may be used to cut through various materials.
Machining	A form of subtractive or additive manufacturing often requiring specialty tooling to physically remove or add material to achieve a desired geometry.
Metal Protection	A process in which metal receives a thin layer of coating to improve corrosion resistance and coating adhesion.
Plastics Manufacture	Plastic is the common term for a wide range of synthetic or semi-synthetic organic solid materials used in industrial applications. Plastics are typically polymers of high molecular weight, and may contain other substances to improve performance or reduce costs.
Powdercoating	A solvent-free finishing method in which electrically charged particles of pigmented resins are sprayed onto a product. Electrical grounding of the coated object causes the charged powder to adhere to the surface. When baked in a curing oven the deposited powder melts and fuses together to form a durable, cross-linked coating

Processes continued

Sand Blasting	The process of smoothing, shaping and cleaning a hard surface by forcing solid particles across that surface at high speeds to provide an even finish.
Welding	A process that joins two similar metals by causing coalescence. Usually accomplished by melting the work pieces and adding a filler material to form a pool of molten metal that cools to become a strong joint.

Packaging Materials

Material	Type	Description	Disposal
Cardboard	Box	Small or light products are packaged in cardboard boxes. Reused for shipping, then recycled.	Reuse/Recycle
Cardboard	Spacers	Used to provide impact cushioning between a product and its package or between two products.	Reuse/Recycle
Plastic	Shrink wrap	Shrink wrap is used to protect the finish on products and also to hold padding to products.	Recyclable
Wood	Pallet	Used in shipping. Reused onsite until no longer serviceable, then recycled.	Reuse/Recycle

Transport

Method	Type	Description
Boat	Overseas	Some product components are shipped by cargo ship from overseas
Ground	Truck/Rail	Some incoming shipments and almost all outgoing shipments to customers are sent via ground transportation. This can include truck and often rail transport depending on the final destination. We are an EPA SmartWay® Transport Partner.

Maintenance & Use

Maintenance or Use	Description	Chemicals Required
Clean with Water and Mild Cleaner	This product requires a damp cloth and a mild, nontoxic cleaner for maintenance.	Mild, water-based cleaner
Electricity – LED	Product is available with LED lamping.	N/A
Solar Power	Product is available solar-powered.	N/A

Disposal

Method	Description
Disassemble	Product can be disassembled to separate recyclable components
Recyclable	Metal and acrylic components are recyclable. LEDs may be recyclable in some areas.
Recycling - Scrap	Materials can be sold for scrap

Forms+Surfaces is dedicated to environmental responsibility. We maintain an Environmental Management System and are continually working to improve our impact through efficiency, material selection, vendor education, employee involvement, and an unwavering commitment to being exemplary corporate citizens. If you would like additional information, please contact our Sustainability Team at green@forms-surfaces.com.