EPD | Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019

Gypsum Based Plaster

from GİPS A.Ş.

S-P Code	Programme	Publication Date	Validity Date
S-P-03126	EPD Turkey	15.04.2021	14.04.2026

EPD®
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GİPS
GELİŞTİRİLMİŞ İNŞAAT MALZEMELERİ VE PERLİTLİ SIVA SANAYİ A.Ş.

Program Information

Programme

EPD Turkey, managed and run by:

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Product Category Rules (PCR): 2019:14 Version 1.11, 2021-02-05, Construction Products and CPC 54 Construction Services, EN 15804:2012 + A2:2019 Sustainability of Construction Works

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

EPD process certification EPD verification X

Third party verifier: Professor Vladimír Kocí

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No X

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Company Information

GIPS Geliştirilmiş İnşaat Malzemeleri ve Perlitli Sıva Sanayi A.Ş. (GIPS) producing gypsum plaster with ALÇIBAY trademark was established in 1992.

In 2006, to reach much more clients, our firm has increased the capasity to 2700 ton/day and necesary conditions have been provided for producton based on customer satisfaction in all units within the firm.

GIPS, by producing powder gypsum such as gypsum plaster, gypsum based machine-applied plaster, satine skim plaster, gypsum sheet, binding gypsum, sealing gypsum, carton-pierre gypsum offers beter options in building sector.

GIPS,following the technology, has opened to the foreign market with its all products, competes with all producing companies at domestic and foreign markets; it aims to offer best servise to its cilents and provide product regularity and quality.

The company have ISO 50001 Energy System Management and ISO 9001 Quality Management System Certificates.

Languages can be different but the name of quality is same: Alçıbay

ALÇIBAY®
EUROGIPS®
ekogips
Dr. Mix®
FULL GIPS

About the Product

Gypsum is a construction material, being provided with superheating of gypsum $CaSO_4+2H_2O$ and evaporating of its water and grinding. When it is mixed with water, gypsum gains bounding property again. Gypsum plaster is used to make plaster boards, fibrous plaster, building decorations and moulds for many applications.

In gypsum manufacturing, production starts with the transport of raw materials to the production plant. The gypsum is then heated to remove 75% of its cyrystal water, resulting in the formation of stucco. Dry plaster powder is then mixed with additives. The final product is sold as bagged or bulk gypsum. The finished product can be cast in moulds, extruded, applied as a thick slurry to a surface or laminated between paper boards.

Gips Geliştirilmiş İnşaat Malzemeleri Tic. A.Ş. manufactures various gypsum based plasters to required specifications for different applications in Mersin and Ankara plants.

Gypsum based plasters manufactured by the Company are used mainly as first level plaster applied to surfaces like concrete, gas concrete, brick etc. with machine or by hand.

The CPC Code of plasters is 37410.

For more information about products and application guidelines:

Please scan or click!

Average composition of gypsum based plasters

Raw Materials	Composition, %
Gypsum	55 - 95
Calcite	10 - 40
Methyl Cellulose	0.3 - 0.9
Air Entrainers	0.1 - 0.5
Retardant	0.1- 0.4
Lime	0.5 - 5.0
Perlite	0.2- 3.0

Hand Plaster

This is a bagged gypsum based which could be directly applied on such materials as bricks, concrete, aerated concrete, etc.
Trade Name: Light Mixed Plaster for Building (spraying)
Place for Use: Concrete, gasbeton, brick etc. First floor plaster applied with surface machine.

Satin Surface Finishing Plaster

Finishing plaster for smooth surface.
Trade Name: Light Mixed Plaster for Building (spraying)
Place for Use: Concrete, gasbeton, brick etc. First floor plaster applied with surface machine.

Spray Plaster

This is a bagged gypsum based which could be directly applied on such materials as bricks, concrete, aerated concrete, etc.
Trade Name: Light Mixed Plaster for Building (spraying)
Place for Use: Concrete, gasbeton, brick etc. First floor plaster applied with surface machine.

Plaster of Paris (P.O.P)

Interior plaster is used for decorating and renovation works.
Trade Name: Fibrous Gypsum Plaster Elements
Place for Use: Interior plaster is used for decorating and renovation works.

Adhesive Plaster

It is a gypsum used for gypsum board pasting on concrete, aerated concrete, brick surfaces.
Trade Name: Adhesive Plaster for Gypsum Board
Place for Use: It is a gypsum used for gypsum board pasting on concrete, aerated concrete, brick surfaces.

Joint Filler

Use for filling the pore between the plaster board.
Trade Name: Joint Filler
Place for Use: It is the plaster used to cover the gaps of the plasterboard.

Professional Machine Applied Plaster

This is a bagged gypsum based which could be directly applied on such materials as bricks, concrete, aerated concrete, etc.
Trade Name: Light Mixed Plaster for Building (spraying)
Place for Use: Concrete, gasbeton, brick etc. First floor plaster applied with surface machine.

Technical Specifications

	Unit	Hand Plaster	Satin Surface Finishing Plaster	Spray Plaster	Plaster of Paris	Adhesive Plaster	Joint Filler	Professional Machine Appplied Plaster
Directive	-	305/2011/AB	305/2011/AB	305/2011/AB	305/2011/AB	305/2011/AB	305/2011/AB	305/2011/AB
Appearence	-	Powder	Powder	Powder	Powder	Powder	Powder	Powder
Colour	-	White	White	White	White	White	White	White
Solubility	-	Soluble in Water	Soluble in Water	Soluble in Water	Soluble in Water	Soluble in Water	Soluble in Water	Soluble in Water
Density	g/L	640	680	675	767	810	815	675
Size	mm	150	155	165	210	140	130	165
Reaction to Fire	-	A1	A1	A1	A1	A1	A1	A1
Fire Resistance	-	NDP	NDP	NDP	NDP	NDP	NDP	NDP
Acustic Performance	-	NDP	NDP	NDP	NDP	NDP	NDP	NDP
Thermal Resistance	W/m.K	0.26	0.26	0.17	0.26	0.26	0.26	0.17
Dangerous Substance	-	Not Excess	Not Excess	Not Excess	Not Excess	Not Excess	Not Excess	Not Excess
Initial Setting Time	min	65	180	80	8-12	40	90	80
Flexural Strenght	N/mm^2	1.84	1.85	1.20	5.28	1.84	2.05	1.20
Compressive Strenth	N/mm^2	3.46	3.20	2.5	12.3	3.46	5.65	2.5
Adhesional Strength	N/mm^2	0.32	-	0.35	-	0.15	0.65	0.35

LCA Information

Declared Unit	1 kg of Gypsum Based Plaster
Time Representativeness	2020
Database(s) and LCA Software Used	Ecoinvent 3.6, SimaPro 9.1

The inventory for the LCA study is based on the 2020 production figures for Alçıbay Gypsum Based Plasters. Background data as recipe of products, transportation, manufacturing details etc are taken from Alçıbay production plants in Ankara/Turkey and Mersin/Turkey.

This EPD's system boundary is cradle to gate. The system boundary covers product stages (A1-A3), end of life stages (C1-C4) and benifts and loads stage (D).

Product Stage			Constrcution Process Stage		Use Stage							End of Life Stage				Benefits and Loads
Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction, demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

X = Included in LCA, ND = Not Declared

System Boundary Description

A1: Raw Material Supply
Alçıbay's productions start from gypsum. The company supplies its raw materials necessary from suitable suppliers. Raw material supply includes raw material extraction/preparation and pre-treatment processes before production. Production for each product starts with mainly locally sourced but some transported from other parts of the world.

A2: Transportation
Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant. Transport of raw materials to production sites is taken as the weight average values for transport from raw materials supplier in 2020.

A3 : Manufacturing
Manufacturing includes stucco preparation, followed by expanded perlite and calcite preparation for production. The mixture is then mixed with the additives. The end products are packaged or sold as bulk. Electric energy, natural gas and diesel for generators are consumed during the manufacturing.

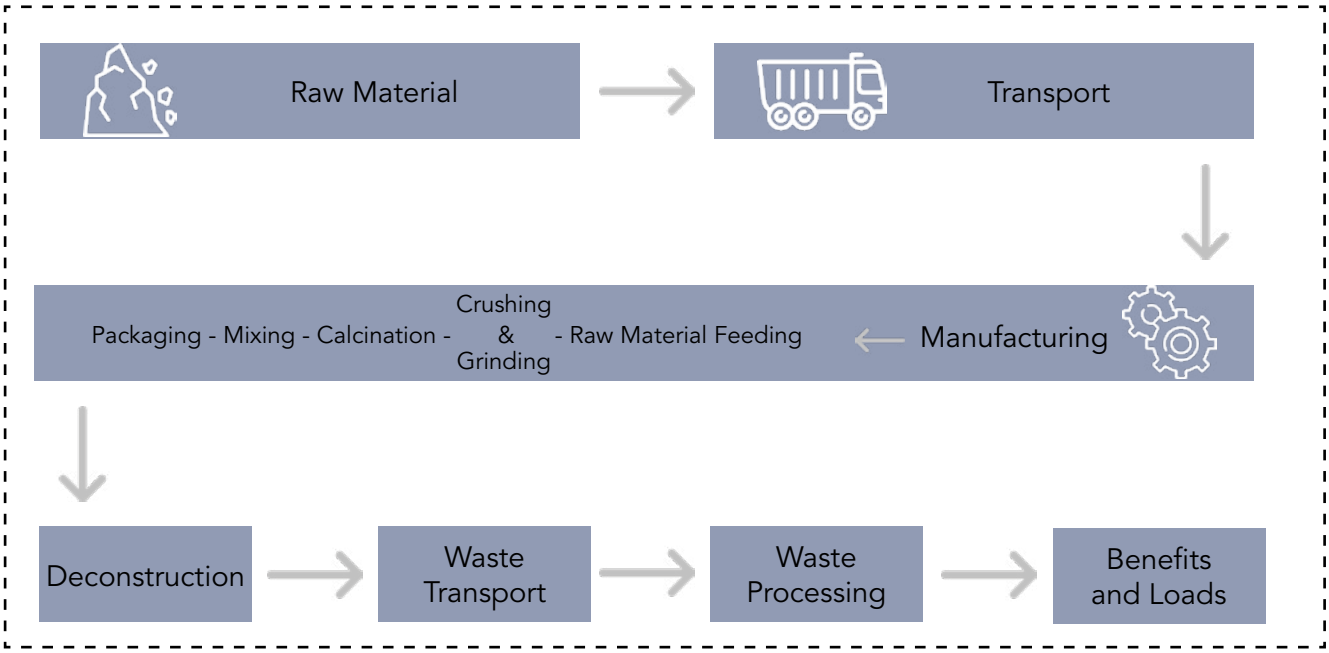
C1 : De-Construction/Demolition
This stage includes the deconstruction of surface applied gypsum based plaster in the construction site. This process can be made with human power or any machine as drill. For deconstruction of 1 kg applied gypsum based plaster, 0.1 kWh electricity consumption is assumed.

C2 : Waste Transport
This stage includes the transportation of the discarded plasters to final disposal. Average distance from deconstruction site to waste processing site for final disposal is assumed to be 100 km.

C3 : Waste Processing
If the wastes are going to landfill , there is no need for any waste process.

C4 : Disposal
Since gypsum-based plasters cannot be physically separated from the applied surface, they go to the inert waste site with the applied surface or part. For this reason, 100% landfill scenario has been asumed.

D : Benefits and Loads
There is no benefit impact as all wastes go to the inert landfill.



More Information

Allocations
Water consumption, energy consumption and raw material transportation were weighted according to 2020 production figures.

In addition, hazardous and non-hazardous waste amounts were also allocated from the 2020 total waste generation.

Cut-Off Criteria
%1 cut-off applied. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

REACH Regulation
No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1 % (wt/wt).

LCA Modelling, Calculation and Data Quality
The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water use is calculated with selected inventory flows in SimaPro according to the PCR.

There are no co-product allocations within the LCA study underlying this EPD.

The SimaPro 9.1 LCA software and the Ecoinvent 3.6 LCA database were used to calculate the environmental impacts. The regional energy datasets were used for all energy calculations.

Geographical Scope
The geographical scope of this EPD is global.

LCA Results

LCA Results of Hand Plaster

Environmental Impacts for 1 kg Alçıbay Hand Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
GWP- Fossil	kg CO_2 eq	0.140	0.059	0.009	0	0.022	0
GWP- Biogenic	kg CO_2 eq	380E-6	537E-6	6.60E-6	0	-19.9E-6	0
GWP- Luluc	kg CO_2 eq	403E-6	561E-6	2.65E-6	0	13.0E-6	0
GWP- Total	kg CO_2 eq	141E-3	60E-3	9.10E-3	0	22.4E-3	0
ODP	kg CFC-11 eq	16.8E-9	1.7E-9	2.14E-9	0	5.81E-9	0
AP	mol H+ eq	0.001	387E-6	38.2E-6	0	227E-6	0
EP- Freshwater	kg PO_4 eq	48.2E-6	62.1E-6	643E-9	0	4.25E-6	0
EP- Marine	kg N eq	129E-6	63.0E-6	11.6E-6	0	75.5E-6	0
EP- Terrestrial	mol N eq	0.001	0.001	127E-6	0	913E-6	0
POCP	kg NMVOC	390E-6	156E-6	40.8E-6	0	232E-6	0
ADPE	kg Sb eq	623E-9	142E-9	155E-9	0	362E-9	0
ADPF	MJ	2.10	0.647	0.141	0	0.446	0
WDP	m^3 depriv.	0.030	0.028	459E-6	0	15.9E-3	0
PM	disease inc.	4.77E-9	1.65E-9	822E-12	0	3.70E-9	0
IR	kBq U-235 eq	0.004	0.001	0.001	0	0.003	0
ETP- FW	CTUe	4.12	0.566	0.113	0	3.64	0
HTTP- C	CTUh	24.6E-12	10.4E-12	2.77E-12	0	11.5E-12	0
HTTP- NC	CTUh	813E-12	501E-12	128E-12	0	314E-12	0
SQP	Pt	0.347	0.037	0.162	0	0.567	0
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics- particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.							
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

Resource Use for 1 kg Alçıbay Hand Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	0.131	0.155	0.002	0	0.020	0
PERM	MJ	0	0	0	0	0	0
PERT	MJ	0.131	0.155	0.002	0	0.020	0
PENRE	MJ	2.10	0.647	0.141	0	0.446	0
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	2.10	0.647	0.141	0	0.446	0
SM	kg	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	0.001	247E-6	29.4E-6	0	621E-6	0

Waste & Output Flows for 1 kg Alçıbay Hand Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	4.22E-6	0	0	0	0	0
NHWD	kg	16.8E-6	0	0	0	0	0
RWD	MJ	0	0	0	0	0	0
CRU	MJ	0	0	0	0	0	0
MFR	MJ	0	0	0	0	0	0
MER	MJ	0	0	0	0	0	0
EE (Electrical)	kg	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.							
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

LCA Results of
Satin Surface Finishing Plaster

Environmental Impacts for 1 kg Satin Surface Finishing Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
GWP- Fossil	kg CO_2 eq	0.141	0.059	0.009	0	0.022	0
GWP- Biogenic	kg CO_2 eq	279E-6	537E-6	6.60E-6	0	-124E-6	0
GWP- Luluc	kg CO_2 eq	407E-6	561E-6	2.65E-6	0	16.6E-6	0
GWP- Total	kg CO_2 eq	142E-3	60E-3	9.10E-3	0	22.2E-3	0
ODP	kg CFC-11 eq	16.4E-9	1.7E-9	2.14E-9	0	4.86E-9	0
AP	mol H+ eq	0.001	387E-6	38.2E-6	0	205E-6	0
EP- Freshwater	kg PO_4 eq	50.1E-6	62.1E-6	643E-9	0	5.99E-6	0
EP- Marine	kg N eq	121E-6	63.0E-6	11.6E-6	0	62.6E-6	0
EP- Terrestrial	mol N eq	0.001	0.001	127E-6	0	751E-6	0
POCP	kg NMVOC	369E-6	156E-6	40.8E-6	0	196E-6	0
ADPE	kg Sb eq	674E-9	142E-9	155E-9	0	411E-9	0
ADPF	MJ	2.14	0.647	0.141	0	0.449	0
WDP	m^3 depriv.	0.036	0.028	459E-6	0	19.0E-3	0
PM	disease inc.	4.42E-9	1.65E-9	822E-12	0	3.09E-9	0
IR	kBq U-235 eq	0.005	0.001	0.001	0	0.003	0
ETP- FW	CTUe	3.42	0.566	0.113	0	2.92	0
HTTP- C	CTUh	28.0E-12	10.4E-12	2.77E-12	0	14.3E-12	0
HTTP- NC	CTUh	825E-12	501E-12	128E-12	0	314E-12	0
SQP	Pt	0.368	0.037	0.162	0	0.496	0
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics- particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.							
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

Resource Use for 1 kg Satin Surface Finishing Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	0.141	0.155	0.002	0	0.029	0
PERM	MJ	0	0	0	0	0	0
PERT	MJ	0.141	0.155	0.002	0	0.029	0
PENRE	MJ	2.14	0.647	0.141	0	0.449	0
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	2.14	0.647	0.141	0	0.449	0
SM	kg	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	0.001	247E-6	29.4E-6	0	862E-6	0

Waste & Output Flows for 1 kg Satin Surface Finishing Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	4.22E-6	0	0	0	0	0
NHWD	kg	16.8E-6	0	0	0	0	0
RWD	MJ	0	0	0	0	0	0
CRU	MJ	0	0	0	0	0	0
MFR	MJ	0	0	0	0	0	0
MER	MJ	0	0	0	0	0	0
EE (Electrical)	kg	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.						
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

LCA Results of Spray Plaster

Environmental Impacts for 1 kg Alçıbay Spray Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
GWP- Fossil	kg CO_2 eq	0.147	0.059	0.009	0	0.024	0
GWP- Biogenic	kg CO_2 eq	552E-6	537E-6	6.60E-6	0	147E-6	0
GWP- Luluc	kg CO_2 eq	414E-6	561E-6	2.65E-6	0	22.9E-6	0
GWP- Total	kg CO_2 eq	148E-3	60E-3	9.10E-3	0	24.7E-3	0
ODP	kg CFC-11 eq	17.3E-9	1.7E-9	2.14E-9	0	4.81E-9	0
AP	mol H+ eq	0.001	387E-6	38.2E-6	0	221E-6	0
EP- Freshwater	kg PO_4 eq	54.0E-6	62.1E-6	643E-9	0	9.57E-6	0
EP- Marine	kg N eq	127E-6	63.0E-6	11.6E-6	0	62.7E-6	0
EP- Terrestrial	mol N eq	0.001	0.001	127E-6	0	744E-6	0
POCP	kg NMVOC	383E-6	156E-6	40.8E-6	0	191E-6	0
ADPE	kg Sb eq	628E-9	142E-9	155E-9	0	298E-9	0
ADPF	MJ	2.22	0.647	0.141	0	0.466	0
WDP	m^3 depriv.	0.046	0.028	459E-6	0	28.9E-3	0
PM	disease inc.	4.66E-9	1.65E-9	822E-12	0	2.96E-9	0
IR	kBq U-235 eq	0.007	0.001	0.001	0	0.005	0
ETP- FW	CTUe	3.42	0.566	0.113	0	2.87	0
HTTP- C	CTUh	27.2E-12	10.4E-12	2.77E-12	0	12.3E-12	0
HTTP- NC	CTUh	909E-12	501E-12	128E-12	0	341E-12	0
SQP	Pt	0.441	0.037	0.162	0	0.492	0
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics- particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.							
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

Resource Use for 1 kg Alçıbay Spray Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	0.153	0.155	0.002	0	0.040	0
PERM	MJ	0	0	0	0	0	0
PERT	MJ	0.153	0.155	0.002	0	0.040	0
PENRE	MJ	2.22	0.647	0.141	0	0.466	0
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	2.22	0.647	0.141	0	0.466	0
SM	kg	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	0.002	247E-6	29.4E-6	0	1.70E-3	0

Waste & Output Flows for 1 kg Alçıbay Spray Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	4.22E-6	0	0	0	0	0
NHWD	kg	16.8E-6	0	0	0	0	0
RWD	MJ	0	0	0	0	0	0
CRU	MJ	0	0	0	0	0	0
MFR	MJ	0	0	0	0	0	0
MER	MJ	0	0	0	0	0	0
EE (Electrical)	kg	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.						
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

LCA Results of Plaster Of Paris (P.O.P)

Environmental Impacts for 1 kg Alçıbay Plaster Of Paris (P.O.P)							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
GWP- Fossil	kg CO_2 eq	0.131	0.059	0.009	0	0.015	0
GWP- Biogenic	kg CO_2 eq	425E-6	537E-6	6.60E-6	0	24.5E-6	0
GWP- Luluc	kg CO_2 eq	395E-6	561E-6	2.65E-6	0	6.16E-6	0
GWP- Total	kg CO_2 eq	132E-3	60E-3	9.10E-3	0	15.1E-3	0
ODP	kg CFC-11 eq	15.3E-9	1.7E-9	2.14E-9	0	4.39E-9	0
AP	mol H+ eq	479E-6	387E-6	38.2E-6	0	161E-6	0
EP- Freshwater	kg PO_4 eq	45.6E-6	62.1E-6	643E-9	0	1.66E-6	0
EP- Marine	kg N eq	112E-6	63.0E-6	11.6E-6	0	56.8E-6	0
EP- Terrestrial	mol N eq	0.001	0.001	127E-6	0	691E-6	0
POCP	kg NMVOC	334E-6	156E-6	40.8E-6	0	174E-6	0
ADPE	kg Sb eq	439E-9	142E-9	155E-9	0	223E-9	0
ADPF	MJ	1.95	0.647	0.141	0	0.304	0
WDP	m^3 depriv.	0.025	0.028	459E-6	0	8.33E-3	0
PM	disease inc.	3.86E-9	1.65E-9	822E-12	0	2.80E-9	0
IR	kBq U-235 eq	0.003	0.001	0.001	0	0.002	0
ETP- FW	CTUe	3.26	0.566	0.113	0	2.80	0
HTTP- C	CTUh	19.7E-12	10.4E-12	2.77E-12	0	6.92E-12	0
HTTP- NC	CTUh	679E-12	501E-12	128E-12	0	208E-12	0
SQP	Pt	0.230	0.037	0.162	0	0.414	0
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics- particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.							
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

Resource Use for 1 kg Alçıbay Plaster Of Paris (P.O.P)							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	0.118	0.155	0.002	0	0.007	0
PERM	MJ	0	0	0	0	0	0
PERT	MJ	0.118	0.155	0.002	0	0.007	0
PENRE	MJ	1.95	0.647	0.141	0	0.304	0
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	1.95	0.647	0.141	0	0.304	0
SM	kg	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	316E-6	247E-6	29.4E-6	0	216E-6	0

Waste & Output Flows for 1 kg Alçıbay Plaster Of Paris (P.O.P)							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	4.22E-6	0	0	0	0	0
NHWD	kg	16.8E-6	0	0	0	0	0
RWD	MJ	0	0	0	0	0	0
CRU	MJ	0	0	0	0	0	0
MFR	MJ	0	0	0	0	0	0
MER	MJ	0	0	0	0	0	0
EE (Electrical)	kg	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.						
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

LCA Results of Adhesive Plaster

Environmental Impacts for 1 kg Alçıbay Adhesive Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
GWP- Fossil	kg CO_2 eq	0.132	0.059	0.009	0	0.016	0
GWP- Biogenic	kg CO_2 eq	325E-6	537E-6	6.60E-6	0	-76.1E-6	0
GWP- Luluc	kg CO_2 eq	397E-6	561E-6	2.65E-6	0	7.65E-6	0
GWP- Total	kg CO_2 eq	133E-3	60E-3	9.10E-3	0	16.0E-3	0
ODP	kg CFC-11 eq	15.3E-9	1.7E-9	2.14E-9	0	4.49E-9	0
AP	mol H+ eq	486E-6	387E-6	38.2E-6	0	169E-6	0
EP- Freshwater	kg PO_4 eq	45.9E-6	62.1E-6	643E-9	0	2.03E-6	0
EP- Marine	kg N eq	113E-6	63.0E-6	11.6E-6	0	58.2E-6	0
EP- Terrestrial	mol N eq	0.001	0.001	127E-6	0	707E-6	0
POCP	kg NMVOC	339E-6	156E-6	40.8E-6	0	179E-6	0
ADPE	kg Sb eq	513E-9	142E-9	155E-9	0	297E-9	0
ADPF	MJ	1.97	0.647	0.141	0	0.324	0
WDP	m^3 depriv.	0.025	0.028	459E-6	0	8.91E-3	0
PM	disease inc.	3.95E-9	1.65E-9	822E-12	0	2.89E-9	0
IR	kBq U-235 eq	0.003	0.001	0.001	0	0.002	0
ETP- FW	CTUe	3.31	0.566	0.113	0	2.85	0
HTTP- C	CTUh	21.1E-12	10.4E-12	2.77E-12	0	8.34E-12	0
HTTP- NC	CTUh	699E-12	501E-12	128E-12	0	228E-12	0
SQP	Pt	0.254	0.037	0.162	0	0.439	0
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics- particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.						
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

Resource Use for 1 kg Alçıbay Adhesive Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	0.122	0.155	0.002	0	0.011	0
PERM	MJ	0	0	0	0	0	0
PERT	MJ	0.122	0.155	0.002	0	0.011	0
PENRE	MJ	1.97	0.647	0.141	0	0.324	0
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	1.97	0.647	0.141	0	0.324	0
SM	kg	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	322E-6	247E-6	29.4E-6	0	222E-6	0

Waste & Output Flows for 1 kg Alçıbay Adhesive Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	4.22E-6	0	0	0	0	0
NHWD	kg	16.8E-6	0	0	0	0	0
RWD	MJ	0	0	0	0	0	0
CRU	MJ	0	0	0	0	0	0
MFR	MJ	0	0	0	0	0	0
MER	MJ	0	0	0	0	0	0
EE (Electrical)	kg	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.						
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

LCA Results of Joint Filler

Environmental Impacts for 1 kg Alçıbay Joint Filler							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
GWP- Fossil	kg CO_2 eq	0.145	0.059	0.009	0	0.024	0
GWP- Biogenic	kg CO_2 eq	443E-6	537E-6	6.60E-6	0	38.0E-6	0
GWP- Luluc	kg CO_2 eq	412E-6	561E-6	2.65E-6	0	21.5E-6	0
GWP- Total	kg CO_2 eq	146E-3	60E-3	9.10E-3	0	23.8E-3	0
ODP	kg CFC-11 eq	17.0E-9	1.7E-9	2.14E-9	0	4.77E-9	0
AP	mol H+ eq	0.001	387E-6	38.2E-6	0	214E-6	0
EP- Freshwater	kg PO_4 eq	52.9E-6	62.1E-6	643E-9	0	8.61E-6	0
EP- Marine	kg N eq	125E-6	63.0E-6	11.6E-6	0	62.1E-6	0
EP- Terrestrial	mol N eq	0.001	0.001	127E-6	0	738E-6	0
POCP	kg NMVOC	377E-6	156E-6	40.8E-6	0	190E-6	0
ADPE	kg Sb eq	656E-9	142E-9	155E-9	0	345E-9	0
ADPF	MJ	2.20	0.647	0.141	0	0.457	0
WDP	m^3 depriv.	0.043	0.028	459E-6	0	26.1E-3	0
PM	disease inc.	4.58E-9	1.65E-9	822E-12	0	2.98E-9	0
IR	kBq U-235 eq	0.006	0.001	0.001	0	0.005	0
ETP- FW	CTUe	3.40	0.566	0.113	0	2.861	0
HTTP- C	CTUh	27.3E-12	10.4E-12	2.77E-12	0	12.8E-12	0
HTTP- NC	CTUh	885E-12	501E-12	128E-12	0	334E-12	0
SQP	Pt	0.427	0.037	0.162	0	0.497	0
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics- particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.						
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

Resource Use for 1 kg Alçıbay Joint Filler							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	0.151	0.155	0.002	0	0.038	0
PERM	MJ	0	0	0	0	0	0
PERT	MJ	0.151	0.155	0.002	0	0.038	0
PENRE	MJ	2.20	0.647	0.141	0	0.457	0
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	2.20	0.647	0.141	0	0.457	0
SM	kg	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	0.002	247E-6	29.4E-6	0	1.48E-3	0

Waste & Output Flows for 1 kg Alçıbay Joint Filler							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	4.22E-6	0	0	0	0	0
NHWD	kg	16.8E-6	0	0	0	0	0
RWD	MJ	0	0	0	0	0	0
CRU	MJ	0	0	0	0	0	0
MFR	MJ	0	0	0	0	0	0
MER	MJ	0	0	0	0	0	0
EE (Electrical)	kg	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.						
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

LCA Results of
Professional Machine Applied Plaster

Environmental Impacts for 1 kg Alçıbay Professional Machine Applied Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
GWP- Fossil	kg CO_2 eq	0.137	0.059	0.009	0	0.019	0
GWP- Biogenic	kg CO_2 eq	363E-6	537E-6	6.60E-6	0	-39.4E-6	0
GWP- Luluc	kg CO_2 eq	403E-6	561E-6	2.65E-6	0	13.4E-6	0
GWP- Total	kg CO_2 eq	138E-3	60E-3	9.10E-3	0	19.3E-3	0
ODP	kg CFC-11 eq	16.0E-9	1.7E-9	2.14E-9	0	4.62E-9	0
AP	mol H+ eq	0.001	387E-6	38.2E-6	0	189E-6	0
EP- Freshwater	kg PO_4 eq	48.8E-6	62.1E-6	643E-9	0	4.76E-6	0
EP- Marine	kg N eq	118E-6	63.0E-6	11.6E-6	0	60.1E-6	0
EP- Terrestrial	mol N eq	0.001	0.001	127E-6	0	722E-6	0
POCP	kg NMVOC	355E-6	156E-6	40.8E-6	0	185E-6	0
ADPE	kg Sb eq	583E-9	142E-9	155E-9	0	329E-9	0
ADPF	MJ	2.06	0.647	0.141	0	0.379	0
WDP	m^3 depriv.	0.033	0.028	459E-6	0	16.0E-3	0
PM	disease inc.	4.22E-9	1.65E-9	822E-12	0	2.95E-9	0
IR	kBq U-235 eq	0.004	0.001	0.001	0	0.003	0
ETP- FW	CTUe	3.35	0.566	0.113	0	2.86	0
HTTP- C	CTUh	23.7E-12	10.4E-12	2.77E-12	0	10.2E-12	0
HTTP- NC	CTUh	778E-12	501E-12	128E-12	0	275E-12	0
SQP	Pt	0.326	0.037	0.162	0	0.465	0
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics- particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.							
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

Resource Use for 1 kg Alçıbay Professional Machine Applied Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	0.134	0.155	0.002	0	0.023	0
PERM	MJ	0	0	0	0	0	0
PERT	MJ	0.134	0.155	0.002	0	0.023	0
PENRE	MJ	2.06	0.647	0.141	0	0.379	0
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	2.06	0.647	0.141	0	0.379	0
SM	kg	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	0.001	247E-6	29.4E-6	0	727E-6	0

Waste & Output Flows for 1 kg Alçıbay Professional Machine Applied Plaster							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	4.22E-6	0	0	0	0	0
NHWD	kg	16.8E-6	0	0	0	0	0
RWD	MJ	0	0	0	0	0	0
CRU	MJ	0	0	0	0	0	0
MFR	MJ	0	0	0	0	0	0
MER	MJ	0	0	0	0	0	0
EE (Electrical)	kg	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.							
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: Deconstruction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads.						

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