

ENVIRONMENTAL PRODUCT DECLARATION

CONTINUOUS HINGES

CONTINUOUS HINGES MODELS HD1100A, HD1100A-LL, HD1100DKB, HD1100DKB-LL, HD1400A, HD1400A-LL, HD1400DKB, HD1400DKB-LL, HD1800A, HD1800A-LL, HD1800DKB, HD1800DKB-LL, HD2400A, HD2400A-LL, HD2400DKB, HD2400DKB-LL, HD2700A, HD2700A-LL, HD2700DKB, HD2700DKB-LL, HD5300A, HD5300DKB, HD5400A, HD5400DKB, HD5700A, AND HD5700DKB



This EPD was created using a UL-verified EPD generator for NGP's full product portfolio. For additional product-specific EPDs, please contact NGP at technical@ngp.com.



At NGP, we are committed to providing products and services that are environmentally sound throughout the entire production process and the product life cycle.

Our environmental policy states:

#1 - We meet or exceed legal requirements and act with integrity, honesty, and transparency in everything we do.

#2 - We develop strategies to reduce consumption of resources, prevent pollution by understanding how our decisions and actions affect the continued long-term success of the company.

#3 - We continuously seek ways to improve the environment and to reduce risks that can cause accidents and pollution and expect the same of our suppliers.

#4 - We engage in open communication of sustainability programs with our stakeholders and adapt to the needs of our customers, associates, suppliers and vendors.



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According to ISO 14025,
EN 15804 and ISO 21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Environment 333 Pfingsten Road Northbrook, IL 60611 https://www.ul.com/ https://spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instructions v.2.5 March 2020
MANUFACTURER NAME AND ADDRESS	National Guard Products, Inc. 4985 East Raines Rd, Memphis, TN
DECLARATION NUMBER	4789517196.104.1
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Continuous Hinges (For detailed model, please refer to Section 1.) One continuous hinge of 83" installed for 75 years
REFERENCE PCR AND VERSION NUMBER	UL PCR Core Part A UL 10010 Version 3.2, 2018 UL PCR Part B: Builders Hardware 10010-13 Version 1.0, 2019
DESCRIPTION OF PRODUCT APPLICATION/USE	A single hinge that goes the full length of the door
PRODUCT RSL DESCRIPTION (IF APPL.)	25 Years
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	January 1, 2021
PERIOD OF VALIDITY	5 Year
EPD TYPE	Product-Specific
RANGE OF DATASET VARIABILITY	N/A
EPD SCOPE	Cradle to Grave
YEAR(S) OF REPORTED PRIMARY DATA	2019
LCA SOFTWARE & VERSION NUMBER	GaBi ts Version 9.2.0.58
LCI DATABASE(S) & VERSION NUMBER	GaBi Database Service Pack 40
LCIA METHODOLOGY & VERSION NUMBER	CML 2001-Jan 2016 and TRACI 2.1

This PCR review was conducted by:	UL Environment
	PCR Review Panel epd@ulenvironment.com
This declaration was independently verified in accordance with ISO 14025: 2006. <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	<i>Grant R. Martin</i> Grant R. Martin, UL Environment
	<i>Thomas P. Gloria</i> Thomas P. Gloria, Industrial Ecology Consultants

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs from different programs may not be comparable. Full conformance with a PCR 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.

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1. Product Definition and Information

1.1. Description of Company/Organization

National Guard Products is known as a leading manufacturer of weather-stripping, thresholds, lite kits, louvers and glass for commercial wood and steel doors. Founded in 1935 NGP has become an ever advancing industry innovator, manufacturing a complete line of door seals, door thresholds, gasketing, intumescent fire seals, smoke seals, sound seals, door sweeps, door shoes, automatic door bottoms, lite kits, louvers, metal edges, astragals and finger guard products.

1.2. Product Description

Continuous geared aluminum hinges run the full height of the door evenly distributing the weight of the door along the full height of the frame. Ideal for high-frequency and heavy-weight doors in new construction and retrofit applications

National Guard Products offers a variety of options to customers with their continuous hinge purchases. These options include lengths, finishes, and installation screws. The underlying LCA considers the impacts of finishes and fasteners. The continuous hinge products covered in this EPD include HD1100A, HD1100A-LL, HD1100DKB, HD1100DKB-LL, HD1400A, HD1400A-LL, HD1400DKB, HD1400DKB-LL, HD1800A, HD1800A-LL, HD1800DKB, HD1800DKB-LL, HD2400A, HD2400A-LL, HD2400DKB, HD2400DKB-LL, HD2700A, HD2700A-LL, HD2700DKB, HD2700DKB-LL, HD5300A, HD5300DKB, HD5400A, HD5400DKB, HD5700A, and HD5700DKB. All values in this EPD are for the representative product HD5300A, chosen due to it having the median impacts of all the included products. The impacts of each product mentioned are within $\pm 10\%$ of the representative product's impact.

1.3. Application

The continuous hinge products are designed to be installed on a door body allowing the door weight evenly distributed along the full height of the frame.

1.4. Declaration of Methodological Framework

This LCA is a cradle-to-grave study, 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 8. 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. Third party verified ISO 14040/44 secondary LCI data sets contribute more than 67% of total impacts in all impact categories required by the PCR.



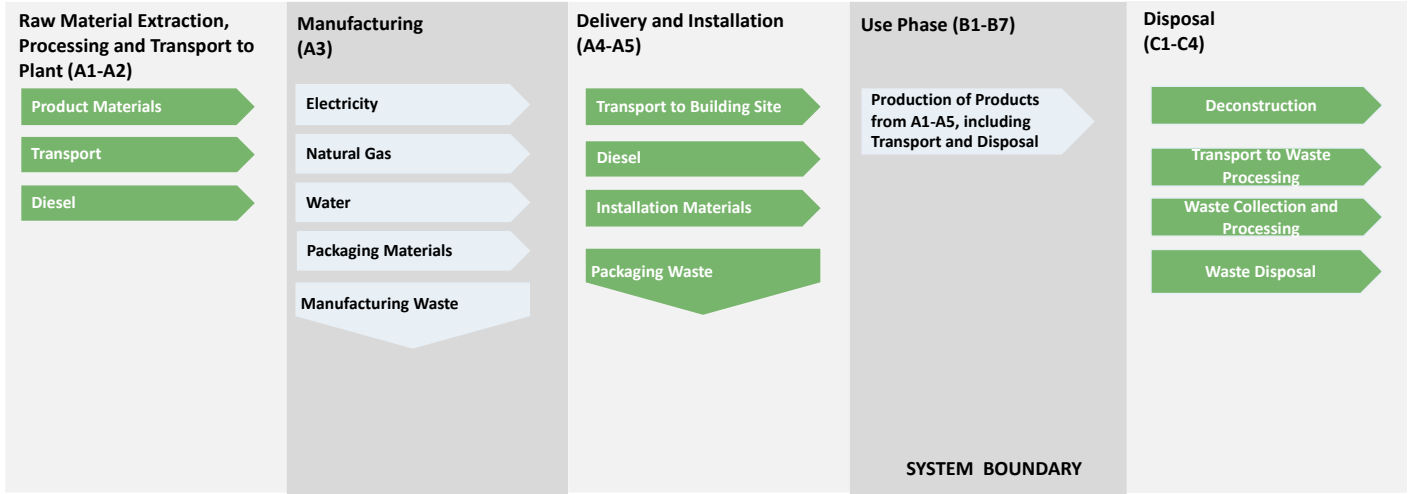
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1.5. Material Composition

The materials that make up HD5300A are indicated in Table 1.

Table 1: Material Composition

	HD5300A
Aluminum	100%

1.6. Technical Requirements

Table 2: HD5300A classification standard

STANDARD	VALUE / TESTING RESULT
ANSI/BHMA A156.26 (2017)	Compliant

1.7. Properties of Declared Product as Delivered

The product is provided to the customer through a fax, phone or email ordering system. The product is shipped directly to customers in packaging material that includes cardboard box, shipping labels and plastic materials. The amount of packaging materials is dependent on the size of the customer’s order. Installation instructional sheets are provided. Accessory materials, such as installation screws are provided with the product.

The dimension and quantities of the product are dependent on the requirements of the customer. NGP products are manufactured to customer specifications. For the purposes of this EPD it is assumed that the customer orders are equivalent to the length in the Section 2.1.

1.8. Manufacturing

All manufacturing occurs at NGP’s Memphis location. Production is typically a manual process that includes the loading of pre-extruded aluminum and/or roll-formed steel onto equipment that cuts, bends, and hole punches to product



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specification. For products that are a combination of several parts, employees weld the parts together. If customers order specific finish options, employees load parts onto equipment that applies the finishing. Once completed all products are manually packaged by employees. Pallets of packaged products are mechanically wrapped and are staged for shipping by forklifts.

Electricity is the primary energy source utilized during manufacturing, although some natural gas is utilized. Water is utilized in small quantities.

1.9. Packaging

Packaging utilized in the shipment of the product is described in Table 3 **Error! Reference source not found.**

Table 3: Packaging

MATERIAL	HD5300A	UNIT	DISPOSAL PATHWAY
Cardboard	7.74E-02	kg	Landfilled (20%), Incinerated (5%), Recycled (75%)
Plastic Foam	3.14E-03	kg	Landfilled (68%), Incinerated (17%), Recycled (15%)
Plastic Film	4.18E-03	kg	Landfilled (68%), Incinerated (17%), Recycled (15%)
Paper	1.05E-01	kg	Landfilled (20%), Incinerated (5%), Recycled (75%)
Plastic Strap	7.32E-03	kg	Landfilled (68%), Incinerated (17%), Recycled (15%)

1.10. Transportation

It is assumed that all raw materials are distributed by truck. An average distance using this information was calculated and used in the model.

The default shipping distance (1000 km) from the manufacturing location to the customer was utilized. The transportation distance for all waste flows is assumed to be 200 km. Both distances are provided in the sub-category PCR in Section 3.12.

1.11. Product Installation

Detailed installation instructions can be found online. While installation equipment is required to install the product, it is not included in the study as these are multi-use tools and the impacts per declared unit is considered negligible. All waste generated during installation, including packaging waste, is disposed of according to the tables found in Section 2.8.5 of *Part A: Life Cycle Assessment Calculation Rules and Report Requirements* from UL Environment.

1.12. Reuse, Recycling, and Energy Recovery

NGP continuous hinges may be recycled or resued at the end of life. The LCA that this EPD is created from takes the conservative approach by assuming that all products are disposed of within the system boundary.

1.13. Disposal

Disposal pathways in the EPD are modeled in accordance with disposal routes and waste classification referenced in Sections 2.8.5 and 2.8.6 of *Part A: Life Cycle Assessment Calculation Rules and Report Requirements* from UL



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Environment. This indicates an end-of-life split amongst landfill, recycling, and incineration pathways.



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2. Life Cycle Assessment Background Information

2.1. Functional Unit

The functional unit is one unit of product installed on a door in a North American standard building with an Estimated Service Life of 75 years, as indicated in Table 4.

Table 4: Functional Unit Details

NAME	HD5300A	UNIT
Functional Unit	One unit of product for 75 years	
Mass per Declare Unit, excluding fasteners	7.85	kg
Length	2.11 m 83"	
Fasteners	5.65E-01	kg
Reference Service Life (RSL)	25	years

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	2019	Raw Material sourcing and processing as defined by secondary data.
A2	Product Stage: Transport	2019	Shipping from supplier to manufacturing site. Fuel use requirements estimated based on product weights and estimated distance.
A3	Product Stage: Manufacturing	2019	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	2019	Shipping from manufacturing site to project site. Fuel use requirements estimated based on product weights and mapped distances.
A5	Construction Process Stage: Installation	2019	Installation materials, installation waste and packaging material waste.
B1	Use Stage: Use	2019	The electricity consumed during the use of the products
B2	Use Stage: Maintenance	2019	The maintenance of the products does not involve any consumption of energy or resources.
B3	Use Stage: Repair	2019	The product does not require repairing once installed.
B4	Use Stage: Replacement	2019	Total materials and energy required to manufacture the replacements needed to meet the functional unit.
B5	Use Stage: Refurbishment	2019	The product does not require refurbishment once installed.
B6	Operational Energy Use	2019	The use of the products does not impact the operational energy use of the building.



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MODULE NAME	DESCRIPTION	ANALYSIS PERIOD	SUMMARY OF INCLUDED ELEMENTS
B7	Operational Water Use	2019	The use of the products does not impact the operational water use of the building.
C1	EOL: Deconstruction	2019	No inputs required for deconstruction.
C2	EOL: Transport	2019	Shipping from project site to landfill. Distance assumed to be 200 km from installation site to landfill.
C3	EOL: Waste Processing	2019	Waste processing not required. All waste can be processed as is.
C4	EOL: Disposal	2019	The disposal process of the product varies with the material type as per Part A Section 2.8.5. The impacts from landfilling and recycling are modeled based on secondary data.
D	Benefits beyond system	N/A	Module not declared

2.3. Estimates and Assumptions

All estimates and assumptions are within 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 pieces to create an energy and water use per declared unit, i.e., one unit of product. Other assumptions are listed below:

- Waste value was estimated after an onsite visit to the manufacturing facility that an average 1% of the input material end up as manufacturing waste and is assumed to be landfilled.
- The installation tools are used enough times that the per unit of product impacts are negligible.
- Default transport distance from NGP to customers based on the PCR is used.
- For the US, 85% of metals are recycled and 15% is landfilled. For all other materials, the EOL is assumed to be 100% landfilled. An assumed average distance of 200 km was assumed to be the shipping distance between project site and the end-of-life facility.

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:

- 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. However, the electricity used to drill holes for installation has been included.
- Some material inputs may have been excluded within the secondary GaBi datasets used for this project. All GaBi datasets have been critically reviewed and conform to the exclusion requirements of the PCR.



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2.5. Data Sources

Primary data were collected by facility personnel and from utility bills and was used for all manufacturing processes. 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 GaBi Database Version 9.2.0.58, Service pack 40.

2.6. Data Quality

Geographical Coverage

The geographical scope of the manufacturing portion of the life cycle is Memphis, Tennessee. This LCA uses country specific energy datasets that take into account US eGrid specific energy and transportation mixes. Overall, the geographic coverage of primary data is considered good.

Time Coverage

Primary data were provided by NGP associates and represent calendar year 2019. Using 2019 data meets the PCR requirement that manufacturer specific data be within the last 5 years. Time coverage of this data is considered good. Data necessary to model cradle-to-gate unit processes was sourced from thinkstep LCI datasets. Time coverage of the GaBi datasets varies from approximately 2015 to present. All datasets rely on at least one 1-year average data. Overall time coverage of the datasets is considered good and meets the requirement of the PCR that all data be updated within a 5-year period. The specific time coverage of secondary datasets can be referenced in the dataset references table in each supplemental LCA report.

Technological Coverage

Primary data provided by NGP 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-gate unit processes was sourced from Sphera LCI datasets. Technological coverage of the datasets is considered good relative to the actual supply chain of NGP. 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 consider 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%.

2.7. Period under Review

The period under review is calendar year 2019.

2.8. Allocation

General principles of allocation were based on ISO 14040/44. Where possible, allocation was avoided. When allocation



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was necessary it was done on a physical mass basis, with the exception of manufacturing process. Discussions with NGP staff divulged this was a more representative way to allocate the manufacturing inputs based on the manufacturing processes used and the types of products created. There are several other products that are assembled and packaged within the same facility. It is assumed that energy used for these purposes are the same across different products. Regarding secondary datasets, as a default, GaBi datasets use a physical mass basis for allocation.



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3. Life Cycle Assessment Scenarios¹

Table 6: Transport to the building site (A4)

NAME	HD5300A	UNIT
Fuel type	Diesel	
Liters of fuel	38.43	l/100km
Vehicle type	Truck – Trailer, basic enclosed/ 50,000 lb. payload	
Transport distance	800	km
Capacity utilization	65	%
Weight of products transported	2.81	kg
Volume of products transported	113.56	m ³
Capacity utilization volume factor	1	-

Table 7: Installation into the building (A5)

NAME	HD5300A	UNIT
Fasteners	1.88E-01	kg
Waste material at the construction site before waste processing, generated by production installation	1.97E-01	kg
Plastic Recycling (15%)	2.20E-03	kg
Plastic Landfilling (68%)	9.96E-03	kg
Plastic Incineration (17%)	2.49E-03	kg
Total Plastic Packaging Waste	1.46E-02	kg
Pulp Recycling (75%)	1.36E-01	kg
Pulp Landfilling (20%)	3.64E-02	kg
Pulp Incineration (5%)	9.10E-03	kg
Total Pulp Packaging Waste	1.82E-01	kg
Biogenic carbon contained in packaging	2.03E-02	kg CO2
VOC emission	N/A	µg/m3

Table 8: Reference Service Life

NAME	HD5300A	
RSL	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	-

¹ The tables for B1, B2, B3, B5, B6 and B7 are not included as these stages do not involve any flow input or output.



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Table 9: Replacement (B4)

NAME	HD5300A	UNIT
Reference Service Life	25	Years
Replacement cycles ((ESL/RSL)-1)	2	#
Fasteners	3.76E-01	kg
Replacement of worn parts	N/A	kg
Further assumptions for scenario development	N/A	-

Table 10: End of life (C1-C4)

NAME		HD5300A	UNIT
Collection process	Collected with mixed construction waste	2.80	kg
Recovery	Metal Waste Recycling (85%)	2.38E+00	kg
	Metal Waste Landfilling (15%)	4.21E-01	kg
Disposal	Product or material for final deposition	2.80	kg

4. Life Cycle Assessment Results

Table 11: Description of the system boundary modules

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE 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 from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
Cradle to Grave		X		X	X	X	X	X	X	X	X	X	X	X	X	X	MND



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4.1. HD5300A Results

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CML Impacts (Europe, Rest of World)															
GWP [kg CO2 eq]	3.06E+01	2.22E-01	6.81E-01	0.00E+00	0.00E+00	0.00E+00	6.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.42E-02	0.00E+00	1.72E-02	MND
ODP [kg CFC 11 eq]	3.87E-10	2.85E-17	4.56E-15	0.00E+00	0.00E+00	0.00E+00	7.74E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.68E-18	0.00E+00	5.91E-17	MND
AP [kg SO2 eq]	1.81E-01	2.79E-04	1.33E-03	0.00E+00	0.00E+00	0.00E+00	3.66E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.39E-05	0.00E+00	7.30E-05	MND
EP [kg Phosphate eq]	8.88E-03	7.54E-05	1.63E-04	0.00E+00	0.00E+00	0.00E+00	1.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.72E-05	0.00E+00	1.68E-05	MND
POCP [kg Ethene eq]	9.54E-03	-5.74E-05	1.85E-04	0.00E+00	0.00E+00	0.00E+00	1.93E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.55E-05	0.00E+00	1.00E-06	MND
ADP-elements [kg Sb eq]	2.22E-05	3.78E-08	3.42E-05	0.00E+00	0.00E+00	0.00E+00	1.13E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.55E-09	0.00E+00	3.67E-09	MND
ADP-fossil fuel [MJ]	3.31E+02	3.14E+00	6.06E+00	0.00E+00	0.00E+00	0.00E+00	6.82E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.26E-01	0.00E+00	2.76E-01	MND
TRACI Impacts (North America)															
AP [kg SO2 eq]	1.73E-01	3.62E-04	1.47E-03	0.00E+00	0.00E+00	0.00E+00	3.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.39E-05	0.00E+00	9.80E-05	MND
EP [kg N eq]	4.42E-03	5.77E-05	1.04E-04	0.00E+00	0.00E+00	0.00E+00	9.21E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-05	0.00E+00	1.17E-05	MND
GWP [kg CO2 eq]	3.06E+01	2.22E-01	6.81E-01	0.00E+00	0.00E+00	0.00E+00	6.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.42E-02	0.00E+00	1.72E-02	MND
ODP [kg CFC 11 eq]	3.87E-10	2.85E-17	4.56E-15	0.00E+00	0.00E+00	0.00E+00	7.74E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.68E-18	0.00E+00	5.91E-17	MND
Resources [MJ]	2.80E+01	4.20E-01	2.61E-01	0.00E+00	0.00E+00	0.00E+00	5.75E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.38E-02	0.00E+00	3.57E-02	MND
POCP [kg O3 eq]	1.42E+00	7.90E-03	2.26E-02	0.00E+00	0.00E+00	0.00E+00	2.91E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E-03	0.00E+00	1.41E-03	MND
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	MND
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	MND
BCRK [kg CO2]	3.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.99E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEK [kg CO2]	0.00E+00	0.00E+00	2.03E-02	0.00E+00	0.00E+00	0.00E+00	4.06E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
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	MND
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	MND
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	MND
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	MND

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National Guard Products
 Continuous Hinge Models HD1100A, HD1100A-LL, HD1100DKB, HD1100DKB-LL, HD1400A, HD1400A-LL, HD1400DKB, HD1400DKB-LL, HD1800A, HD1800A-LL, HD1800DKB, HD1800DKB-LL, HD2400A, HD2400A-LL, HD2400DKB, HD2400DKB-LL, HD2700A, HD2700A-LL, HD2700DKB, HD2700DKB-LL, HD5300A, HD5300DKB, HD5400A, HD5400DKB, HD5700A, and HD5700DKB



According to ISO 14025,
 EN 15804 and ISO 21930:2017

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Resource Use Indicators															
RPRE [MJ]	1.39E+02	1.33E-01	9.91E-01	0.00E+00	0.00E+00	0.00E+00	2.79E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.66E-02	0.00E+00	2.28E-02	MND
RPRM [MJ]	2.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.84E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
RPRT [MJ]	1.41E+02	1.33E-01	9.91E-01	0.00E+00	0.00E+00	0.00E+00	2.85E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.66E-02	0.00E+00	2.28E-02	MND
NRPRE [MJ]	3.49E+02	3.16E+00	6.47E+00	0.00E+00	0.00E+00	0.00E+00	7.20E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-01	0.00E+00	2.82E-01	MND
NRPRM [MJ]	4.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
NRPRT [MJ]	3.50E+02	3.16E+00	6.47E+00	0.00E+00	0.00E+00	0.00E+00	7.21E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-01	0.00E+00	2.82E-01	MND
SM [kg]	1.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.04E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
RSF [MJ]	1.46E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
NRSF [MJ]	4.90E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.80E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
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	MND
FW [m3]	6.55E-01	5.93E-04	1.31E-03	0.00E+00	0.00E+00	0.00E+00	1.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-04	0.00E+00	4.00E-05	MND
Output Flows and Waste Categories															
HWD [kg]	2.40E-03	5.40E-08	9.10E-09	0.00E+00	0.00E+00	0.00E+00	4.79E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E-08	0.00E+00	1.88E-09	MND
NHWD [kg]	8.12E+00	2.26E-04	4.60E-02	0.00E+00	0.00E+00	0.00E+00	1.72E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.51E-05	0.00E+00	4.22E-01	MND
HLRW [kg]	9.06E-06	8.58E-09	1.83E-07	0.00E+00	0.00E+00	0.00E+00	1.85E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.71E-09	0.00E+00	2.78E-09	MND
ILLRW [kg]	7.46E-03	7.11E-06	1.61E-04	0.00E+00	0.00E+00	0.00E+00	1.53E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-06	0.00E+00	2.38E-06	MND
CRU [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	MND
MR [kg]	0.00E+00	0.00E+00	1.39E-01	0.00E+00	0.00E+00	0.00E+00	9.81E+00	0.00E+00	0.00E+00	0.00E+00	2.38E+00	0.00E+00	0.00E+00	2.38E+00	MND
MER [kg]	0.00E+00	0.00E+00	1.16E-02	0.00E+00	0.00E+00	0.00E+00	2.32E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
EEE [MJ]	0.00E+00	0.00E+00	4.25E-02	0.00E+00	0.00E+00	0.00E+00	8.50E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
EET [MJ]	0.00E+00	0.00E+00	1.47E-02	0.00E+00	0.00E+00	0.00E+00	2.93E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
EE [MJ]	0.00E+00	0.00E+00	5.71E-02	0.00E+00	0.00E+00	0.00E+00	1.14E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND

ENVIRONMENTAL PRODUCT DECLARATION



National Guard Products
Continuous Hinge Models HD1100A, HD1100A-LL, HD1100DKB, HD1100DKB-LL,
HD1400A, HD1400A-LL, HD1400DKB, HD1400DKB-LL, HD1800A, HD1800A-LL,
HD1800DKB, HD1800DKB-LL, HD2400A, HD2400A-LL, HD2400DKB, HD2400DKB-LL,
HD2700A, HD2700A-LL, HD2700DKB, HD2700DKB-LL, HD5300A, HD5300DKB,
HD5400A, HD5400DKB, HD5700A, and HD5700DKB

According to ISO 14025,
EN 15804 and ISO 21930:2017

5. LCA Interpretation

Overall, the vast majority of the impacts of the products are found in A1-A3 and for the whole life cycle of a building, the majority of the impacts is derived from the replacement of the products. Given this, the biggest thing NGP can do to decrease their environmental footprint is to light-weight the product, utilize additional recycled content, and improve the durability of the products.

6. Additional Environmental Information

6.1. Environment and Health During Manufacturing

NGP meets all federal and state standards related to the Environment and Health during manufacturing. Additionally, NGP employs a strict waste minimization and recycling program that reduces and recycles waste produced in the manufacturing process.

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 NGP's website should be referred to and followed to have a 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

The product is certified as fire-rated 90 minute on hollow metal (except steel stiffened) or wood door leaves up to 4'0" x 7'2".

Water

Should the product become flooded, the water should be removed by means of extraction and drying and the product should behave as originally intended. There are no environmental impacts associated with the product being flooded.

Mechanical Destruction

If the product is mechanically destroyed, it should be disposed of using standard procedures and replaced in a timely manner.



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National Guard Products
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 HD1400A, HD1400A-LL, HD1400DKB, HD1400DKB-LL, HD1800A, HD1800A-LL,
 HD1800DKB, HD1800DKB-LL, HD2400A, HD2400A-LL, HD2400DKB, HD2400DKB-LL,
 HD2700A, HD2700A-LL, HD2700DKB, HD2700DKB-LL, HD5300A, HD5300DKB,
 HD5400A, HD5400DKB, HD5700A, and HD5700DKB

According to ISO 14025,
 EN 15804 and ISO 21930:2017

7. Supporting Documentation

The full text of the acronyms found in Section 4 are found in Table 12.

Table 12: Acronym Key

ACRONYM	TEXT	ACRONYM	TEXT
LCA Indicators			
ADP-elements	Abiotic depletion potential for non-fossil resources	GWP	Global warming potential
ADP-fossil	Abiotic depletion potential for fossil resources	OPD	Depletion of stratospheric ozone layer
AP	Acidification potential of soil and water	POCP	Photochemical ozone creation potential
EP	Eutrophication potential	Resources	Depletion of non-renewable fossil fuels
LCI Indicators			
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PENRT	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)
PERM	Use of renewable primary energy resources used as raw materials	SM	Use of secondary materials
PERT	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	RSF	Use of renewable secondary fuels
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	NRSF	Use of non-renewable secondary fuels
PENRM	Use of non-renewable primary energy resources used as raw materials	FW	Net use of fresh water
HWD	Disposed-of-hazardous waste	MFR	Materials for recycling
NHWD	Disposed-of non-hazardous waste	MET	Materials for energy recovery
RWD	Disposed-of Radioactive waste	EEE	Exported electrical energy
CRU	Components for reuse	EET	Exported thermal energy
		EE	Exported energy



ENVIRONMENTAL PRODUCT DECLARATION



National Guard Products
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HD1800DKB, HD1800DKB-LL, HD2400A, HD2400A-LL, HD2400DKB, HD2400DKB-LL,
HD2700A, HD2700A-LL, HD2700DKB, HD2700DKB-LL, HD5300A, HD5300DKB,
HD5400A, HD5400DKB, HD5700A, and HD5700DKB

According to ISO 14025,
EN 15804 and ISO 21930:2017

8. References

1. Life Cycle Assessment, NGP, LCA Report for Thresholds, Gasketing, Continuous Hinges, Lite Kits/Louvers. WAP Sustainability Consulting. Sept 2020.
2. Product Category Rules for Building-Related Products and Services Part A: Life Cycle Assessment Calculation Rules and Report Requirements UL – 10010 Version 3.2. UL Environment.
3. Product Category Rule Guidance for Building-Related Products and Services Part B: Builders Hardware EPD Requirements UL 10010-13 Version 1.0. UL Environment.
4. ISO 14044: 2006 Environmental Management – Life cycle assessment – Requirements and Guidelines.
5. ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures.
6. ISO 14044: 2006/ Amd 1:2017 Environmental Management – Life cycle assessment – Requirements and Guidelines – Amendment 1.
7. ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.
8. EN 15804: 2012 + A1: 2013 – Sustainability of construction works – Environmental Product Declarations – Core rules for the product category of construction product.
9. UL Environment General Program Instructions, March 2020, version 2.5.

