Environmental Product Declaration

BASEWORKS™ WALL BASE

THERMOSET RUBBER WALL BASE

Johnsonite® BaseWorks ® Thermoset Rubber Wall Base

Tarkett | THE ULTIMATE FLOORING EXPERIENCE

With more than 150 years of history, Tarkett is a world leader of innovative and sustainable flooring solutions. Available in hundreds of shades, patterns and designs, end users have the ability to seamlessly blend the world's largest array of flooring products.

Tarkett is fully committed to closed loop, circular design through the use of good materials, resource stewardship, creating products for people friendly spaces, and recycling at the end of use. The company utilizes Cradle to Cradle principals to strategically design and manufacture its products and has fully implemented Life Cycle Analysis (LCA) as a means to continually improve its operations, products and their use. Developing products than can be reused within production cycles, at the end of their use or by other industries has been a part of Tarkett's sustainability strategy for many years. For more information visit

www.tarkettna.com

UL CERTIFIED
ENVIRONMENTAL PRODUCT DECLARATION
UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

BASEWORKS®
THERMOSET RUBBER WALL BASE

According to ISO 14025 and EN 15804

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. 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, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	Tarkett
DECLARATION NUMBER	13CA29936.103.1
DECLARED PRODUCT	BaseWorks® Wall Base
REFERENCE PCR	PCR, for Construction Products and CPC 54 Construction Services, V1.2, 3/15/2013 published by the International EPD System
DATE OF ISSUE	November 6, 2014
PERIOD OF VALIDITY	5 Years
CONTENTS OF THE DECLARATION	Product definition and information about building physics Information about basic material and the material's origin Description of the product's manufacture Indication of product processing Information about the in-use conditions Life cycle assessment results Testing results and verifications

The PCR review was conducted by:	Martin Erlandsson Swedish Environmental Research Institute Martin.erlandsson@ivl.se
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories ☐ INTERNAL ☒ EXTERNAL	Wade Stout
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas Gloria

This EPD conforms with EN 15804

ENVIRONMENTAL PRODUCT DECLARATION

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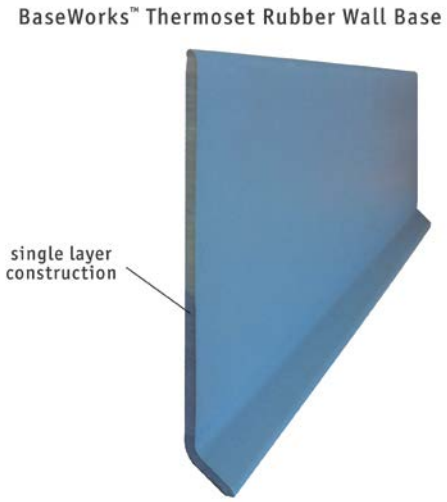
Product Definition

Product Classification and Description

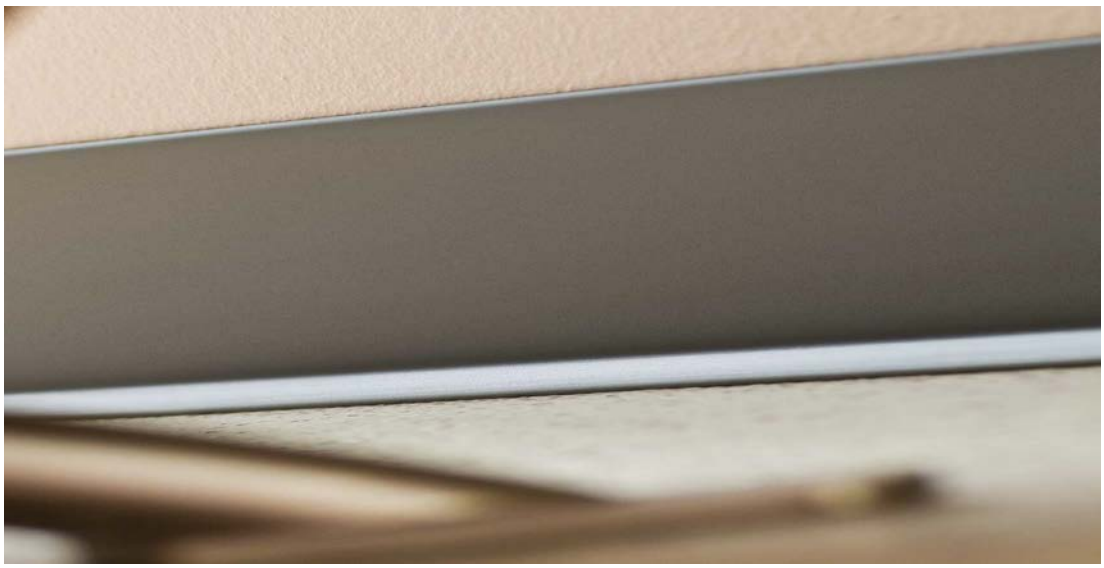
BaseWorks® thermoset rubber wall base, manufactured by Johnsonite, the North American commercial brand of Tarkett, is included in the company's fully integrated line of coordinating flooring, finishing borders and accessories. The product has a single layer, homogeneous composition of rubber, additives and colorants. It is one-eighth inch thick, available in 2.5, 4 and 6 inch heights and in toe and toeless profiles. Its high performance surface composition resists fatigue, fading and cracking and it will not shink or separate from the wall. It is available in 32 standard ColorMatch® colors that offer optimal coordination with existing borders and accessories. BaseWorks contains 2.6% rapidly renewable content from natrual rubber and is also fully recyclable in the company's ReStart® reclaimation program.

Figure 1: Schematic of BaseWorks Thermoset Rubber Wall Base



Range of Applications

BaseWorks® thermoset rubber wall base is a barrier that is used to prevent physical damage to walls, cabinets, columns, casework, pillasters, toe spaces and other permanent fixures. It is most often used in commercial environments where aesthetics and durability are important. It is extremely flexible and easy to install – even around curves and columns.



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Product Standards and Performance

BaseWorks meets the performance requirements of ASTM F 1861 for resilient wall base. It is also certified in the FloorScore® indoor air quality program by SCS Global Services and meets the requirements of California Specification 01350.

Table 1: BaseWorks Product Specifications

Product Specifications	
Product Thickness	1/8 inch
Product Heights	2.5 inch (64 mm), 4 inch (102 mm) and 6 inch (153 mm)
Product Profile Length	4 feet (all heights)
Product Roll Length	120 ft. (2.5, 4" heights)
Product Roll Length	100 ft.(6" height)

Table 2: BaseWorks Product Performance

Product Performance	
Indoor Air Quality	FloorScore® Certified
Indoor Air Quality	Meets the requirements of California
Classification	ASTM F 1861 - Type TS, Group 1 (Solid),
Staining of Adjacent Surfaces	ASTM F 1861 - No Staining
Flexibility	ASTM F 137 – passes ¼" mandrel
Chemical Resistance	ASTM D 3389 - less than 1 gram loss
Resistance to Light by Color Change	ASTM F 1515 $\Delta E \leq 8.0$
Flammability /Critical Radiant Flux	ASTM E 648 – 0.45 watts/cm^2 or greater
Flame Spread / Smoke Density	ASTM E 84 – Class B; < 450

Accreditations

- FloorScore®
- ISO 14001 Environmental Management System
- ISO 9001 Quality Management System

floor score
CERTIFIED BY SCS Global Services

Tarkett ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM

Tarkett ISO 9001 QUALITY SYSTEM

UL

Material Content

Material Content of the Product

Table 3: Material Content of BaseWorks® Thermoset Rubber Wall Base

Component*	Material	Mass (wt%)	Availability			Origin of raw materials
			Renewable	Non-renewable	Recycled	
Fillers	Kaolin, Calcium Carbonate	68.5		Abundant mineral		Global
Base Polymer	SBR, High Styrene butadiene resin	15.1		Fossil limited		Global
Binder	Natural Rubber	2.6	Abundant, bio based			Global
Additives	Various	10.8		Abundant mineral, Fossil limited		Global
Other Components	Various	3.2		Abundant mineral, Fossil limited		Global

Production of Main Materials

Calcium carbonate, also known as limestone, is a mineral filler that is mined from natural surface deposits.

Kaolin is a naturally occurring clay mineral; the primary constituent is the mineral kaolinite, a hydrous aluminum silicate formed by the decomposition of minerals such as feldspar.

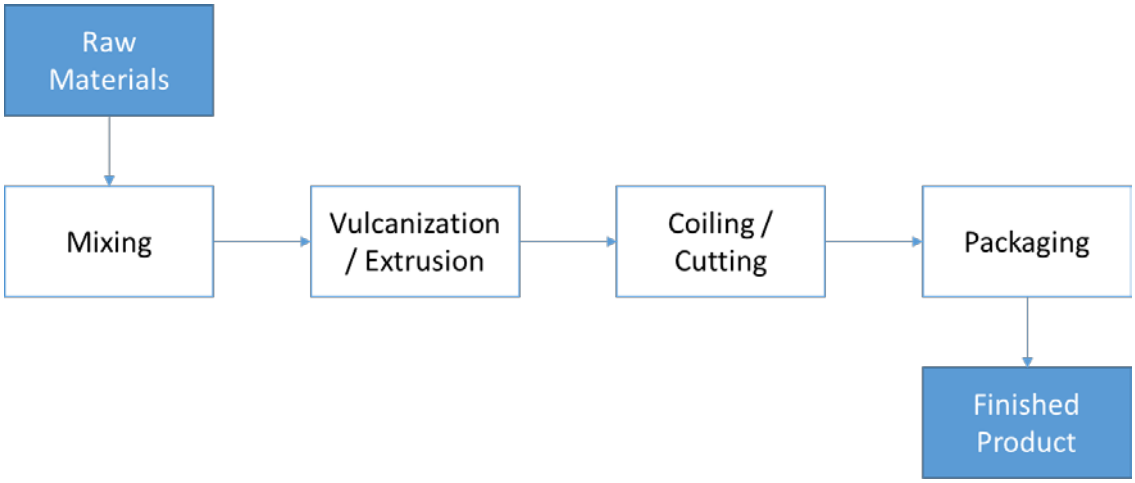
Natural Rubber is obtained from the latex of various plants and refined for commercial processing.

Styrene Butadiene Rubber describes the families of synthetic rubbers derived from styrene and butadiene. High styrene content rubbers are harder and less rubbery.

Production of Wall Base

BaseWorks has a single layer, homogeneous composition of rubber, additives and colorants. It is produced in several stages beginning with the mixing of the raw materials. After thorough mixing, the resulting compound is extruded and vulcanized, cut into lengths, stacked or rolled and packaged.

Figure 2: Manufacturing Process for BaseWorks® Thermoset Rubber Wall Base



Production Waste

Scrap during manufacturing is both recycled (7.54% of the finished product) and sent to the landfill as manufacturing waste (2.36% of the finished product).

Health Safety and Environmental Aspects During Production

- ISO 14001 Environmental Management System
- ISO 9001 Quality Management System
- World Class Manufacturing (WCM) - a comprehensive Environment, Health and Safety program focused on continual improvement in industrial performance, safety, quality, customer service and the environment.

Delivery and Installation

Delivery

For the transport of finished products to installation, the products are assumed to be shipped an average of 751 km by truck and 118 km by boat to the customer. These shipping distances represent a weighted average of distribution based on the locations of customers in 2013.

Installation

BaseWorks wall base should be installed on clean, smooth, flat, dry, adequately prepared walls according to the manufacturer's recommended installation procedures. Recommended adhesives that meet site conditions should be utilized. Detailed installation instructions can be found at www.tarkettna.com.

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Installation Waste

During installation, approximately 3% of the wall base is removed as waste. Although installation trim can be reclaimed in the company's ReStart® program, installation waste was modeled as being disposed of in a landfill to be conservative.

Packaging

BaseWorks rubber wall base is packaged in cardboard boxes and stacked on pallets. Although packaging is often recycled, packaging waste was modeled as sent to a landfill.

Health Safety and Environmental Aspects During Installation

BaseWorks thermoset rubber wall base has low VOC emissions -- less than 10 µg/m³ (14 days / ASTM D-5116), which is well below industry standards. BaseWorks products are certified in the FloorScore® Indoor Air Quality program and comply with the VOC emissions requirements of the California Department of Public Health (CDPH) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers, v1.1, Feb 2010 (also known as the California 01350 Specification). Tarkett's recommended installation instructions should be followed and the appropriate adhesive Material Safety Data Sheets (MSDSs) referenced.

End of Life

Tarkett is one of the industry's largest recyclers, with its ReStart program in the US and its ReUse program in Europe. ReStart® is Tarkett's recycling program in which reclaimed postconsumer flooring, installation waste, samples and portfolios are used in the production of new flooring. Although BaseWorks thermoset rubber wall base is recyclable in the company's ReStart program, for the purposes of this EPD, all post-use wall base was modeled as disposed of in a landfill to remain conservative.

Life Cycle Assessment

A full Life Cycle Assessment (LCA) has been carried out according to ISO 14040 and 14044. The LCA information as declared in this EPD meets the requirements of EN15804 (CEN 2013) and Environdec's CPC 54 Product Category Rules for Construction Products v1.2 (Environdec, 2013).

The following life cycle stages are considered:

- Product stage (raw material extraction, processing and transport; product manufacturing)
- Construction stage (delivery and installation)
- End-of-life stage

Functional Unit Description

The declared unit has been defined as one linear meter of wall base as defined by the PCR.

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Cut Off Criteria

For mass and energy, a cut-off goal of 99% of energy inputs and total mass inputs was defined. However, an attempt was made to collect all materials and energy involved in the materials systems – despite the defined energy and mass criteria – in order to capture any aspect that may be environmentally relevant. The product's mass is accounted for using relevant LCIs and proxies. For manufacturing, water required for steam generation, utilized thermal energy, electrical energy, required packaging materials, and all direct production waste are all included in the analysis.

Allocation

Allocation of the production data for this product was based on a total facility mass basis. No co- or by- product allocation was necessary during the manufacturing or end of life. Allocation was used in the GaBi background data. Materials and chemicals needed during manufacturing are modeled using the allocation rule most suitable for the respective product. Incoming secondary material for product manufacturing was assumed to enter the system burden-free (i.e., cut-off allocation approach). In cases where materials are sent to landfills, the appropriate product-specific share of the total End of Life scrap is linked to a parameterized inventory that accounts for waste composition, regional leakage rates, landfill gas capture as well as utilization rates (flaring vs. power production). No credits are given for recovered electricity or thermal energy in order to maintain consistency with the cut-off allocation approach.

Background Data

The GaBi 6 software system for Life Cycle Engineering, developed by PE INTERNATIONAL AG, has been used to model the life cycle of product systems considered in this assessment. All primary data were collected from Tarkett. Data for all up- and downstream raw materials and unit processes and national and regional averages for fuel inputs and electricity grid mixes were obtained from the GaBi 6 database 2013. Energy use and the associated emissions were calculated using existing transportation models from the GaBi 2013 database. The energy supply emissions are provided by the GaBi LCI database.

Data Quality

Inventory data quality is judged by its precision (measured, calculated or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied) and representativeness (geographical, temporal, and technological). To cover these requirements and to ensure reliable results, first-hand industry data in combination with consistent background LCA information from the GaBi LCI database were used. The LCI data sets from the GaBi LCI database are widely distributed and used with the GaBi 6 Software. The datasets have been used in LCA models worldwide in industrial and scientific applications in internal as well as in many critically reviewed and published studies. In the process of providing these datasets they are cross-checked with other databases and values from industry and science.

Time Coverage

All primary data collected from Tarkett are based on averaged data for production (energy, water, and emissions) between January and May 2014. Some data (such as waste to landfill) were collected for all products manufactured at the site for calendar year 2013 and then scaled to the production of BaseWorks in 2014. Raw material inputs were based on standard product weight and formulation. Background datasets are all based on data from the last four years (since 2010).

Technological Coverage

This study represents the specific environmental profile of Tarkett's manufacturing technologies and supply chain. Data on material composition and manufacturing are primary data from Tarkett. Secondary data for upstream material processing, energy production, etc. are sourced from GaBi 6 2013 databases and are considered representative of the technologies applied in this product's supply chain.

Geographical Coverage

BaseWorks products manufactured at Tarkett's facility in Middlefield, Ohio in North America are represented in this study. Manufacturing energy datasets were modeled with the regional energy LCIs, but proxy datasets were used as needed for raw material inputs to address lack of data for a specific material and some of these were sourced from regions outside the US. These proxy datasets were chosen for their technological representativeness of the actual materials.

System Boundaries

Because the study excludes the product use phase, the system boundaries are described as cradle to grave with options. The scope of the study includes raw material sourcing / extraction, manufacturing, delivery, installation, and disposal. Impacts and aspects related to wastage (i.e. production, transport and waste processing and end-of-life stage of lost waste products and materials) are considered in the module in which the wastage occurs.

The system boundaries of the study are split into modules according to the requirements of the PCR, consistent with EN 15804 (described in Table 4). These life cycle phases include extraction and processing of raw materials (A1), inbound transportation (A2), manufacturing (A3), distribution (A4), installation (A5), transport to disposal (C2), and disposal of rubber wall base (C4). No impacts from the product's use and maintenance (modules B1-B7) or from demolition (C1) or waste processing (C3) are included. Optional module D, for reporting benefits and loads beyond the system boundary has also been excluded from the study. A summary of the system boundaries codes (A, B, C, D) is provided in Table 4 below for reference. Life cycle stages with an 'X' are included in the study and those with an 'MND' are Module Not Declared.

Table 4: System Boundary Codes and Life Cycle Modules According to EN15804

PRODUCT STAGE			CONSTRUC-TION PROCESS		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport	Construction-installation process	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X	MND

Results

Life Cycle Inventory Analysis

The Life Cycle Inventory and impact assessment results are calculated using characterization factors published by the University of Leiden's CML 2001-April 2013. The CML impact assessment results in this report show the cradle-to-grave environmental impacts for one linear meter of BaseWorks. The results are presented in Tables 5, 6 and 7 below.

Table 5 - Resource Use for 1 Meter of BaseWorks Wall Base

		Product Stage			Construction Process		End of Life Stage			
	Unit	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
PERE	[MJ]	0.256	0.000997	0.694	0.00842	0.0305	0	0.000164	0	0.0274
PERM	[MJ]	0.248	0	0.0376	0	0.31	0	0	0	0
PERT	[MJ]	0.504	0.000997	0.732	0.00842	0.341	0	0.000164	0	0.0274
PENRE	[MJ]	11	0.17	9.5	1.44	2.14	0	0.0281	0	0.546
PENRM	[MJ]	0	0	0	0	0	0	0	0	0
PENRT	[MJ]	11	0.17	9.5	1.44	2.14	0	0.0281	0	0.546
SM	[kg]	0.0393	0	0	0	0	0	0	0	0
RSF	[MJ]	0.000182	4.14E-006	0.000177	3.52E-005	4.47E-005	0	6.83E-007	0	0.000398
NRSF	[MJ]	0.0019	4.36E-005	0.00178	0.00037	0.000369	0	7.19E-006	0	0.000886
FW	[m³]	0.000217	2.97E-007	0.000369	2.52E-006	4.79E-005	0	4.89E-008	0	1.9E-005
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Use of fresh water									

Table 6 - Outputs and Wastes for 1 meter of BaseWorks Wall Base

		Product Stage			Construction Process		End of Life Stage			
	Unit	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
HWD	[kg]	0	0	0	0	0	0	0	0	0
NHWD	[kg]	0	0	0.000246	0	0	0	0	0	0
RWD	[kg]	0.000113	2.77E-007	0.000741	2.35E-006	3.34E-005	0	4.57E-008	0	9.66E-006
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed									

Table 7: LCIA impacts for 1 meter of BaseWorks Wall Base

		Product Stage			Construction Process		End of Life Stage			
	Unit	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
GWP	[kg CO2-Eq.]	0.416	0.0115	0.649	0.0981	0.0831	0	0.0019	0	0.0362
ODP	[kg CFC11-Eq.]	2.16E-007	7.82E-014	5.84E-010	6.65E-013	6.3E-012	0	1.29E-014	0	1.41E-012
AP	[kg SO2-Eq.]	0.00203	4.68E-005	0.00211	0.000421	0.00019	0	7.71E-006	0	0.000112
EP	[kg PO43--Eq.]	0.00038	1.06E-005	0.000121	9.19E-005	3.8E-005	0	1.75E-006	0	0.000135
POCP	[kg Ethen Eq.]	0.000669	5.62E-006	0.000132	4.89E-005	2.63E-005	0	9.26E-007	0	1.4E-005
ADPE	[kg Sb Eq.]	8.37E-006	1.52E-009	9.57E-008	1.29E-008	4.75E-008	0	0.028	0	7.22E-009
ADPF	[MJ]	10.7	0.169	7.6	1.44	2.06	0	2.5E-010	0	0.522
Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources									

Interpretation

Raw materials production, manufacturing, and installation are the largest contributors in each impact category considered. Within the raw materials, the product of SBR and natural rubber have the highest impact. The electricity used during manufacturing drives those impacts, and the adhesive used during installation drives those. Transportation and disposal are smaller and relatively insignificant contributors. No materials or energy are included regarding maintenance, so this category has no impact.

Additional Information, Evidence and Test Results

Tarkett is committed to using to Cradle to Cradle principles in the evaluation and design of its flooring products. The company focuses on a balanced, four step approach in the product life cycle - - the choice of good materials in the design of products, the responsible use of resources to minimize impacts on the environment, the well-being of people during production, product use and at the end-of-use, recycling and reuse to enable the production of new products with good materials.

Tarkett is part of the Circular Economy 100 program created by the Ellen MacArthur Foundation. The company is working a with network of companies to develop a circular economy model based on the reuse of materials and preservation of the world's resources. Using the closed loop approach, products are designed and optimized for a cycle of disassembly and reuse either as biological nutrients that can be safely returned to the biosphere or technical nutrients designed for reuse or recycling from the start. Developing products that can be reused at the end of their use, within production cycles or by other industries has been a part of Tarkett's sustainability strategy for many years.

The choice of good materials in the design of products

Recycling at end-of-use and the design of new products with good materials

The responsible use of resources

The well-being and health of people during product use and maintenance

References

(CEN, 2013) European Committee for Standardization (CEN) EN 15804; Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, 2013

(Environdec, 2013) Environdec CPC 54; Construction Products and Construction Services, Version 1.2, March 15, 2013

(Guinee, 2001) Guinée, J. B. (ed.): Handbook on life cycle assessment: Operational guide to the ISO-standards. Centre for Milieukunde (CML), Leiden 2001.

(ISO 14025, 2006) ISO 14025 Environmental labels and declarations – Type III environmental declarations – Principles and procedures, 2006

(ISO 14040, 2006) ISO 14040 Environmental Management – Life Cycle Assessment – Principles and Framework, 2006

(ISO 14044, 2006) ISO 14044 Environmental management -- Life cycle assessment -- Requirements and guidelines, 2006

(PE INTERNATIONAL, 2013) GaBi 6 dataset documentation for the software-system and databases, LBP, University of Stuttgart and PE INTERNATIONAL GmbH, Leinfelden-Echterdingen, 2013 http://www.gabi-software.com/support/gabi/gabi-6-lci-documentation/