

Knight Bollards are low maintenance and easy to disassemble. Aluminum, stainless steel and steel components are 100% recyclable and have a high recycled content. The powdercoat finish is a low- or no-VOC finish, depending on color. Energy efficient lamp options are available.

Recycled Content & Certifications

Configurations	Post-Industrial Recycled Content	Post-Consumer Recycled Content	Total Recycled Content	3rd Party Certifications
Knight Bollard	42%	3%	45%	-
Knight Bollard- security core	36%	7%	43%	-

Green Building Standards

<p>LEED® v3</p> <p><i>SS8: Light Pollution</i> – full light output data is available on Product Data Sheets. Contact for details.</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. Contact for extraction information.</p>
<p>LEED v4</p> <p><i>SS6: Light Pollution Reduction</i> - full light output data is available on Product Data Sheets. Contact for details.</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. Contact for extraction information.</p> <p><i>EQ2: Low-emitting Materials</i> – inherently non-emitting sources. Contact for details.</p>
<p>Green Globes™</p> <p><i>3.2.5 Exterior Light Pollution</i> - full light output data is available on Product Data Sheets. Contact for details.</p> <p><i>3.3.5.6 Exterior Luminaires and Controls</i> – energy efficient LEDs are available. LEDs do not contain mercury. Contact for details.</p> <p><i>3.5.4.1 Construction Waste</i> – packaging is designed to be reusable or recyclable. See below for details.</p> <p><i>3.5.6.3 Deconstruction and Disassembly</i> – this product can be disassembled to separate recyclable components</p> <p><i>3.7.2.1 Volatile Organic Compounds</i> - inherently non-emitting sources. Contact for details.</p>
<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>LBi-2.5: Material Emissions: Formaldehyde Reduction</i> – inherently non-emitting sources. Contact for details.</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. Contact for extraction information.</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> – energy efficient LEDs are available. Full light output data is available on Product Data Sheets.</p>

Product Materials

Material	Description	Maintenance (0-5)*	Inherent Value (0-5)**	Biodegradable	Corrosion/Wear Resistant	Rapidly Renewable	Recyclable	Scratch Resistant
Aluminum	Corrosion-resistant metal that is suitable for many fabrication methods.	3	3		x		x	
Glass	Hard, brittle, transparent material consisting mostly of silica and various other ingredients that achieve different physical properties depending on use.	1	3		x			
Stainless Steel	Steel that is alloyed with chromium and other metals to improve corrosion-resistance.	3	4		x		x	
Steel	Plain steel that is alloyed primarily with carbon in varying concentrations. Requires a secondary finish coating for corrosion-resistance.	3	3				x	

*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;

**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

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.
Extruding	Process in which heated metal is pushed through a cross-sectional die to create a linear part with a specific shape.
Forming	A mechanical process used to alter the shape of metal.
Glass Making	Molten glass is pushed through a cross-sectional die and is sheared to form a cylinder of glass. It is then machined to specification and annealed to ensure even cooling throughout the piece.
Metal Finishing	Applied using grinding/sanding or polishing wheels or fine glass beads. Finishing produces a grained/brushed, mirror-like or matte/etched finish on the surface and depending on the material will increase corrosion resistance.
Metal Protection	A process in which metal receives a thin layer of coating to improve corrosion resistance and coating adhesion.
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
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.
Steel Making	Steel and stainless steel are made in one of two types of furnace: a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). A BOF is used to make steel from iron ore or from scrap steel; an EAF is used primarily to reprocess scrap steel.
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

Disposal

Method	Description
Disassemble	Product can be disassembled to separate recyclable components
Recyclable – Partially	Metal 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.