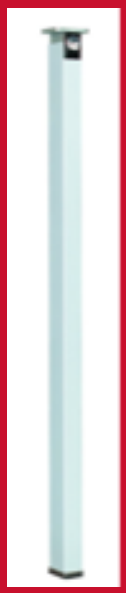
90 Series Keyed Removable Mullion

ENVIRONMENTAL PRODUCT DECLARATION



NSF Certified Environmental Product Declaration www.nsf.org

DETEX® A Century of Security 1923-2023

ENVIRONMENTAL PRODUCT DECLARATION
90 Series Keyed Removable Mullion

Program Operator	NSF International 789 N. Dixboro, Ann Arbor, MI 48105 www.nsf.org
General Program instructions and Version Number	Program Operator Rules v 2.7 2022
Manufacturer Name and Address	Detex Corporation 302 Detex Dr. New Braunfels, TX 78130
Declaration Number	EPD10978
Functional Unit	Divide one set of 3'x7' single-leaf doors for a period 75 years
Reference PCR and Version Number	Part A: Life Cycle Assessment Calculation Rules and Report Requirements (UL Environment, V3.2, 2018) Part B: Builders Hardware EPD Requirements (UL Environment, V1.0, 2019)
Product's intended Application and Use	Commercial Applications
Product RSL	25 years
Markets of Applicability	North America
Date of Issue	08/13/2024
Period of Validity	5 years from date of issue
EPD Type	Product Specific
Range of Dataset Variability	N/A
EPD Scope	Cradle to Grave
Year of reported manufacturer primary data	2021
LCA Software and Version Number	LCA For Experts 10.7 (formerly GaBi)
LCI Database and Version Number	Managed Life Cycle Content Database 2023.1 (formerly GaBi)
LCIA Methodology and Version Number	TRACI 2.1, IPCC AR5
The sub-category PCR review was conducted by:	Daniel Picard (Chair), ASSA ABLOY Openings Solutions Jim Mellentine, Ramboll Lindita Bushi, Athena Sustainable Materials Institute

This declaration was independently verified in accordance with ISO 14025: 2006. The UL Environment "Part A: Life Cycle Assessment Calculation Rules and Report Requirements," v3.2 (2018) and ISO 21930:2017 ☐ Internal ☒ External	Jack Geibig - EcoForm jgeibig@ecoform.com
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	WAP Sustainability Consulting
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Jack Geibig - EcoForm jgeibig@ecoform.com

Limitations:
Environmental declarations from different programs (ISO 14025) may not be comparable.
Comparison of the environmental performance of Builders Hardware products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR.
Full conformance with the PCR for Products allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

1. Product Definition and Information

1.1. Description of Company

Detex Corporation is a world-class manufacturer and distributor of products that protect people, secure property, and assure the life safety and security objectives of our customers. We strive to create the highest customer value in our worldwide markets while obtaining the highest possible return for our other stakeholders.

For more than a century, Detex has earned the trust of architects and owners who rely on Detex products for the safety and security of people and property. A USA company, Detex designs, manufactures, markets and ships products around the world from New Braunfels, Texas. Detex is known internationally for life safety and security door hardware, loss prevention and architectural hardware, integrated door security systems, and guard tour verification.

1.2. Product Description

The 90 Series Keyed Removable (90KR) Mullions are very durable, low-cost mullions designed for use with rim exit devices on standard and fire rated pairs of doors. The unique design of the latching head allows the mullion to be removed in seconds with one key turn, and then to be snapped back into place without needing the key.

1.3. Technical Requirements

Table 1: Technical Details

	Listings and Approvals
90KR	- UL and Warnock Hersey Listed for 3-hour fire rated pairs of doors up to 8'x8' - WHI labeled for use with other manufacturers' fire exit hardware

1.4. Application

These products can be used in commercial applications.

1.5. Declaration of Methodological Framework

This EPD is cradle-to-grave, as represented by the flow diagram below. A summary of the life cycle stages can be found in Table 5. The reference service life (RSL) is outlined in Table 4. The cut-off criteria are described in Cut-off Rules, and the allocation procedures are described in the Allocation section. No known flows are deliberately excluded from this EPD.

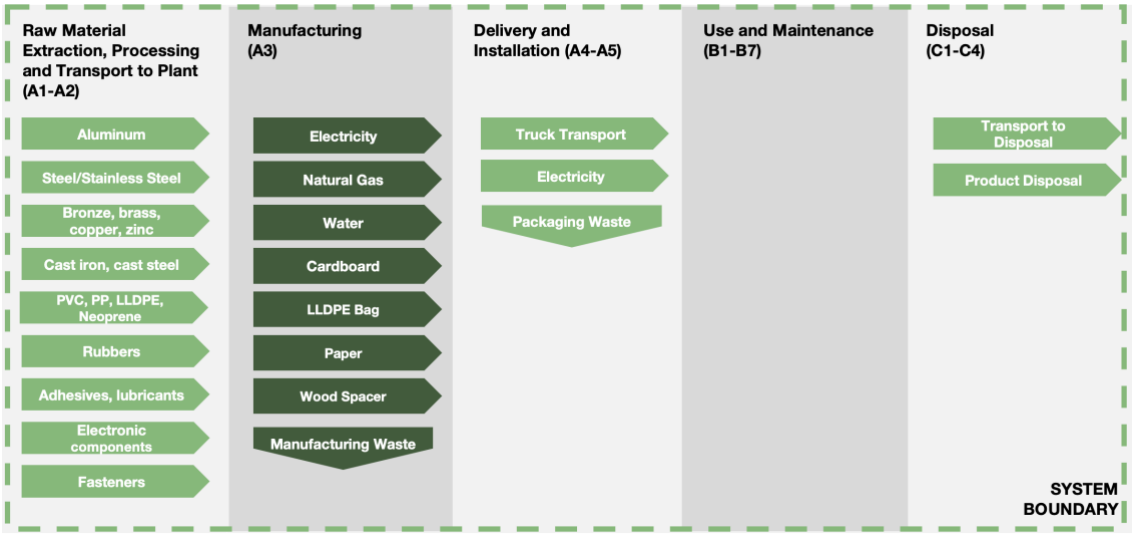


Figure 1: System Boundary Diagram

1.6. Material Composition

Table 2: Material Composition

Material	90KR
Galvanized Steel	18.4%
Glass	1.30%
Iron	7.41%
Lubricant	18.2%
Polypropylene	18.9%
Stainless Steel	35.1%
Steel	<1%
Nylon	<1%

1.7. Properties of Declared Product as Shipped

The product is shipped directly to customers in packaging material that includes cardboard box, shipping labels and plastic packaging. The amount of packaging materials is dependent on the size of the customer's order, but typically each product has its own cardboard box and associated packaging. Installation instructional sheets are provided. Accessory materials, such as installation screws are provided with the product.

1.8. Manufacturing

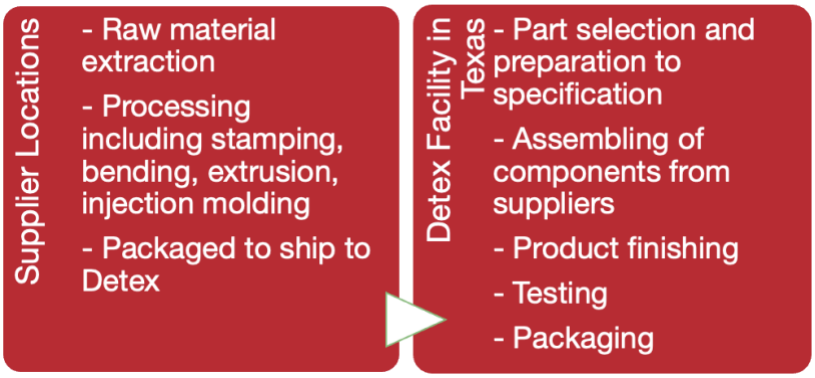


Figure 2: Manufacturing process flow diagram

Production occurs at Detex Corporation's manufacturing facility in New Braunfels, TX. Production begins when raw materials are received from suppliers. Non-electrical components, such as steel, aluminum and plastic parts, are selected, cut to specification, finished and assembled to create the body of the product. Assembly may occur by manual or electrical means depending on the part. Final assembly in the next stage in the process. During final assembly electrical boards and wires (if applicable) are installed inside the body of the product, along with other non-electrical parts. The body is then closed using another piece of steel or aluminum (depending on the model or product) and affixed with screws. No substances required to be reported as hazardous are associated with the production of this product.

Products are then tested to assure functionality. Once products pass the functionality testing, they are packaged and prepared for shipping. Standard carriers ship individual or small bulk orders separately. Large orders may be palletized.

1.9. Packaging

Detex's products are packaged with a variety of packaging materials depending on the type of product and delivery status. Options for cardboard, paper (for labels and instructions), linear low-density polypropylene bags, and wood spacers were included to account for all packaging types for building hardware, frame, and door products. Exact weight and type of packaging per product were provided by the product engineering team. All materials are recyclable at the site of installation.

Table 3: Packaging inputs per functional unit

Material	90KR
Cardboard [kg]	2.45
LLDPE [kg]	0.06
Paper [kg]	0.19
Wood [kg]	0.36

1.10. Transportation

Raw materials are delivered to the manufacturing facility via US truck, international shipping, and international truck and are accounted for in the model. The distances were modeled by material and were calculated using the supplier location and the location of manufacturing. Products are delivered to the end customers via truck. An average transport distance to the end customers was calculated based on sales data for the year 2021. Packaging and installation waste disposal have been modeled as per guidelines in section 2.8.5 of Part A: Life Cycle Assessment Calculation Rules and Report Requirements from UL Environment.

1.11. Product Installation

Detailed installation instructions are provided with the product. These instructions can also be found at http://www.detex.com/. Installation of each product requires ancillary materials, such as screws and mounting templates. These are provided with the product and included in the study. Installation equipment, such as a power drill, is required though not included in the study as these are multi-use tools and the impacts per declared unit is considered negligible. Packaging waste is generated and disposed of in this stage. Packaging and installation waste disposal have been modeled as per guidelines in section 2.8.5 of Part A: Life Cycle Assessment Calculation Rules and Report Requirements from UL Environment.

Products should be installed by a professional and is subject to commercial building codes. Proper equipment, including protective equipment, should be used. Detex products must be installed in full compliance with manufacturer's written instructions, which are included with each product.

1.12. Reuse, Recycling, and Energy Recovery

90 Series Keyed Removable Mullion products may be recycled or reused at the end of life, however, the LCA that this EPD is created from takes the conservative approach by assuming that all products are landfilled at end of life.

1.13. Disposal

All waste has been classified according to regional-specific legislation as laid out in Section 2.8.6 in Part A: Life Cycle Assessment Calculation Rules and Requirements from UL Environment. The waste classification is based on RCRA for North American region, and the non-metal waste is 100% landfilled, while the metal waste is 85% recycled and 15% landfilled.

2. Life Cycle Assessment Background Information

2.1. Functional Unit

The functional unit according to the PCR is 1 unit of product used for a standard 3'x7' single-leaf door for 75 years. The products under study have a reference service life (RSL) of 25 years. Table 4 shows additional details related to the functional unit.

Table 4: Functional Unit Details

Name	90KR	Unit
Functional Unit	One unit of product for 75 years	
Mass per functional unit, including fasteners	15.5	kg
Reference Service Life (RSL)	25	years
The fasteners needed for installation are supplied by the manufacturer with the product and therefore are accounted for together with the product.		

2.2. System Boundary

The type of EPD is cradle-to-grave. All LCA modules are included and are summarized in Table 5.

Table 5: Summary of Included Life Cycle Stages

Module Name	Description	Analysis Period	Summary of Included Elements
A1	Product Stage: Raw Material Supply	2021	Raw Material sourcing and processing as defined by secondary data.
A2	Product Stage: Transport	2021	Shipping from supplier to manufacturing site. Fuel use requirements estimated based on product weights and estimated distance.
A3	Product Stage: Manufacturing	2021	Energy, water and material inputs required for manufacturing products from raw materials. Packaging materials and manufacturing waste are included as well.
A4	Construction Process Stage: Transport	2021	Shipping from manufacturing site to project site. Fuel use requirements estimated based on product weights and mapped distances.
A5	Construction Process Stage: Installation	2021	Installation materials, installation waste and packaging material waste.
B1	Use Stage: Use	2021	The product does not produce emissions from use.
B2	Use Stage: Maintenance	2021	The maintenance of the products does not involve any consumption of energy or resources.
B3	Use Stage: Repair	2021	The product does not require repairing once installed.
B4	Use Stage: Replacement	2021	Total materials and energy required to manufacture the replacements needed to meet the functional unit.
B5	Use Stage: Refurbishment	2021	The product does not require refurbishment once installed.
B6	Operational Energy Use	2021	The product does not require energy for use.
B7	Operational Water Use	2021	The product does not require water for use.
C1	EOL: Deconstruction	2021	No inputs required for deconstruction.
C2	EOL: Transport	2021	Shipping from project site to landfill.
C3	EOL: Waste Processing	2021	Waste processing not required. All waste can be processed as is.

C4	EOL: Disposal	2021	All waste has been classified according to regional-specific legislation as laid out in Section 2.8.6 in Part A: Life Cycle Assessment Calculation Rules and Requirements from UL Environment.
D	Benefits beyond system	N/A	Module not declared

2.3. Estimates and Assumptions

All estimates and assumptions adhere to the requirements of ISO 14040/44. The majority of the estimations are within the primary data. The primary data was collected as annual totals including all utility usage and production information. For the LCA, the usage information was divided by the production in mass to create an energy and water use per functional unit, i.e., one unit of product. Other assumptions are listed below:

- It is assumed that there is a 10% scrap loss rate of the input raw material while manufacturing all of Detex's products.
- Stamping was the assumed manufacturing process of the upstream metal part when either the appropriate process wasn't available or was unknown.
- The inclusion of overhead energy and sanitary water usage were determined appropriate due to the limited energy tracking capabilities of Detex.
- Several proxies were chosen from materials within the model due to the lack of appropriate secondary data and have been described in the raw materials section of the LCA report.
- The use and selection of secondary Sphera MLC datasets from LCA for Experts – The selection of which generic dataset to use to represent an aspect of a supply chain is a significant value choice. Collaboration between the LCA practitioner, the manufacturer, and LCA for Experts data specialists was invaluable in determining best-case scenarios in the selection of data. However, no generic data can be a perfect fit. Improved supply chain specific data would improve the accuracy of results, however budgetary and time constraints also must be considered.

2.4. Cut-off Criteria

All inputs in which data was available were included. Material inputs greater than 1% (based on total mass of the final product) were included within the scope of analysis. Material inputs less than 1% were included if sufficient data was available to warrant inclusion and/or the material input was thought to have significant environmental impact. Cumulative excluded material inputs and environmental impacts are less than 5% based on total weight of the functional unit.

There is no excluded material or energy input or output, except as noted below:

- Finishes which forms below 1% by mass of the total product weight per functional unit.

- As the tools used during the installation of the product are multi-use tools and can be reused after each installation, the per-functional unit impacts are considered negligible and therefore are not included.
- Some material inputs may have been excluded within the Sphera MLC datasets used for this project. All Sphera MLC datasets have been critically reviewed and conform to the exclusion requirement of the PCR, Part A: "Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report".

2.5. Data Sources

Primary data were collected from Detex associates. Whenever available, supplier data was used for raw materials used in the production process. When primary data did not exist, secondary data for raw material production was utilized from LCA For Experts 10.7 (formerly GaBi), Managed Life Cycle Content Database 2023.1 (formerly GaBi). Third party verified ISO 14040/44 secondary LCI data sets contribute to more than 67% of total impact to all of the required impact categories identified by the PCR.

2.6. Data Quality

Geographical Coverage

The geographical scope of the manufacturing portion of the life cycle is New Braunfels, TX. All primary data were collected from the manufacturer. The geographic coverage of primary data is considered excellent. The geographical scope of the raw material acquisition is the North America, China, and Taiwan. Customer distribution, site installation, and use portions of the life cycle is within the United States. This data is considered very good. Disposal and end-of-life has been modeled as per guidelines in section 2.8.5 of Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Overall geographic data quality is considered good.

Time Coverage

Primary data were provided by Detex associates and represent calendar year 2021. Using 2021 data meets the PCR requirement that manufacturer specific data be within the last 5 years. Time coverage of this data is considered excellent. Data necessary to model cradle-to-gate unit processes were sourced from Sphera's MLC LCI datasets. Time coverage of the Sphera MLC datasets varies from approximately 2010 to present. All datasets rely on at least one 1-year average data. Overall time coverage of the datasets is considered good. While there were a couple of datasets used that are outside of the requirement of the PCR that all data be updated within a 10- year period, these were deemed appropriate as they represent the best technological and geographical coverage available. Specific time coverage of secondary datasets can be referenced in the dataset references table in the background LCA report.

Technological Coverage

Primary data provided by Detex are specific to the technology that the company uses in manufacturing their product. It is site specific and considered of good quality. It is worth noting that the energy and water used in manufacturing the product includes overhead energy such as lighting, heating and sanitary use of water. Sub-metering was not available to extract process only energy and water use from the total energy use. Sub-metering would improve the technological coverage of data quality. Data necessary to model cradle-to-grave unit processes was sourced from Sphera MLC LCI datasets (GaBi). There were several proxies chosen when an appropriate dataset that matches a particular material from the bill of materials was unavailable. However, these fall well below 5% of product weight and don't have a significant impact on the total lifecycle impact indicators. Technological coverage of the datasets is considered good relative to the actual supply chain of Detex. While improved life cycle data from suppliers would improve technological coverage, the use of lower quality generic datasets does meet the goal of this EPD.

Completeness

The data included is considered complete. The LCA model included all known material and energy flows, with the exception of what is listed in Section 2.4. As pointed out in that section, no known flows above 1% were excluded and the sum of all excluded flows totals less than 5%, whether evaluated by mass, energy, or potential environmental impact.

2.7. Period under Review

The period under review is calendar year 2021.

2.8. Allocation

General principles of allocation were based on ISO 14040/44. There are no products other than the ones under consideration that are produced at the Detex facility. To derive a per-unit value for manufacturing inputs such as electricity, thermal energy and water, allocation based on total production by units was adopted. As a default, secondary MLC datasets use a physical basis for allocation.

Of relevance to the defined system boundary is the method in which recycled materials were handled. Recycled materials were accounted for via the cut-off method. Under this method, impacts and benefits associated with the previous life of a raw material from recycled stock are excluded from the system boundary. Additionally, impacts and benefits associated with secondary functions of materials at end of life are also excluded (i.e. production into a third life or energy generation from the incineration plant). Results include the impacts associated with reprocessing and preparation of recycled materials that are part of the bill of materials of the products under study.

3. Life Cycle Assessment Scenarios

Table 6: Transport to Building Site (A4) per Functional Unit

Name	90KR	Unit
Vehicle Type	Heavy-duty Diesel Truck / 50,000lb payload	-
Fuel Efficiency	38.43	L/100km
Fuel Type	Diesel	-
Distance	1,080	km
Capacity Utilization	65%	%
Capacity Utilization Volume Factor	1	-
Weight of Products Transported	15.5	kg

Table 7: Installation Scenario Details (A5) per Functional Unit

Name	90KR	Unit
Ancillary Materials	The fasteners for installation are accounted for in A1-A3.	kg
Waste materials at the construction site before waste processing, generated by product installation	0	kg
Cardboard Packaging Waste to Landfill	2.45	kg
LLDPE Bag Packaging Waste to Landfill	0.06	kg
Paper Packaging Waste to Landfill	0.19	kg
Wood Spacer Packaging Waste to Landfill	0.36	kg
Biogenic carbon contained packaging	4.88	kg CO_2
Direct Emission to ambient air, soil, and water	0	kg
VOC emission	N/A	µg/m^3

Table 8: Reference Service Life

Name	90KR	Unit
Reference Service Life	25	Years
Design application parameters	Installation per recommendation by manufacturer	-
An assumed quality of work	Accepted industry standard	-
Indoor environment	Normal building operating conditions	-
Use conditions	Normal use conditions	-
Maintenance	None required	-

Table 9: Replacement (B4)

Name	90KR	Unit
Reference Service Life	25	Years
Replacement cycles	2	-
Energy input	0	kWh
Net freshwater consumption	0	m^3
Replacement of worn parts	0	kg
Direct emissions to ambient air, soil and water	0	kg
Further assumptions for scenario development	N/A	-

Table 10: End-of-Life Scenario Details (C1-C4)

Name	90KR		Unit
Assumptions for scenario development	As per PCR Part B, the deconstruction of the hardware is manual. The deconstructed product is collected with mixed construction waste. As required by the PCR Part A, the waste classification is based on RCRA for North American region, and the non-metal waste is 100% landfilled, while the metal waste is 85% recycled and 15% landfilled. Distance to waste processing is assumed to be 200km as stated in Table 4 of the Part B PCR.		
Collection process	Collected with mixed construction waste	15.5	kg
Disposal	Plastic Waste Landfilling	0.202	kg
	Metal Waste Landfilling	2.32	kg
	Metal Waste Recycling	13.20	kg
	Wood Waste Landfilling	0.36	kg

4. Life Cycle Assessment Results

A summary of the life cycle stages included in this LCA is shown below in Table 11.

Table 11: Life Cycle Stages Included in the Study

Production			Construction		Use							End of Life				Benefits & Loads Beyond System Boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw Material Supply	Transport	Manufacturing	Transport to Site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction	Transport	Waste Processing	Disposal	Reuse, Recovery, Recycling Potential
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ND
X = Included ND = Module not declared																

The LCIA and LCI results presented below in Table 12 are per functional unit, which is 1 unit of product used for a standard 3'x 7' single-leaf door for 75 years. LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. Results are reported separately by life cycle stage.

Table 12: LCIA & LCA Results

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
TRACI Impacts (North America)															
AP [kg SO2 eq]	1.72E-01	7.67E-03	7.48E-04	0.00E+00	0.00E+00	0.00E+00	3.65E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.70E-04	0.00E+00	1.35E-03	ND
EP [kg N eq]	1.27E-02	9.91E-04	1.23E-04	0.00E+00	0.00E+00	0.00E+00	2.81E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.97E-05	0.00E+00	1.22E-04	ND
GWP [kg CO2 eq]	6.60E+01	4.39E+00	3.52E-01	0.00E+00	0.00E+00	0.00E+00	1.43E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-01	0.00E+00	4.63E-01	ND
ODP [kg CFC 11 eq]	2.70E-08	1.14E-14	4.79E-16	0.00E+00	0.00E+00	0.00E+00	5.39E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.28E-16	0.00E+00	2.78E-15	ND
Resources [MJ]	4.39E+01	8.22E+00	5.12E-02	0.00E+00	0.00E+00	0.00E+00	1.05E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.81E-01	0.00E+00	1.14E-01	ND
POCP [kg O3 eq]	2.28E+00	1.73E-01	4.43E-03	0.00E+00	0.00E+00	0.00E+00	4.95E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-02	0.00E+00	9.07E-03	ND
Carbon Emissions and Uptake															
BCRP [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
BCEP [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
BCRK [kg CO2]	6.41E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
BCEK [kg CO2]	0.00E+00	0.00E+00	6.41E+00	0.00E+00	0.00E+00	0.00E+00	1.28E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
BCEW [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
CCE [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
CCR [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
CWNR [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
Resource Use Indicators															
RPRE [MJ]	1.30E+02	2.47E+00	2.63E-02	0.00E+00	0.00E+00	0.00E+00	2.65E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-01	0.00E+00	1.06E-01	ND
RPRM [MJ]	5.66E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
RPRT [MJ]	1.86E+02	2.47E+00	2.63E-02	0.00E+00	0.00E+00	0.00E+00	3.78E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-01	0.00E+00	1.06E-01	ND
NRPRE [MJ]	9.19E+02	6.21E+01	4.00E-01	0.00E+00	0.00E+00	0.00E+00	1.97E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E+00	0.00E+00	9.05E-01	ND
NRPRM [MJ]	3.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.36E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
NRPRT [MJ]	9.22E+02	6.21E+01	4.00E-01	0.00E+00	0.00E+00	0.00E+00	1.98E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E+00	0.00E+00	9.05E-01	ND
SM [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
RSF [MJ]	9.05E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
NRSF [MJ]	3.04E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.09E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
RE [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
FW [m3]	3.71E+00	8.49E-03	3.12E-04	0.00E+00	0.00E+00	0.00E+00	7.43E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.93E-04	0.00E+00	1.61E-04	ND
Output Flows and Waste Categories															
HWD [kg]	3.22E-04	1.79E-10	4.83E-12	0.00E+00	0.00E+00	0.00E+00	6.44E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.27E-12	0.00E+00	2.26E-11	ND

ENVIRONMENTAL PRODUCT DECLARATION
90 Series Keyed Removable Mullion

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
NHWD [kg]	3.08E+00	5.41E-03	2.50E-01	0.00E+00	0.00E+00	0.00E+00	1.18E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.50E-04	0.00E+00	2.58E+00	ND
HLRW [kg]	1.96E-02	1.78E-04	3.27E-06	0.00E+00	0.00E+00	0.00E+00	3.97E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.25E-06	0.00E+00	1.00E-05	ND
ILLRW [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
CRU [kg]	0.00E+00	0.00E+00	1.09E+00	0.00E+00	0.00E+00	0.00E+00	2.85E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E+01	0.00E+00	ND
MR [kg]	0.00E+00	0.00E+00	7.77E-02	0.00E+00	0.00E+00	0.00E+00	1.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND
MER [kg]	0.00E+00	0.00E+00	2.62E-01	0.00E+00	0.00E+00	0.00E+00	7.64E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-01	ND
EEE [MJ]	0.00E+00	0.00E+00	8.62E-02	0.00E+00	0.00E+00	0.00E+00	2.85E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.65E-02	ND
EET [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND

5. LCA Interpretation

A dominance analysis evaluates each life cycle stage and compares the impacts from that stage to the sum of the impacts calculated for all declared modules. Results from the dominance analysis were presented in the LCA report. The product stage A1-A3 (≈31%) and replacements B4 (≈67%) drive global warming potential impacts. Product stage impacts are primarily due to raw material extraction of metals and the electricity used in manufacturing. Replacement impacts are driven by the 25-year reference service life, which means the product will need to be replaced twice over the building's 75-year service life.

6. Additional Environmental Information

6.1. Environment and Health During Manufacturing

Detex meets all federal and state standards related to the Environment and Health during manufacturing. Beyond what is regulated, there are no additional environment and health considerations during the production of goods.

6.2. Environment and Health During Installation

The installation instruction that can be found on Detex's website should be referred to and followed to have proper and safe installation.

6.3. Environment and Health During Use

There are no environmental or health considerations during the use of the product.

6.4. Extraordinary Effects

Fire

90KR products are UL and Warnock Hersey Listed for 3-hour fire rated pairs of doors up to 8'x8' certified. Contact Detex for specific details on fire ratings.

Mechanical Destruction

If the product is mechanically destroyed, it should be disposed of using standard procedures and replaced promptly.

7. Supporting Documentation

More information on the product can be obtained here.

Table 13: LCIA Indicators

Abbreviation	Parameter	Unit
IPCC AR6		
GWP	Global warming potential (100 years, includes biogenic CO_2)	kg CO_2 eq
TRACI 2.1		
AP	Acidification potential of soil and water	kg SO_2 eq
EP	Eutrophication potential	kg N eq
GWP	Global warming potential (100 years, includes biogenic CO_2)	kg CO_2 eq
ODP	Depletion of stratospheric ozone layer	kg CFC 11 eq
Resources	Depletion of non-renewable fossil fuels	MJ, surplus energy
SFP	Smog formation potential	kg O_3 eq

Table 14: Biogenic Carbon Indicators

Parameter	Parameter	Unit
BCRP	Biogenic Carbon Removal from Product	[kg CO2]
BCEP	Biogenic Carbon Emission from Product	[kg CO2]
BCRK	Biogenic Carbon Removal from Packaging	[kg CO2]
BCEK	Biogenic Carbon Emission from Packaging	[kg CO2]
BCEW	Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	[kg CO2]
CCE	Calcination Carbon Emissions	[kg CO2]
CCR	Carbonation Carbon Removals	[kg CO2]
CWNR	Carbon Emissions from Combustion of Waste from Non- Renewable Sources used in Production Processes	[kg CO2]

Table 15: Resource Use, Waste, and Output Flow Indicators

Abbreviation	Parameter	Unit
Resource Use Parameters		
RPR_E	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value (LHV)
RPR_M	Use of renewable primary energy resources used as raw materials	MJ, net calorific value
RPR_T	Total use of renewable primary energy resources	MJ, net calorific value
$NRPR_E$	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value
$NRPR_M$	Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value
$NRPR_T$	Total use of non-renewable primary energy resources	MJ, net calorific value
SM	Use of secondary materials	kg
RSF	Use of renewable secondary fuels	MJ, net calorific value
NRSF	Use of non-renewable secondary fuels	MJ, net calorific value
RE	Recovered energy	MJ, net calorific value
FW	Net use of fresh water	m^3
Waste Parameters and Output Flows		
HWD	Disposed-of-hazardous waste	kg
NHWD	Disposed-of non-hazardous waste	kg
HLRW	High-level radioactive waste, conditioned, to final repository	kg
ILLRW	Intermediate- and low-level radioactive waste, conditioned, to final repository	kg
CRU	Components for reuse	kg
MR	Materials for recycling	kg
MER	Materials for energy recovery	kg
EEE	Exported electrical energy	MJ, net calorific value
EET	Exported thermal energy	MJ, net calorific value
EE	Exported Energy	MJ, net calorific value

8. References

IPCC. (2013). Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.

IPCC. (2021). Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press. In Press.

ISO. (2006). ISO 14025: Environmental labels and declarations - Type III environmental declarations - Principles and procedures. Geneva: International Organization for Standardization.

ISO. (2006). ISO 14040/Amd 1:2020: Environmental management - Life cycle assessment - Principles and framework. Geneva: International Organization for Standardization.

ISO. (2006). ISO 14044/Amd 1:2017/Amd 2:2020: Environmental Management - Life cycle assessment - Requirements and Guidelines. Geneva: International Organization for Standardization.

ISO. (2017). ISO 21930: Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services. Geneva: International Organization for Standardization.

UL Environment. (2018). Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010, V3.2.

US EPA. (2012). TRACI: The Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts. Version 2.1 - User Guide. Retrieved from https://nepis.epa.gov/Adobe/PDF/P100HN53.pdf