epd square .

ALAS
BUILDING MATERIALS

Environmental Product Declaration

Average EPD

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

Concrete C8/10, C12/15, C16/20, C20/25, C25/30, C30/37, C35/45, C40/50, C45/55, C50/60

ALAS SLOVAKIA, s.r.o.

Programme
EPD Square | www.epdsquare.com

Programme operator
EPD Square, s.r.o.

EPD Registration number
SQ 00-063

Publication date
26.03.2026

Valid until
25.03.2031

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ALAS BUILDING MATERIALS

General information

Product
Concrete - C8/10, C12/15, C16/20, C20/25, C25/30, C30/37, C35/45, C40/50, C45/55, C50/60

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Registration number
SQ 00-063

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25.03.2031

Owner of the declaration
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Place of production
Polianky 23, 841 01 Bratislava, Slovakia

Product Category Rules (PCR)
The CEN standard EN 15804+A2 serves as the core PCR. In addition, EPD Square PCR v1.0.1, 2025 is used.

Declared unit
1 m^3

Mass per DU
2339 kg

UN CPC code
375

Geographical scope
Europe

Year of study
January – December 2024

Comparability
EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in the context of the building.

EPD author
Sarah Curpen, Silvia Vilčeková, EPD Clarity s.r.o.

Verification type
Independent verification of the declaration and data, according to ISO14025:2006
Internal: ☐
External: ☑

Verified by
Stanislava Borisová, dotEnvironment AB

The owner of the declaration shall be liable for the underlying information and evidence.
EPD Square shall not be liable with respect to manufacturer, life cycle assessment data and evidence.

System boundaries

This EPD is based on system boundary cradle to gate (A1-A3), modules C1-C4 and D.

Modules declared and geographical scope

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	✓	✓	✓	MND	MND	MND	MND	MND	MND	MND	MND	MND	✓	✓	✓	✓	✓
Geographic scope	SK	SK	SK	MND	MND	MND	MND	MND	MND	MND	MND	MND	SK	SK	SK	SK	SK

Modules not declared = MND

Description of organization

ALAS SLOVAKIA, s.r.o. has long been one of the largest aggregate producers in the Slovak Republic and the most important concrete suppliers in western Slovakia. In terms of production sales, our company's area of interest is Bratislava and its surroundings, as well as the Bratislava, Trnava, Nitra and Trenčín regions.

ALAS SLOVAKIA, s.r.o. has an established quality management system that meets the requirements of the STN EN ISO 9001 standard for the extraction and processing of aggregates and the production of ready-mix concrete, as well as the ISO 14001 environmental management system. The goal is to maintain the high quality of our products for customers by constantly optimizing work procedures, production processes, and by investing in modern technologies and strategies with minimal impact on the environment. We apply a gentle approach to nature and the environment at all operations. At the same time, safety is important to us, which is why we emphasize the protection of our employees, partners and people moving around our workplaces.

Product information

Product name

Concrete - C8/10, C12/15, C16/20, C20/25, C25/30, C30/37, C35/45, C40/50, C45/55, C50/60

Product description

Concrete is a material formed by mixing cement, coarse and fine aggregate and water, with or without the incorporation of admixtures and additions. Fresh concrete is manufactured at ready-mix batch plants and is delivered to construction sites in a liquid state. Fresh concrete is placed, compacted and hardened in the desired shape, via a chemical reaction: the hydration of cement. The cement is the binding agent in concrete: it is a finely ground powder that when hydrated forms a paste that sets, hardens, and adheres to other materials and after hardening retains its strength even underwater. It is used as the main raw material in the production of concrete, mortar, grouts and plasters.
Standardized strength (28 days): 10 MPa – 60 MPa

Product application

These specific types of concrete have a wide range of applications and are mainly utilized in civil engineering works and in residential and commercial construction. The product is delivered in bulk with ready-mix trucks.

Geographical scope

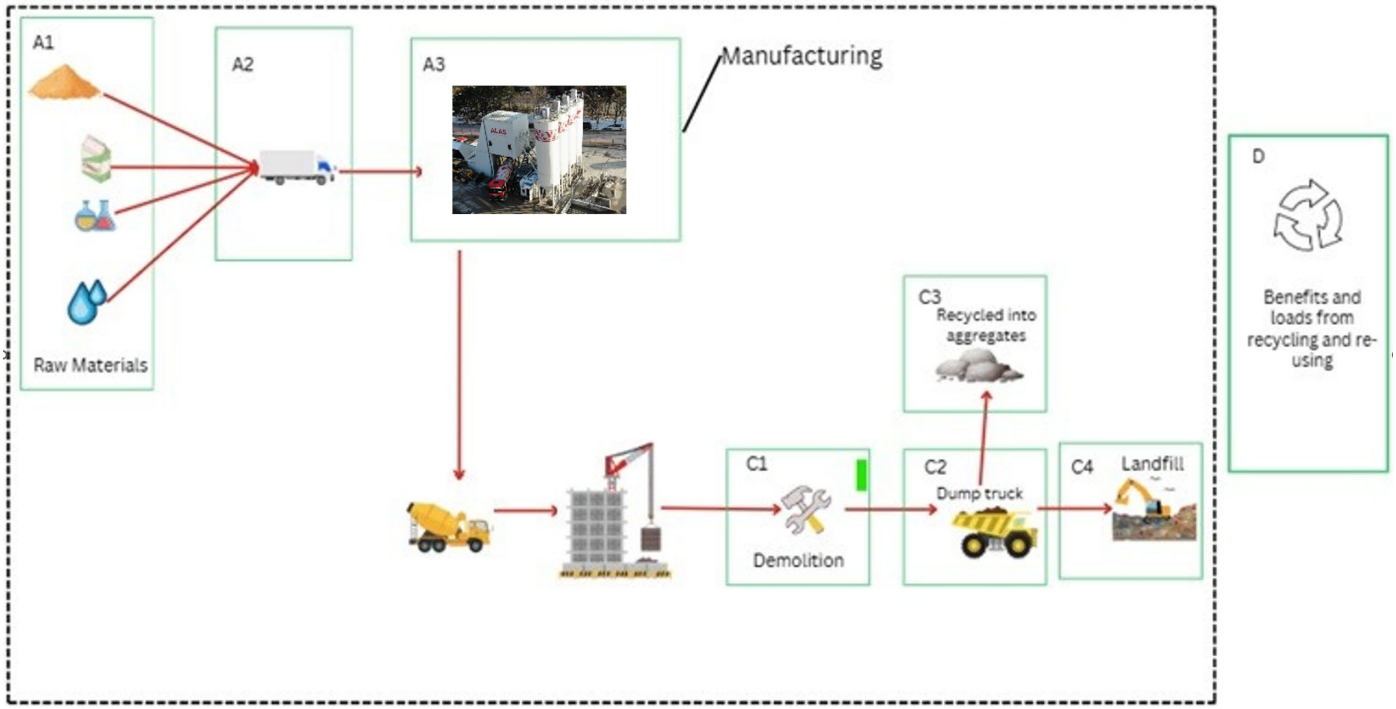
Slovakia

Product contents information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Cement binder	335	0	0
Aggregates	1830	0	0
Admixtures	2,20	0	0
Water	171	0	0
TOTAL	2339	0	0

Manufacturing process

Fresh concrete is produced by mixing fine and coarse aggregates, cement, admixtures, water and additions. Aggregates are stored in marked aggregate dumps, on a reinforced subsoil in separate boxes. Aggregates are loaded by trucks. From the boxes, the aggregates are transported by a loader to marked hoppers of the concrete plant. Cement and additions are stored in silos connected by a screw conveyor to a cement scale at the concrete plant. The silos are marked with the name of the material. Admixtures are stored and transported in containers in the additive warehouse. The mixing water used in production is from the city. Recycled water is used for washing the mixers. Waste generated during production - residual concrete is disposed of in a recycling facility or taken as waste to a landfill.



Life cycle assessment

Cut-off criteria

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

Allocation, estimations, and assumptions

Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 m^3 of the products which are used within this study are calculated by considering the total product weight per annual production. In the production plant, several kinds of products are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total energy consumption, and the generated waste per the declared product are allocated. Subsequently, the produced products output fixed to 1 m^3 and the corresponding amount of product is used in the calculations.

Module A1: This stage considers the extraction and processing of all raw materials. Within the product stage accurate data has been used.

Module A3: In the plant, different products are produced. Therefore, electricity and diesel are allocated on yearly consumption.

Module A2 & C2: Vehicle capacity utilization volume factor is assumed to be 1. Empty returns are taken into account.

Module C1: Electricity consumption during disassembly is assumed 19.76 MJ.

Module C2: Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry which is the most common.

Module C3, C4, D: The modelling includes recycling and landfilling. 70% of concrete is recycled and 30% is taken to landfill for final disposal.

Database(s) and LCA software

This EPD has been created using One Click LCA Pre-Verified EPD Generator. Ecoinvent v3.11 and One Click LCA databases were used as sources of environmental data. Characterisation factors based on Environmental Footprint 3.1. (EF 3.1) have been used throughout the study.

LCA scenarios and additional technical information

Module A1

This module includes the extraction and processing of all raw materials which occur upstream to the manufacturing site. Data on the raw materials were provided directly by the manufacturer. Specific data were collected to reflect the actual inputs and sourcing.

Module A2

The considered transportation impacts include exhaust emissions resulting from transportation of all raw materials from suppliers to production plant as well as the environmental impacts of production of the used fuel. Transport modes and distances were based on the manufacturer's logistics records covering the period from January 2024 to December 2024.

Transportation scenario (A2)

Vehicle type used for transport	Transport, freight, lorry 16-32 metric ton, EURO6
Capacity utilization	100
Capacity utilization factor	1

Module A3

The environmental impacts considered for the production stage cover the manufacturing of the production materials and fuels used by machines. The environmental impacts of this stage have been calculated using the most recent data regarding what applied in the factory. The data is for year 2024. The study considers the losses of main raw materials occurring during the manufacturing process. Part of waste is considered to be recycled and be transferred to the landfill. Electricity data were collected directly from the manufacturer, reflecting actual process energy use on-site. In the plant, electricity and diesel are allocated on yearly consumption.

Manufacturing energy scenario (A3)

Electricity data source and quality	Electricity, low voltage, residual mix	Ecoinvent 3.10.1
Electricity CO_2e / kWh	0,260 CO_2e / kWh	
Diesel source and quality	Diesel, burned in building machine	Ecoinvent 3.11
Diesel kg CO_2e / MJ	0,100 kg CO_2e / MJ	

Module C1

Demolition energy is assumed as 0,52 L fuel per m^3 (Häkkinen, 2020).

Module C2

Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry (Transport freight lorry 16-32 metric ton) which is the most common.

Module C3

70% of the demolished concrete is recycled into aggregates.

Module C4

The remaining 30% of the demolished concrete is landfilled.

End of life (C1, C2, C3, C4)

	Value	Unit
Collected separately	2339	kg
Considered distance to the place of recycling	50	km
Transport to the place of recovery	Truck EURO6, 16-32 t, consumption 35 l / 100 km	-
Recycling	1617	kg
To landfill	693	kg

Benefits and Loads (D)

The loads and benefits of recycled concretes are considered.

Data quality

The data quality information has been provided according to the requirements of EN 15941. The data assessment was done using the Product Environmental Footprint Category Rules. The data has been collected internally, considering the latest available average production amounts and measurements during the time period of 2024. The quality level in this study is qualified as Good. Data quality rating procedure has been performed using a rating system where “1” means Very good quality, and “5” means Very poor quality. No fair, poor or very poor data was found during the assessment of relevant data.

LCA results

Results are presented per 1 m^3(Declared Unit) of the product. Estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

Core environmental impact indicators – EN 15804+A2

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	1,56E+02	ND	ND	1,99E+00	2,25E+01	7,11E+00	4,35E+00	-1,63E+01
GWP-fossil	kg CO_2 eq.	1,56E+02	ND	ND	1,99E+00	2,25E+01	7,11E+00	4,35E+00	-1,63E+01
GWP-biogenic	kg CO_2 eq.	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-LULUC	kg CO_2 eq.	4,51E-02	ND	ND	2,04E-04	7,93E-03	7,28E-04	2,49E-03	-1,47E-02
ODP	kg CFC-11 eq.	1,83E-06	ND	ND	2,95E-08	4,47E-07	1,09E-07	1,26E-07	-1,27E-07
AP	mol H^+ eq.	3,87E-01	ND	ND	1,78E-02	7,02E-02	6,42E-02	3,08E-02	-9,93E-02
EP-freshwater	kg P eq.	1,64E-02	ND	ND	6,40E-05	1,49E-03	2,05E-04	3,57E-04	-4,96E-03
EP-marine	kg N eq.	8,52E-02	ND	ND	8,27E-03	2,37E-02	2,98E-02	1,18E-02	-2,35E-02
EP-terrestrial	mol N eq.	9,51E-01	ND	ND	9,06E-02	2,57E-01	3,26E-01	1,28E-01	-2,85E-01
POCP	kg NMVOC eq.	3,36E-01	ND	ND	2,71E-02	1,10E-01	9,72E-02	4,60E-02	-7,88E-02
ADP-M&M	kg Sb eq.	1,11E-03	ND	ND	7,15E-07	7,34E-05	2,55E-06	6,91E-06	-8,70E-05
ADP-fossil	MJ	1,32E+03	ND	ND	2,59E+01	3,15E+02	9,30E+01	1,07E+02	-1,95E+02
WDP	m^3	4,34E+01	ND	ND	6,67E-02	1,55E+00	2,32E-01	3,08E-01	-2,44E+01

***GWP-total**: Global Warming Potential; **GWP-fossil**: Global Warming Potential fossil fuels; **GWP-biogenic**: Global Warming Potential biogenic; **GWP-LULUC**: Global Warming Potential land use and land use change; **ODP**: Depletion potential of the stratospheric ozone layer; **AP**: Acidification potential, Accumulated Exceedance; **EP-freshwater**: Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional requirements" for indicator given as PO4 eq. **EP-marine**: Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial**: Eutrophication potential, Accumulated Exceedance; **POCP**: Formation potential of tropospheric ozone; **ADP-M&M**: Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil**: Abiotic depletion potential for fossil resources; **WDP**: Water deprivation potential, deprivation weighted water consumption*

Additional (optional) environmental impact indicators – EN 15804+A2

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	6,08E-06	ND	ND	5,07E-07	1,76E-06	1,39E-05	7,02E-07	-1,51E-06
IRP	kBq U235 eq.	2,14E+01	ND	ND	1,10E-02	4,02E-01	4,12E-02	6,71E-02	-1,37E+00
ETP-fw	CTUe	1,06E+03	ND	ND	1,48E+01	4,14E+01	5,12E+00	8,95E+00	-4,66E+01
HTP-c	CTUh	1,88E-08	ND	ND	2,03E-10	3,83E-09	7,31E-10	8,02E-10	-4,35E-09
HTP-nc	CTUh	1,75E-06	ND	ND	3,19E-09	1,98E-07	1,16E-08	1,84E-08	-1,27E-07
SQP	Dimensionless	5,63E+02	ND	ND	1,71E+00	1,88E+02	6,52E+00	2,10E+02	-1,83E+02

***PM**: Particulate matter emissions; **IRP**: Ionising radiation, human health; **ETP-fw**: Ecotoxicity (freshwater); **ETP-c**: Human toxicity, cancer effects; **HTP-nc**: Human toxicity, non-cancer effects; **SQP**: Land use related impacts / soil quality*

Use of natural resources

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	1,36E+02	ND	ND	1,62E-01	5,45E+00	5,89E-01	1,03E+00	-1,78E+01
RPEM	MJ	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	1,36E+02	ND	ND	1,62E-01	5,45E+00	5,89E-01	1,03E+00	-1,78E+01
NRPE	MJ	1,31E+03	ND	ND	2,59E+01	3,15E+02	9,30E+01	1,07E+02	-1,95E+02
NRPM	MJ	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	1,31E+03	ND	ND	2,59E+01	3,15E+02	9,30E+01	1,07E+02	-1,95E+02
SM	kg	7,04E+00	ND	ND	1,07E-02	1,44E-01	3,86E-02	2,68E-02	-2,18E-01
RSF	MJ	5,23E-03	ND	ND	2,81E-05	1,82E-03	1,01E-04	5,55E-04	-1,50E-03
NRSF	MJ	2,41E-04	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m^3	1,24E+00	ND	ND	1,66E-03	4,24E-02	6,15E-03	1,11E-01	-5,79E-01

***RPEE**: Renewable primary energy resources used as energy carrier; **RPEM**: Renewable primary energy resources used as raw materials; **TPE**: Total use of renewable primary energy resources; **NRPE**: Non-renewable primary energy resources used as energy carrier; **NRPM**: Non-renewable primary energy resources used as materials; **TRPE**: Total use of non-renewable primary energy resources; **SM**: Use of secondary materials; **RSF**: Use of renewable secondary fuels; **NRSF**: Use of non-renewable secondary fuels; **W**: Use of net fresh water*

End of life – Waste

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HW	kg	3,80E+00	ND	ND	2,90E-02	4,52E-01	1,04E-01	1,18E-01	-1,52E+00
NHW	kg	1,02E+02	ND	ND	4,23E-01	9,54E+00	1,41E+00	2,69E+00	-2,72E+01
RW	kg	5,28E-03	ND	ND	2,71E-06	9,99E-05	1,01E-05	1,64E-05	-3,31E-04

***HW**: Hazardous waste disposed; **NHW**: Non-hazardous waste disposed; **RW**: Radioactive waste disposed*

End of life – Output flows

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
CR	kg	0,00E+00	ND	ND	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
MR	kg	4,00E-02	ND	ND	0,0E+00	0,0E+00	1,63E+03	0,0E+00	0,0E+00
MER	kg	4,43E-05	ND	ND	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
EEE	MJ	4,20E-04	ND	ND	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
ETE	MJ	0,00E+00	ND	ND	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00

***CR**: Components for reuse; **MR**: Materials for recycling; **MER**: Materials for energy recovery; **EEE**: Exported electric energy; **ETE**: Exported thermal energy*

Information describing biogenic carbon content at factory gate

Biogenic carbon content	Value	Unit
Biogenic carbon content in product	0	kg C
Biogenic carbon content in the accompanying packaging	0	kg C

Specific data (GWP-GHG) and data variation for A1-A3

Specific data and data variation	Value-%
Specific data	89,8%
Variation - product	36%
Variation - site	Not relevant

Hazardous substances

☑ The product does not contain any REACH SVHC substances in amounts greater than 0,1 %.

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Bibliography

ISO 14020:2000
Environmental labels and declarations – General principles

ISO 14025:2010
Environmental labels and declarations - Type III environmental declarations - Principles and procedures

ISO 14040:2006
Environmental management - Life cycle assessment - Principles and framework

ISO 14044:2006
Environmental management - Life cycle assessment - Requirements and guidelines

EN 15804:2012+A2:2019/AC:2021
Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products

EN 15941:2024
Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data

EPD Square PCR v.1.0.1, 2025

EPD Square, General Programme Instructions v.1, 2024

Ecoinvent database v3.10.1/v3.11 (2024) and One Click LCA database

Annex 1

Environmental impacts – EN 15804+A1, CML/ISO 21930

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP	kg CO_2 eq.	1,53E+02	ND	ND	1,98E+00	2,23E+01	7,07E+00	4,31E+00	-1,62E+01
ODP	kg CFC-11 eq.	1,40E-06	ND	ND	2,35E-08	3,55E-07	8,63E-08	1,00E-07	-1,07E-07
AP	kg SO_2 eq.	3,06E-01	ND	ND	1,25E-02	5,33E-02	4,51E-02	2,28E-02	-7,71E-02
EP	kg PO_4 eq.	5,67E-02	ND	ND	2,94E-03	1,36E-02	1,05E-02	7,25E-03	-1,50E-02
POCP	kg C_2H_4 eq.	2,42E-02	ND	ND	9,38E-04	5,09E-03	3,38E-03	2,16E-03	-6,80E-03
ADP-M&M	kg Sb eq.	4,12E-04	ND	ND	6,93E-07	7,17E-05	2,48E-06	6,77E-06	-8,57E-05
ADP-fossil	MJ	9,10E+02	ND	ND	2,57E+01	3,09E+02	9,24E+01	1,06E+02	-1,73E+02

Environmental impacts – GWP-GHG

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP - GHG	kg CO_2 eq.	1,56E+02	ND	ND	1,99E+00	2,25E+01	7,11E+00	4,35E+00	-1,63E+01

***GWP- GHG**: Global Warming Potential, greenhouse gases*

Annex 2 GWP-GHG for each type of concrete

No	Concrete	GWP-GHG [kg CO_2 eq.]
1	C 8/10 - X0 (SK) -Cl 0,40 - Dmax16 - S4	103
2	C 12/15 - X0 (SK) -Cl 0,40 - Dmax16 - S4	113
3	C 16/20 - X0 (SK) -Cl 0,40 - Dmax16 - S4	131
4	C 16/20 - XC1 (SK) -Cl 0,20 - Dmax16 - S4 C 20/25 - XC1 (SK) -Cl 0,20 - Dmax16 - S4 C 25/30 - XC1 (SK) -Cl 0,20 - Dmax16 - S4	136
5	C 20/25 - XC2 (SK) -Cl 0,20 - Dmax16 - S4 C 25/30 - XC2 (SK) -Cl 0,20 - Dmax16 - S4	144
6	C 25/30 - XC3 (SK) -Cl 0,20 - Dmax16 - S4 C 30/37 - XC3 (SK) -Cl 0,20 - Dmax16 - S4	157
7	C 25/30 - XC3 (SK) -Cl 0,20 - Dmax16 - S4 - max. penetration 50 mm according to STN EN 12390-8 C 30/37 - XC3, XD1 (SK) -Cl 0,20 - Dmax16 - S4 - max. penetration 50 mm according to STN EN 12390-8	153
8	C 30/37 - XC4, XD2 -Cl 0,20 - Dmax16 - S4 C 30/37 - XC4, XD2 -Cl 0,20 - Dmax16 - S4 - max. penetration 50 mm according to STN EN 12390-8	158
9	C 35/45 - XC4, XD3 -Cl 0,20 - Dmax16 - S4 C 35/45 - XC4, XD3 -Cl 0,20 - Dmax16 - S4 - max. penetration 50 mm according to STN EN 12390-8	169
10	C 40/50 - XC4, XD3 -Cl 0,20 - Dmax16 - S4 C 40/50 - XC4, XD3 -Cl 0,20 - Dmax16 - S4 - max. penetration 50 mm according to STN EN 12390-8	189
11	C 45/55 - XC4, XD3 -Cl 0,20 - Dmax16 - S4 C 45/55 - XC4, XD3 -Cl 0,20 - Dmax16 - S4 - max. penetration 50 mm according to STN EN 12390-8	200
12	C 50/60 - XC4, XD3 -Cl 0,20 - Dmax16 - S4 C 50/60 - XC4, XD3 -Cl 0,20 - Dmax16 - S4 - max. penetration 50 mm according to STN EN 12390-8	212