

Environmental Product Declaration



In accordance with ISO 14025 and EN 15804 for:

Concrete products for walls and walkways

from

S:t Eriks AB



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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EPD Profile

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	<p>Third party Verifier</p> <p>Pär Lindman, Miljögiraff AB Approved by: The International EPD® System</p>

Product category rules (PCR): The International EPD System PCR for Construction Products and Construction Services 2012:01, version 2.32 and PCR 2012:01-SUB-PCR-G

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

EPD process certification EPD verification

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

Description of the organisation

S:t Eriks develops, manufactures, sells and delivers concrete ground-, roof- and infra systems to professional customers and retailers on the Nordic market. They are certified according to ISO 9001:2015, ISO 14001:2015, BASTA, BBC, Vilma and transQ.

Read more at: steriks.se/om-st-eriks/miljo-och-kvalitet/

Name and location of production sites

The Concrete products for walls and walkways covered in this EPD are produced at four different sites in Sweden, located in Staffanstorp (Industrivägen 4, 245 34 Staffanstorp), Uppsala (Börjegatan 77, 752 28 Uppsala), Vårgårda (Gjuterigatan 2, 447 37 Vårgårda) and Vara (Mossbrott, 534 91 Vara).

EPD Product information

Product name: Concrete products for walls and walkways.

Product identification:

This EPD covers Concrete products for walls and walkways, all identified with product name and code in Appendix A.

Product description:

The concrete products are made of cement, and gravel. A small amount of chemicals is also included in the products. The four production sites in Staffanstorp, Uppsala, Vårgårda and Vara use slightly different raw material compositions, in some cases from different suppliers, and also use different manufacturing fuels. The finished products are prefabricated concrete products used as concrete slabs, concrete paving stones and concrete blocks.. This EPD is valid for all products listed in Appendix A. Specifications for each product can be found at steriks.se/produksortiment/

Average compilation:

Since the assessed product category is produced on four different sites, an average was compiled. This was done based on production volumes of the product category at the four sites, where the production volumes of the assessed product category were compared resulting in each site contributing with a corresponding ratio to the average.

UN CPC code: 37550



Figure 1. Illustrations of two product examples included in the product group assessed, both valid for the declared unit.

LCA information

Declared unit: 1 metric ton of the average Concrete product for walls and walkways.

Reference service life: Not specified

Time representativeness: The data and information collected and modelled for refers to the production year of 2017. The general datasets from used databases are all representative and valid for the year of 2017.

Geographical scope: Sweden

The geographical coverage of this LCA is scenario adapted, i.e. set to Sweden for the manufacturing and to region specifics, when possible, for the raw material extraction and production. This means that the data used for raw material extraction and production is adapted to the geographical region it is extracted from and produced in. The geographical coverage for transports is set to Europe.

Database(s) and LCA software used: The LCA software SimaPro 9.1.0 was used in the assessment, with data from specific raw material EPDs and the databases Ecoinvent 3.5 and U.S. LCI.

Description of system boundaries: Cradle-to-gate, i.e. life cycle stages A1-A3

Excluded lifecycle stages: Since this is a cradle-to-gate EPD, life cycle stages A4, B1-B7, C1-C4 and D are neither considered nor declared.

More information:

The differences between the environmental impact indicators deviate from the average results (i.e. results for the DU) with more than $\pm 10\%$. Ranges are presented in Table 4.

For more information about the EPD owner, visit www.steriks.se.

For more information about the EPD producer, visit www.dge.se.

For more information about the underlying LCA study, contact the LCA practitioner Helena Lindh (helena.lindh@dge.se).

Concrete in use goes through a carbonation process. Carbonation of concrete is a chemical reaction, a natural process by which CO_2 in the ambient air penetrates the concrete and reacts with hydration products in the concrete. Not only the $\text{Ca}(\text{OH})_2$ component of the hardened cement paste is able to carbonate, but also other calcium rich hydrated oxides in the concrete have been shown to gradually transform into carbonate by first decompose to $\text{Ca}(\text{OH})_2$ when pH is getting lower due to carbonation. For concrete carbonation this means that part of the carbon dioxide emitted during cement production is rebound to the concrete during use and end of life stages of a structure. The carbonation process for the products assessed is not considered, since the life cycle stages for usage and end of life is not included.

System diagram

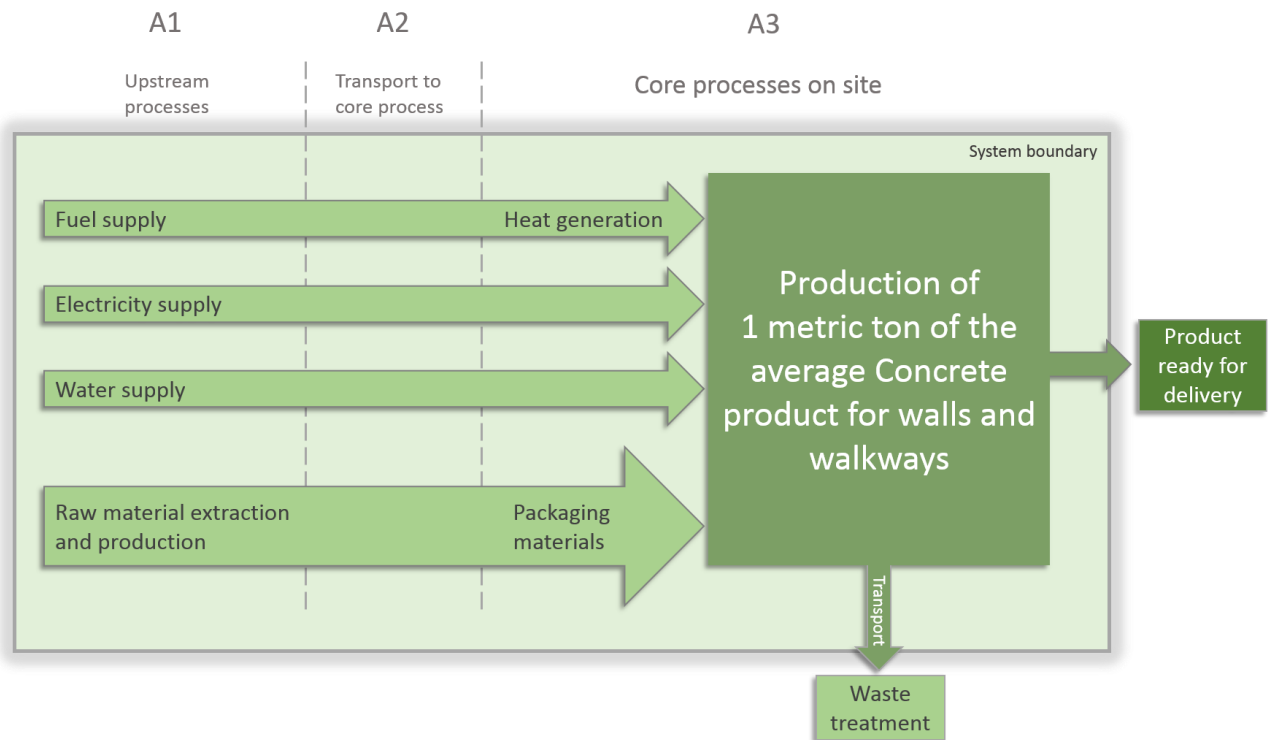


Figure 2. Flow diagram of the assessed life cycle stages for the DU assessed, beginning with raw material extraction and production, followed by transport from supplier to site and finally manufacturing at the core sites.

Table 1. Table declaring the life cycle stages included in the LCA.

X= included in the LCA, MND= Module Not Declared

Product stage			Construction process stage		Use stage								End of life stage				Resource recovery stage
Raw materials	Transport	Manufacturing	Transport	Construction-Installation	Usage stage	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	

Description of life cycle stages A1-A3: Raw material extraction and production, transport from suppliers and manufacturing on site

Table 2. The life cycle stages included in this EPD and a description of each stage.

Stage	Description
A1 Raw materials	Extraction and processing of all raw materials occurring upstream from the manufacturing process, including the waste generated for these processes. The energy generation needed for these processes (extraction, refining and transport of energy from primary energy sources) as well as the energy needed for the manufacturing process (A3).
A2 Transport	The external transportation of raw materials to each of the four manufacturing sites. The modelling includes transportation on road and/or water, with processes for each raw material.
A3 Manufacturing	The manufacturing of the concrete products takes place at S:t Eriks' four sites in Staffanstorp, Uppsala, Vårgårda and Vara. All raw materials are weighted in by a computer driven process. Gravels and cement are mixed, followed by dosing of water and addition of oxides and plasticizer. The concrete mixture is then conveyed to be casted. The casting process is performed in a fully automated machine, in which the concrete mixture is poured into a material pocket and filled in cast oil-coated casts, which are vibrating to create the right thickness and solidity. The products are placed on pallets and delivered to hardening chambers. 24 hours later, they are controlled and delivered to storage for further hardening. Electricity, fuel and water consumption, waste generation and packaging materials are all included in this stage.

Content declaration per declared unit

1 metric ton of the average Concrete product for walls and walkways

Table 3. Content declaration for the declared unit. None of the substances are regarded as SVHCs (Substances of Very High Concern) as defined in the REACH legislation.

Raw materials	Mass ratio
Cement	<15%
Gravel, crushed	<30%
Gravel, natural round	<60%
Plasticizer	<0,1%
Cast oil	<0,001%
Water*	<5%

*The water weight included in the products are the calculated amounts left after hardening, to sum up to the total weight.

Environmental performance

1 metric ton of the average Concrete product for walls and walkways

Environmental impacts

Table 4. The results from the LCA showing the environmental impacts from 1 DU during the life cycle stages assessed.

IMPACT CATEGORY	UNIT	A1	A2	A3	TOTAL A1-A3	Deviation range from average
Acidification potential (AP)	kg SO ₂ eq.	0,25	0,03	0,03	0,31	-5% to +5%
Eutrophication potential (EP)	kg PO ₄ ³⁻ eq.	0,043	0,004	0,008	0,055	-5% to +8%
Global warming potential (GWP100a)	kg CO ₂ eq.	89,8	3,0	3,9	96,8	-9% to +13%
Formation potential of tropospheric ozone (POCP)	kg C ₂ H ₄ eq.	0,017	0,001	0,001	0,019	-10% to +10%
Abiotic depletion potential, elements	kg Sb eq.	1,51E-04	4,16E-05	7,05E-06	1,63E-04	-3% to +13%
Abiotic depletion potential, fossil resources	MJ, net calorific value	359,2	45,9	46,9	451,8	-10% to +9%
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	4,96E-07	5,53E-07	1,67E-06	2,71E-06	-24% to +39%

Use of resources

1 metric ton of the average Concrete products for walls and walkways

Resource use

Table 5. The results from the LCA showing the resource consumption from 1 DU during the life cycle stages assessed.

PARAMETER		UNIT	A1	A2	A3	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	46	1	133	180
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	46	1	133	180
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	383	47	195	625
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	383	47	195	625
Secondary material		kg	2	0	0	2
Renewable secondary fuels		MJ, net calorific value	138	0	0	138
Non-renewable secondary fuels		MJ, net calorific value	150	0	0	150
Net use of fresh water		m ³	1,22	0,01	0,14	1,37

Waste production and output flows

1 metric ton of the average Reinforced concrete product for traffic, railroad and retaining walls

Waste production

Table 6. The results from the LCA showing the waste production from 1 DU during its different life cycle stages.

IMPACT CATEGORY	UNIT	A1	A2	A3	TOTAL
Hazardous waste disposed	kg	1,43E-04	0,001	0,070	0,071
Non-hazardous waste disposed	kg	0,468	7,68E-05	0,126	0,595
Radioactive waste disposed	kg	0,003	0	5,14E-07	0,003

Output flows

Table 7. The results from the LCA showing the output flows from 1 DU during its different life cycle stages.

IMPACT CATEGORY	UNIT	A1	A2	A3	TOTAL
Components for reuse	kg	0	0	0	0
Material for recycling	kg	0	0	0,105	0,105
Materials for energy recovery	kg	0,002	0	1,001	1,003
Energy recovery	MJ	0	0	0	0

References

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Appendix A

The following Tables (Table A1-A3) list all products from S:t Eriks' product range for which this EPD is valid.

Table A1. The concrete slabs products covered by this EPD.

Product name	Product number	Product name	Product number	Product name	Product number	Product name	Product number	Product name	Product number	Product name	Product number
Vision	9672-040630	Ivåg	9821-1830000	Klassik	9610-070600	Premium	9661-060607	Superplattan	9696-040633	Orienteringsplatta	9680-070207
Vision	9672-040632	Ivåg	9821-1830007	Klassik	9610-070607	Premium	9660-060600	Superplattan	9696-040500	Orienteringsplatta	9680-070233
Vision	9672-040629	Spectra	9601-040607	Klassik	9610-070500	Premium	9660-060607	Superplattan	9696-040507	Orienteringsplatta	9681-070300
Vision	9672-060630	Spectra	9601-060607	Klassik	9610-070507	Premium	9661-060500	Superplattan	9696-040533	Orienteringsplatta	9681-070307
Vision	9672-060632	Circus	9522-061200	Klassik	9610-070400	Premium	9661-060507	Superplattan	9696-050600	Orienteringsplatta	9681-070310
Vision	9672-060629	Circus	9522-061207	Klassik	9610-070407	Premium	9660-060500	Superplattan	9696-050607	Rännalsplattor	9631-050000
Vision	9673-040630	Circus Struktur	9522-081200	Klassik	9610-080800	Premium	9660-060507	Superplattan	9696-050633	Rännalsplattor	9631-050100
Vision	3416-400030	Circus Struktur	9527-061207	Klassik	9610-080807	Premium	9662-070600	Superplattan	9696-050500	Rännalsplattor	9631-050200
Vision	3416-400031	kaprifol	9670-050600	Klassik	9610-080700	Premium	9662-070607	Superplattan	9696-050507	Rännalsplattor	9631-050300
Vision	3416-400032	kaprifol	9670-050607	Klassik	9610-080707	Premium	9661-070600	Superplattan	9696-050533	Rännalsplattor	9630-060000
Solitud	9602-040607	Klassik	9611-040600	Klassik	9610-080600	Premium	9661-070607	Superplattan	9696-060600	Rännalsplattor	9630-060100
Solitud	9602-060607	Klassik	9610-040600	Klassik	9610-080607	Premium	9660-070600	Superplattan	9696-060607	Rännalsplattor	9630-060200
Structura	9671-040660	Klassik	9610-040607	Klassik	9610-080500	Premium	9660-070607	Superplattan	9696-060633	Rännalsplattor	9630-060300
Structura	9671-040661	Klassik	9611-040500	Klassik	9610-080507	Premium	9662-070500	Superplattan	9696-060500	Rännalsplattor	9632-090000
Structura	9671-060660	Klassik	9611-040507	Klassik	9610-120700	Premium	9662-070507	Superplattan	9696-060507	Rännalsplattor	9632-090100
Structura	9671-060661	Klassik	9610-040500	Klassik	9610-120707	Premium	9661-070500	Superplattan	9696-060533	Rännalsplattor	9632-090200
Structura	9671-060662	Klassik	9610-040507	Klassik	9610-120600	Premium	9661-070507	Superplattan patina	9691-040600	Rännalsplattor	9632-090300
Structura	3416-400060	Klassik	9612-050600	Klassik	9610-120607	Premium	9660-070500	Superplattan patina	9691-050600	Rännalsplattor	9632-090400
Structura	3416-400061	Klassik	9612-050607	Klassik	9610-072000	Premium	9660-070507	Superplattan patina	9691-060600	Lökränna	9633-020000
Cateau	9678-050650	Klassik	9610-050600	Klassik	9610-072007	Premium	9661-080500	Orienteringsplatta	9680-060000	Lökränna	9633-020600
Cateau	9678-050651	Klassik	9610-050607	Premium	9661-040600	Premium	9661-080507	Orienteringsplatta	9680-060007	Lökränna	9633-020500
Ravel	9677-040610	Klassik	9610-050606	Premium	9660-040600	Premium	9660-080500	Orienteringsplatta	9680-060010	Lökränna	9633-020700
Ravel	9677-040607	Klassik	9612-050600	Premium	9662-050600	Premium	9660-080507	Orienteringsplatta	9681-060000	Lökränna	9633-020800
Ravel	9677-060610	Klassik	9612-050607	Premium	9662-050607	Frilagda plattor	9641-040620	Orienteringsplatta	9681-060007	Symbolplattor	9683-060400
Ravel	9677-060607	Klassik	9610-050500	Premium	9661-050600	Frilagda plattor	9641-040621	Orienteringsplatta	9681-060010	Symbolplattor	9683-060405
Ravel	9677-080610	Klassik	9610-050506	Premium	9661-050607	Frilagda plattor	9641-040622	Orienteringsplatta	9680-060100	Symbolplattor	9683-060500
Ravel	9677-080607	Klassik	9610-050507	Premium	9660-050600	Frilagda plattor	9641-040520	Orienteringsplatta	9680-060107	Symbolplattor	9683-060505
Gerlo New Style	9676-040708	Klassik	9610-050400	Premium	9660-050607	Frilagda plattor	9641-040521	Orienteringsplatta	9680-060133	Symbolplattor	9683-060600
Gerlo New Style	9676-040714	Klassik	9610-050407	Premium	9662-050500	Frilagda plattor	9641-040522	Orienteringsplatta	9680-060307	Symbolplattor	9683-060605
Gerlux	9676-050775	Klassik	9610-060600	Premium	9662-050507	Frilagda plattor	9640-050620	Orienteringsplatta	9680-060333	Symbolplattor	9683-060700
Gerlux	9676-050776	Klassik	9610-060607	Premium	9661-050500	Frilagda plattor	9640-050621	Orienteringsplatta	9680-060300	Symbolplattor	9683-060705
Ivåg	9621-060000	Klassik	9610-060500	Premium	9661-050507	Frilagda plattor	9640-050622	Orienteringsplatta	9681-060100	Kantstöd	9411-700000
Ivåg	9621-060007	Klassik	9610-060507	Premium	9660-050500	Frilagda plattor	9640-070621	Orienteringsplatta	9681-060107	Kantstöd	9411-500000
Ivåg	9821-0620000	Klassik	9610-060400	Premium	9660-050507	Superplattan	9696-040600	Orienteringsplatta	9681-060133	Kantstöd	9411-500007
Ivåg	9821-0620007	Klassik	9610-060407	Premium	9661-060600	Superplattan	9696-040607	Orienteringsplatta	9680-070200		

Table A2. The concrete paving stones covered by this EPD.

Product	Product number	Product	Product number	Product	Product number	Product	Product number
Rustik	9531-050600	Rustik	9532-050314	Munksten	9510-070800	Gräsarmering	9651-080000
Rustik	9531-050607	Rustik	3416-000108	Munksten	9510-070807	Gräsarmering	9651-080007
Rustik	9531-050500	Rustik	3416-000114	Munksten	9510-070700	Gräsarmering	9510-104000
Rustik	9531-050507	Antik	9530-070500	Munksten	9510-070707	Gräsarmering	9650-100000
Rustik	9531-050506	Antik	9530-070507	Munksten	9510-070600	Hexa	9517-080000
Rustik	9531-050505	Antik	9530-070300	Munksten	9510-070607	Hexa	9517-100000
Rustik	9531-050512	Antik	9530-070307	Munksten	9510-070500	Hexa	9517-082000
Rustik	9531-050514	Scala	9520-050600	Munksten	9510-070507	Hexa	9517-102000
Rustik	9531-050300	Scala	9520-050607	Munksten	9510-070400	Hexa	9517-083000
Rustik	9531-050307	Scala	9520-050500	Munksten	9510-070407	Hexa	9517-103000
Rustik	3416-000100	Scala	9520-050507	Munksten	9510-070300	Markant	9513-101400
Rustik	3416-000107	Scala	9520-050300	Munksten	9510-070307	Markant	9513-101407
Rustik	3416-000106	Scala	9520-050307	Munksten	9510-070200	Markant	9513-101410
Rustik	3416-000105	Scala	9520-070700	Munksten	9510-070207	SF	9526-080000
Rustik	3416-000112	Scala	9520-070707	Munksten	9510-101000	SF	9526-080007
Rustik	9533-050100	Scala	9520-070600	Munksten	9510-101007	SF	9526-080005
Rustik	9533-050107	Scala	9520-070607	Munksten	9510-100900	SF	9526-100000
Rustik	9533-050200	Scala	9520-071300	Munksten	9510-100907	SF	9526-100005
Rustik	9533-050207	Scala	9520-071307	Munksten	9510-100800	SF	9526-082000
Rustik	9533-050300	Scala	9520-070500	Munksten	9510-100807	SF	9526-082007
Rustik	9533-050307	Scala	9520-070507	Munksten	9510-100700	SF	9526-082005
Rustik	9533-050000	Scala	9520-070300	Munksten	9510-100707	SF	9526-102000
Rustik	9533-050007	Scala	9520-070307	Munksten	9510-100600	SF	9526-102005
Rustik	9532-050608	Scala	9520-100500	Munksten	9510-100607	SF	9526-083000
Rustik	9532-050614	Munksten	9510-050600	Munksten	9510-100400	SF	9526-083007
Rustik	9532-050508	Munksten	9510-050607	Munksten	9510-100407	SF	9526-083005
Rustik	9532-050514	Munksten	9510-050400	Munksten	9510-072000	SF	9526-103000
Rustik	9532-050308	Munksten	9510-050407	Munksten	9510-072007	SF	9526-103005

Table A3. The concrete blocks products covered by this EPD.

Product name	Product number	Product name	Product number	Product name	Product number
Vertica	9755-451000	Brilliant	9750-430200	Rustik	9730-390006
Vertica	9755-451014	Brilliant	9750-430207	Rustik	9730-390012
Vertica	9755-241100	Brilliant	9750-432100	Rustik	9730-190300
Vertica	9755-241114	Brilliant	9750-432107	Rustik	9730-190307
Vertica	9755-450200	Brilliant	9750-451500	Rustik	9730-190306
Vertica	9755-450214	Brilliant	9750-451507	Rustik	9730-191700
Vertica	9755-452000	Rubin	9752-301000	Rustik	9730-191707
Vertica	9755-452014	Rubin	9752-301007	Rustik	9730-191706
Vertica	9755-220100	Rubin	9752-120100	Rustik	9730-190700
Vertica	9755-220114	Rubin	9752-120107	Rustik	9730-190707
Windsor	9740-300000	Rubin	9752-240100	Klassik	9716-700000
Windsor	9740-300007	Rubin	9752-240107	Klassik	9716-700007
Topaz	9754-301000	Rubin	9752-360200	Klassik	9716-350000
Topaz	9754-301007	Rubin	9752-360207	Klassik	9716-350007
Topaz	9754-331100	Rubin	9752-302100	Scala	9715-390000
Topaz	9754-331107	Rubin	9752-302107	Scala	9715-390007
Topaz	9754-331104	Rubin	9752-320400	Scala	9715-190300
Topaz	9754-420900	Rubin	9752-320407	Scala	9715-190307
Topaz	9754-420907	Rubin	9752-360900	Scala	9715-191700
Smaragd	9753-431000	Rubin	9752-360907	Scala	9715-191707
Smaragd	9753-431007	Iglo	9711-420000	kantblock	9714-500000
Smaragd	9753-431014	Iglo	9711-420007	kantblock	9714-500007
Smaragd	9753-430200	Iglo	9711-420600	Campus	9712-700000
Smaragd	9753-430207	Iglo	9711-420607	Campus	9712-700007
Smaragd	9753-430214	Iglo	9711-210700	Campus	9712-350000
Smaragd	9754-331100	Iglo	9711-210707	Campus	9712-350007
Smaragd	9754-331107	Iglo	9711-280400	Campus	9712-783000
Smaragd	9754-331114	Iglo	9711-280407	Campus	9712-783007
Brilliant	9750-431000	Iglo	9711-340900	Campus	9712-786000
Brilliant	9750-431007	Iglo	9711-340907	Campus	9712-786007
Brilliant	9750-430400	Iglo	9711-500500	Flexiblock	9717-160000
Brilliant	9750-430407	Iglo	9711-500507	Flexiblock	9717-080300
Brilliant	9750-210800	Rustik	9730-390000	Flexiblock	9717-161000
Brilliant	9750-210807	Rustik	9730-390007		

