Environmental Product Declaration

S-CEL 7G®

In accordance with
EN 15 804
ISO 14 025

Alternative products:	INNOCELL®
Manufactured by:	CIUR a.s.
EPD programme:	Národní program environmentálního značení
Declaration number:	3013EPD-16-0542
Issued:	1.12.2016
Valid until:	30.11.2021
Verified by:	Building Research Institute - Certification company Ltd. Accredited third party verifier

CIUR a.s.

General nformation

CIUR a.s.

Manufacturer	CIUR a.s.
Official address	Malé náměstí 142/3, 110 00 Prague 1, Czech Republic
Manufacturing site	Pražská 1012, 250 01 Brandýs nad Labem, Czech Republic
About	CIUR a.s. is a manufacturing company with a successful history of producing cellulose fibre running since 1991. Since 1998, technology has been developed to manufacture a high quality **specialised** cellulose road fibre S-CEL 7® and also a pelletising process for the production of granules S-CEL 7G®, both used in road constructions worldwide. Both products have been highly successful in the production of Stone Mastic Asphalt (SMA), an asphalt paving mixture used in road surfacing.
Website	www.ciur.cz; www.climatizer.com
e-mail	info@ciur.cz
Phone	00420 326 901 411
VAT	CZ40612724
Product	**S-CEL 7G®**
Alternative products:	INNOCELL®
Description	A stabilizing additive in the form of loose fibres (S-CEL 7®) or granules (S-CEL 7G®) based on cellulose for SMA asphalt mixtures. The delivery of the aditive allows an increase of the bitumen content in coated mixtures.
Product code (HS)	48237090
EPD	Environmental Product Declaration
EPD Programme	Národní program environmentálního značení (National programme of environmental labelling), CENIA, the Czech Environmental Information Agency. Litevská 1174/8, 100 05 Praha 10
Declaration number	3013EPD-16-0542
Registration date	1. 12. 2016
Valid until	30. 11. 2021
General PCR	EN 15 804
Prepared by	Jan Weinzettel, Charles University, Environment Centre (e-mail: weinzettel@seznam.cz)
Based on	Weinzettel J. and D. Kapitulčinová, LCA studie vybraných produktů firmy CIUR a.s. (LCA study of selected CIUR products), CIUR, 2016
Verified by	Barbora Vlasatá, Bulding Research Institute – Certification Company Ltd. (e-mail: vlasata@vups.cz)
Accredited by	Czech Accreditation Institute (a national accreditation body)

S-CEL 7G® stabilizing additive

Product Description

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S-CEL 7G® is designed to be added to asphalt mixture in order to improve its characteristics, particularly, S-CEL 7G®:

- stabilizes the asphalt mixture even with a higher bitumen content
- features the workability of the mixture during installation
- improves the heat resistance of the mixture
- improves physical-mechanical properties of the mixtures
- can also be used in mixtures for low-noise asphalt modification or drainage layers
- due to the addition of fibres to the mixture, an increase in the lifetime and water resistance of the roads can be achieved
- improvements in the dimensional stability at high traffic load, and can reduce rutting
- provides a high resistance to the roads from abrasive wearing.

Benefits

S-CEL 7G® :

- uses 100% post-consumer waste product
- provides greater surface area and strength
- stabilizes binding agent (Bitumen) by helping to maintain its viscosity and reducing its drainage (known as "drain down")
- improves durability of the wearing course
- recognized as the most cost-efficient and effective fibre filler for SMA applications
- meets ISO 9001 quality requirements

Storage

Cellulose fibre is produced from recycled paper and therefore should always be stored under cover and away to avoid water ingress and ignition sources. Do not use cellulose fibre if it is wet or has been wet and has subsequently dried out.

Table 1 Technical parameters.

Average length of the fibre approx.	1.1 mm
Thickness of the fibre approx.	35 - 45 μm
Bulk density approx.	420 - 520 kg.m^{-3}
pH factor	7.5 +/- 1
Average moisture less than	5.5 % of weight
Appearance	grey - brown granules
Granule diameter	6 mm
Average length of granules	2 - 10 mm
Recommended dosage	3 - 4 kg / 1 t of mixture

EPD DETAILS

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Function and declared unit

The main function of S-CEL 7G ® is to improve the properties of asphalt. Due to it being a semi-product, the declared unit is set to 1kg of S-CEL 7G ®.

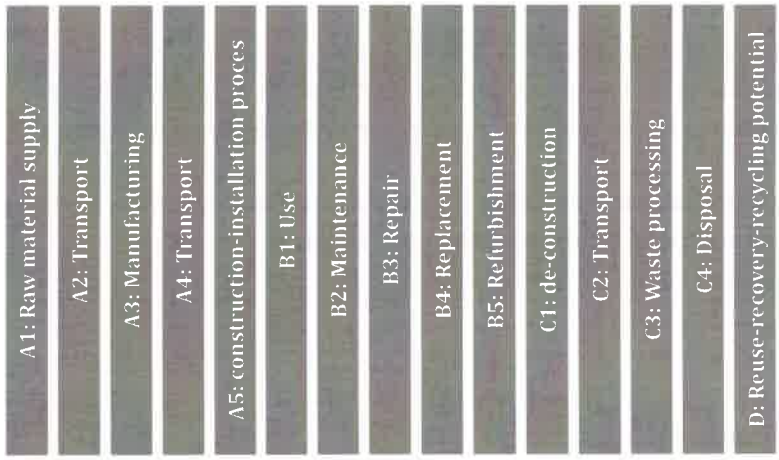

Figure 1 Overview of life cycle modules.

Reference service life

Not specified.

Life cycle stages

The life cycle stages covered by this EPD include modules A1-A3.

EPD-type

Cradle to gate – modules A4-D are not part of this EPD.

Comparability of EPD

EPD of construction products may not be comparable if they do not comply with EN 15 804.

Key assumptions

Environmental impacts of upstream processes of all secondary materials are excluded. However, the transport processes to the manufacturing site of a distance of 50 km are included in the assessment.

Product Description

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Electricity mix

Electricity mix used in LCA is the Ecoinvent 3 process Electricity, medium voltage {CZ}| market for | Alloc Def, U with these inputs:

Electricity, high voltage {CZ}| electricity production, nuclear, pressure water reactor | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, lignite | Alloc Def, U
Electricity, high voltage {CZ}| import from PL | Alloc Def, U
Electricity, high voltage {CZ}| heat and power co-generation, lignite | Alloc Def, U
Electricity, high voltage {CZ}| import from DE | Alloc Def, U
Electricity, high voltage {CZ}| heat and power co-generation, hard coal | Alloc Def, U
Electricity, high voltage {CZ}| treatment of blast furnace gas, in power plant | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, hard coal | Alloc Def, U
Electricity, high voltage {CZ}| heat and power co-generation, wood chips, 6667 kW, state-of-the-art 2014 | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, hydro, run-of-river | Alloc Def, U
Electricity, high voltage {CZ}| heat and power co-generation, biogas, gas engine | Alloc Def, U
Electricity, high voltage {CZ}| heat and power co-generation, natural gas, conventional power plant, 100MW electrical | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, hydro, pumped storage | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, hydro, reservoir, non-alpine region | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, wind, 1-3MW turbine, onshore | Alloc Def, U
Electricity, high voltage {CZ}| treatment of coal gas, in power plant | Alloc Def, U
Electricity, high voltage {CZ}| heat and power co-generation, oil | Alloc Def, U
Electricity, high voltage {CZ}| import from AT | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, wind, <1MW turbine, onshore | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, natural gas, conventional power plant | Alloc Def, U
Electricity, high voltage {CZ}| import from SK | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, oil | Alloc Def, U
Electricity, high voltage {CZ}| electricity production, natural gas, combined cycle power plant | Alloc Def, U

Allocation

Mass allocation is applied on the processes within the manufacturing site.

System boundaries

Secondary materials are assumed with zero environmental impacts at their production site, only the transport is included for input materials and no impacts are allocated to waste for reuse generated at the production site. Complete production chains are included for other input products and materials.

Reference year and geographical scope

The EPD is based on data collected for year 2015. The geographical scope is global, however, the EPD is only relevant to products manufactured at the specified production site at Brandýs nad Labem, Czech Republic.

Content Declaration

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S-CEL7G® is composed of those materials:

Material	Content
Waste paper	>85%
LDPE	<15%

The main component of **S-CEL 7G®** is waste paper which is a secondary material obtained mainly from surplus production of newsprint and post-consumer waste.

Environmental Performance

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Resource use

Table 2 Use of resources per declared unit (1kg of product).

Indicator	Unit	1kg
Use of renewable primary energy excluding renewable energy used as raw materials	MJ, net calorific value	0.98
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0.00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	0.98
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	6.32
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0.00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	6.32
Use of secondary material	kg	0.88
Use of renewable secondary fuels	MJ, net calorific value	0.00
Use of non renewable secondary fuels	MJ, net calorific value	0.00
Use of net fresh water	m^3	0.00

Potential environmental impacts

Table 3 Potential environmental impacts per declared unit (1 kg of product)

Impact category	Unit	A1-A3
Abiotic depletion	kg Sb_{eq}	$2.7 * 10^{-7}$
Abiotic depletion (fossil fuels)	MJ	4.9
Global warming (GWP100a)	kg CO_{2eq}	0.33
Global warming (GWP100a) C-content, given as a negative number	kg CO_{2eq}	-0.7
Ozone layer depletion (ODP)	kg CFC-11 $_{eq}$	$2.2 * 10^{-8}$
Photochemical oxidation	kg C_2H_{4eq}	$5.8 * 10^{-5}$
Acidification	kg SO_{2eq}	$1.1 * 10^{-3}$
Eutrophication	kg PO_4^{---} $_{eq}$	$1.1 * 10^{-3}$

Waste generation

Table 4 Waste generation per declared unit (1 kg of product)

Waste type	Unit	1kg
Hazardous waste disposed	kg	$5 * 10^{-6}$
Non hazardous waste disposed	kg	0,026
Radioactive waste disposed	kg	-

Verification

CEN standard EN 15804 serves as the core PCR (product category rules)

Independent verification of the declaration and data, according to EN ISO 14025:2010

☐ internal ☒ external

Third party verifier:

Building Research Institute - Certification company Ltd.

Additional information

CIUR a.s. was certified according to ISO 9001:2008 (Quality Management), ISO14001:2004 (Environmental Management) and OHSAS 18001:2007 (Occupational Health and Safety Management).

References

Weinzettel, J., D. Kapitulčinová, LCA studie vybraných produktů firmy CIUR a.s. (LCA study of selected products manufactured by CIUR a.s.), CIUR, 2016.

EN 15804:2012+A1:2013 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

ISO 14 025:2006 Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures