

TANGENT BOLLARD CONFIGURATIONS	Total Recycled Content	Post-Industrial Recycled Content	Post-Consumer Recycled Content	Light Output Above 90°
Tangent Bollard	53%	1%	52%	Contact

**GREEN BUILDING STANDARDS**

**LEED®**

This product can apply to the LEED credits outlined below. In order to provide knowledgeable assistance to our customers, we also have a LEED Accredited Professional on staff. If you don't see the information you need for your project on this page, you can contact our LEED AP by e-mailing [green@forms-surfaces.com](mailto:green@forms-surfaces.com).

- **SS: Light Pollution Reduction** – Easily-shielded light fixtures can reduce light pollution and associated environmental impacts. Full light output profile is available on Product Data Sheets.
- **MR: Recycled Content** – This product contains recycled material. Recycled content information is shown above for all of our standard options. Custom product recycled content is available by advance request.
- **MR: Regional Materials** – We have manufacturing facilities in Pittsburgh, PA (15223), Carpinteria, CA (93013), Phoenix, AZ (84043), Santa Fe Springs, CA (90605), and Pune, India. Please contact us for more information.

**Green Globes™**

This product can apply to one or more Green Globes credits, as outlined below. Our sustainability team is knowledgeable about the Green Globes standards, so please feel free to contact us at [green@forms-surfaces.com](mailto:green@forms-surfaces.com) should you need more information.

- **7.5.1 Exterior Light Pollution** – Low-energy lamping is an option for most of our light fixtures. Full light output profile is available on Product Data Sheets.
- **10.2.2.1 Recycled Content** – This product contains recycled material. Recycled content information is shown above for all of our standard options. Custom product recycled content is available by advance request.
- **10.2.4.1 Transportation of Manufactured Materials** – We have manufacturing facilities in Pittsburgh, PA (15223), Carpinteria, CA (93013), Phoenix, AZ (84043), Santa Fe Springs, CA (90605), and Pune, India. Please contact us for more information.

**Estidama**

This product can apply to the Estidama credits outlined below. We are familiar with the Estidama standards, so please feel free to contact us at [green@forms-surfaces.com](mailto:green@forms-surfaces.com) should you need additional information.

- **ADE3: External Lighting** – Low-energy lamping is an option for most of our light fixtures. Full light output profile is available on Product Data Sheets.
- **ADMAT1: Materials Specification - Major Building Elements – Recycled** – This product contains recycled material. Recycled content information is shown above for all of our standard options. Custom product recycled content is available by advance request.
- **ADMAT5: Sustainable Materials Sourcing** – We maintain sustainable procurement policies and procedures. Please contact us for more information.
- **ADWAS1: Reduction of Waste** – Most of our products are recyclable. Full disposal information is available below.

**PRODUCT MATERIALS**

Material	Type	Description	Maintenance (0-5)*	Inherent Value (0-5)**	Biodegradable	Corrosion/Wear Resistant	Rapidly Renewable	Recyclable	Scratch-Resistant
Aluminum	Cast	Solid aluminum cast in a mold to create a desired shape.	3	3		x		x	
Aluminum	Extruded	Simple or complex profiles created by forcing aluminum through a shaped die.	3	3		x		x	
Aluminum	Sheet	Light weight and corrosion-resistant metal sheets suitable for roll-forming and other fabrication methods.	3	3		x		x	
Glass	All	Hard, brittle, transparent material consisting mostly of silica and various other ingredients that achieve different physical properties depending on use.	1	3		x		x	
Polymer	Acrylic	Thermoplastic, petroleum-based polymer often used as a substitute for glass because of its high impact strength and clarity.	4	0		x		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**

<b>F+S Facility Processes</b>	<b>Process Description</b>	<b>Vendor Facility Processes</b>	<b>Process Description</b>
Brake Forming	A mechanical process in which material is shaped at a single angle along a straight axis. The process can be repeated to form more complicated shapes.	Aluminum Chromate Conversion	A process in which aluminum is coated in a thin layer of trivalent chromate to improve corrosion resistance and coating adhesion.
Glass Making	Float glass is made by floating molten glass on a bed of molten tin. This allows uniform thickness and a very flat surface. The sheet glass is passed through rollers and eventually a kiln to gradually cool the liquid to its solid state. Once cool, the glass can be machined to specification. It is then tempered and can no longer be machined. Applies for soda-lime or borosilicate glass sheet.	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.
Laser Cutting	A powerful, computer-controlled laser is used to precisely cut shapes or designs into metal.	Gravity Casting	Process of using gravity to force molten metal into mold cavities. Gravity casting allows for high volume production while retaining good part detail, fine surface quality and dimensional consistency.
Machining	A form of subtractive or additive manufacturing often requiring specialty tooling to physically remove or add material to achieve a desired geometry	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.
Metal Punching	A mechanical process where a die tool creates a hole in the material using velocity and pressure. This is an efficient alternative to laser cutting or water jet cutting when patterns to be placed into the material are small and numerous.	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.
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		
Saw Cutting	A tool with an abrasive edge is used to cut through various materials.		
VHB Tape Application	Used to bond components. Tape is applied by hand.		
Water Jet Cutting	A water jet utilizes water and a mixture of abrasives (garnet) at high pressure and velocity in order to carve/cut the material. Can be used to machine a large variety of materials, including heat sensitive or delicate materials. It produces no heat damage to the cutting area, and can yield a smooth edge finish when using the proper operating speed.		

**PACKAGING MATERIALS**

Material	Type	Description	Disposal
Cardboard	Box	Small or light products are packaged in cardboard boxes. We often reuse boxes for shipping.	Recycle
Cardboard	Shredded	Shredded cardboard is made onsite from incoming cardboard boxes and padding. The shredded cardboard is used to package outgoing shipments.	Recycle
Plastic	Wrap	Plastic wrap is used to protect the finish on products and also to hold padding to products. Clean plastic wrap is recyclable.	Recycle
Wood	Crate	Wood crates are made to fit onsite. Wood scraps are recycled into mulch. Crates are reused when possible.	Recycle/Reuse

**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.

**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.	NA

**DISPOSAL**

Method	Description
Disassemble	Product can be disassembled to separate recyclable components.
Recyclable – Partially	Some of the product components are recyclable.
Recycling – Scrap	Materials can be sold for scrap.
Reuse	This item can be reused in the same or different function.

**SUMMARY**

Category Type	Property/Component	Tangent Bollard
Basic	Total Recycled Content	53%
Basic	Post-Industrial Recycled Content	1%
Basic	Post-Consumer Recycled Content	52%
Basic	Light Output Above 90°	Contact
LEED	SS: Light Pollution Reduction	Contact
LEED	MR: Recycled Content	x
LEED	MR: Regional Materials	Contact
Green Globes	7.5.1 Exterior Light Pollution	Contact
Green Globes	10.2.2.1 Recycled Content	x
Green Globes	10.2.4.1 Transport of Manufactured Matls	Contact
ESTIDAMA	ADE3: External Lighting	89 lumens/W
ESTIDAMA	ADMAT1: Matls Spec – Recycled	x
ESTIDAMA	ADMAT5: Sustainable Matls Sourcing	Contact
ESTIDAMA	ADWAS1: Reduction of Waste	x
Materials	Al – Cast	x
Materials	Al – Extruded	x
Materials	Al – Sheet	x
Materials	Glass	x
Materials	Polymer – Acrylic	x
Processes	Aluminum Chromate Conversion	x
Processes	Aluminum Making	x
Processes	Brake Forming	x
Processes	Glass Making	x
Processes	Gravity Casting	x
Processes	Laser Cutting	x
Processes	Machining	x
Processes	Metal Punching	x
Processes	Plastics Manufacture	x
Processes	Powdercoating	x
Processes	Sand Blasting	x
Processes	Saw Cutting	x
Processes	VHB Tape Application	x
Processes	Water Jet Cutting	x
Packaging	Cardboard – Box	x
Packaging	Cardboard – Shredded	x
Packaging	Plastic – Wrap	x
Packaging	Wood – Crate	x
Transport	Boat – Overseas	x
Transport	Ground – Truck/Rail	x
Maintenance & Use	Clean with Water and Mild Cleaner	x
Maintenance & Use	Electricity – LED	x
Disposal	Disassemble	x

**SUMMARY continued**

<b>Category Type</b>	<b>Property/Component</b>	<b>Tangent Bollard</b>
Disposal	Recyclable – Partially	x
Disposal	Recycling – Scrap	x
Disposal	Reuse	x

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 on our Environmental Management System or our company environmental initiatives and policies, please feel free to contact our Sustainability Team at [green@forms-surfaces.com](mailto:green@forms-surfaces.com).