PRODUCT CARBON FOOTPRINT

according to ISO 14067, ISO 14040 and ISO 14044

PVC COMPOUNDS

INEOS Compounds

PCF holder:
INEOS Compounds Switzerland AG
Industrie Nord 2
5643 Sins
www.ineos.com

Life cycle assessor: PeoplePlanetProfit GmbH
Preparation date: 19.10.2023
Note: The LCA was calculated with the software Umberto LCA +. The method of preparation can be requested.

Validity period: 19.10.2028
Note on validity: These manufacturer-specific balances are valid for five years from the date of preparation.

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Summary

PCF holder

INEOS Compounds Switzerland AG
Industrie Nord 2
5643 Sins
www.ineos.com

Life cycle assessor

PeoplePlanetProfit GmbH
Gerberstrasse 7
88250 Weingarten

Designation

PVC compounds

Description and definition of the product

HS 1013 BA 20 in Grau
Description: Rigid Compound Injection
Colour: Grey
Application: Fittings
Shape: Pellets

General Properties	Test method	Units	Value
Density	EN ISO 1183-1A	g/cm³	1.38
Hardness (15 sec, 23°C)	EN ISO 686	Shore D	78
Vicat temperature	ISO 306	°C	77
Thermal stability (200 °C)	CEI 20-34/3-2, ISO 182-1	Min	20

HEZ 0177 Weiss 9690
Description: Rigid Compound Extrusion
Colour: White
Application: Profiles – external usage
Shape: Pellets

General Properties	Test method	Units	Value
Density	EN ISO 1183-1A	g/cm³	1.58
Hardness (15 sec, 23°C)	EN ISO 686	Shore D	79
Vicat temperature	ISO 306	°C	80
Thermal stability (200 °C)	CEI 20-34/3-2, ISO 182-1	Min	33

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PVC COMPOUNDS

INEOS Compounds

VX 334 BK 67
Description: Flex Compound Extrusion
Colour: Black
Application: Automotive glass encapsulation
Shape: Pellets

General Properties	Test method	Units	Value
Density	EN ISO 1183-1A	g/cm³	1.30
Hardness (15 sec, 23°C)	EN ISO 686	Shore A	62
Thermal stability (200°C)	CEI 20-34/3-2, ISO 182-1	Min	98

WE 7866E CRI 91020
Description: Flex Compound Extrusion
Colour: Transparent
Application: Hoses, gaskets, …
Shape: Pellets

General Properties	Test method	Units	Value
Density	EN ISO 1183-1A	g/cm³	1.22
Hardness (15 sec, 23°C)	EN ISO 686	Shore A	79
Thermal stability (200°C)	CEI 20-34/3-2, ISO 182-1	Min	48

WE 7866E CRI 91020
Description: Flex Compound Extrusion; Bio Plasticizer
Colour: Transparent
Application: Hoses, gaskets, …
Shape: Pellets

General Properties	Test method	Units	Value
Density	EN ISO 1183-1A	g/cm³	1.22
Hardness (15 sec, 23°C)	EN ISO 686	Shore A	70
Thermal stability (200°C)	CEI 20-34/3-2, ISO 182-1	Min	40

Document number -

Preparation date 19.10.2023

Validity period 19.10.2028

Objective This balance is intended to report the Product Carbon Footprint of PVC compounds from INEOS Compounds (cradle to gate).

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INEOS Compounds

Method and Notes

The method for the preparation of the PCF can be requested.

These manufacturer-specific balances are valid for five years from the date of preparation.

A comparison of the PCF values is possible in principle, but not recommended, as assumptions in the report, models and the balancing software can differ from each other.

The LCA was calculated with the software Umberto LCA + on the basis of ISO 14067, ISO 14040 and ISO 14044.

The method is documented in a background report. The LCA study includes the definition of the objective and the scope of the study, the life cycle inventory, the impact assessment and the interpretation.

Considered life cycle

In the PCF, the manufacturing phase was taken into account (cradle to gate).

Data base

The LCA data was collected by the INEOS Compounds Switzerland AG and reviewed by PPP.

System boundaries

The system boundaries refer to the site in Sins, Switzerland. Outsourced processes were not present.

Functional / declared unit

The declared unit is 1 kg PVC compound.

The functional unit is as follows:

Product	Density
HS1013 BA 20 IN GRAU	1.38 g/cm³
HEZ0177 WEISS 9690	1.58 g/cm³
WE7866E CRI 91020	1.22 g/cm³
VX 334 BK 67	1.30 g/cm³
WE7866 BIO2 AMBER 91020	1.22 g/cm³

Information modules

The following information modules or life cycle phases were considered were considered:

- Production A1 - A3

Interpretation of results

The main environmental impacts in the production of XM80758 are caused by the raw material PVC or its upstream chains. In the case of the Biovyn ECOV001, Recycled Tyres ECOV Version 2 and Heavy Metal Free + Green Lubs ECOV Version 3, the environmental impact is mainly due to the energy consumption for the production and transport of the intermediate products. Furthermore, the additives also have a moderate impact on the environmental impact of these products.

The differences in the environmental impact of the products lie in the various intermediate products and raw materials used. Above all, the selection and use of the PVC (original versus bio-attributed) as well as some specific additives (plasticizer) have an influence on this. WE7866 BIO2 AMBER 91020 has the lowest environmental impact because bio-attributed PVC and polyester-based plasticizer are used.

The main environmental impacts in the production of HS1013 BA 20 IN GRAU, HEZ0177 WEISS 9690, VX 334 BK 67 and WE7866E CRI 91020 are caused by the raw material PVC or its upstream chains. In the case of WE7866 BIO2 AM-BER 91020, the environmental impact is mainly due to the polyester resin. The bio-attributed PVC play a more subordinate role. With regard to HEZ0177 WEISS 9690, a titanium dioxide based pigment also has a decisive influence on the values. For VX 334 BK 67, this applies to a specific additive. Concerning WE7866E CRI 91020, also a specific additive must also be mentioned with regard to its effect on the PCF. Other additives, pigments, fillers and lubricants have a secondary influence.

The transport of the intermediate products also have also a moderate impact on the environmental impact of the products.

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Product carbon footprint over the life cycle of PVC compounds

	Manufacturing phase			Construction phase		Use phase						Disposal phase				
	Provision of raw materials	Transport	Production	Installation	Transport	Use	Inspection/maintenance/cleaning	Repair	Exchange/replacement	Operational energy use	Operational water use	Dismantling	Transport	Waste management	Landfill	Recycling potential
	X	X	X													

PCF – Product Carbon Footprint (ISO 14067)

X: Declared

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INEOS Compounds

PVC COMPOUNDS

HS1013 BA 20 IN GRAU	Unit	Production A1 – A3	Transport A4	Installation/assembly A5	Usage B1	Inspection/Maintenance/ Cleaning B2	Repair B3	Replacement/Replacement B4	Improvement/Modernization B5	Operational energy use B6	Operational water use B7	Dismantling/demolition C1	Transport C2	Waste treatment C3	Elimination C4	Recycling potential D
PCF total	kg CO2 e	2.18E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF fossil	kg CO2 e	2.09E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF biogenic	kg CO2 e	1.96E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF land use	kg CO2 e	6.70E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF Aviation	kg CO2 e	2.45E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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INEOS Compounds

PVC COMPOUNDS

HEZ0177 WEISS 9690	Unit	Production A1 – A3	Transport A4	Installation/assembly A5	Usage B1	Inspection/Maintenance/ Cleaning B2	Repair B3	Replacement/Replacement B4	Improvement/Modernization B5	Operational energy use B6	Operational water use B7	Dismantling/demolition C1	Transport C2	Waste treatment C3	Elimination C4	Recycling potential D
PCF total	kg CO2 e	2.12E-00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF fossil	kg CO2 e	2.09E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF biogenic	kg CO2 e	-1.55E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF land use	kg CO2 e	4.88E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF Aviation	kg CO2 e	5.59E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Life cycle assessor: PeoplePlanetProfit GmbH
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INEOS Compounds

PVC COMPOUNDS

VX 334 BK 67	Unit	Production A1 – A3	Transport A4	Installation/assembly A5	Usage B1	Inspection/Maintenance/ Cleaning B2	Repair B3	Replacement/Replacement B4	Improvement/Modernization B5	Operational energy use B6	Operational water use B7	Dismantling/demolition C1	Transport C2	Waste treatment C3	Elimination C4	Recycling potential D
PCF total	kg CO2 e	2.30E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF fossil	kg CO2 e	2.17E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF biogenic	kg CO2 e	-4.52E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF land use	kg CO2 e	1.33E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF Aviation	kg CO2 e	1.85E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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INEOS Compounds

PVC COMPOUNDS

WE7866E CRI 91020	Unit	Production A1 – A3	Transport A4	Installation/assembly A5	Usage B1	Inspection/Maintenance/ Cleaning B2	Repair B3	Replacement/Replacement B4	Improvement/Modernization B5	Operational energy use B6	Operational water use B7	Dismantling/demolition C1	Transport C2	Waste treatment C3	Elimination C4	Recycling potential D
PCF total	kg CO2 e	3.21E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF fossil	kg CO2 e	3.05E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF biogenic	kg CO2 e	-3.06E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF land use	kg CO2 e	1.90E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF Aviation	kg CO2 e	3.07E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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INEOS Compounds

PVC COMPOUNDS

WE7866 BIO2 AMBER 91020	Unit	Production A1 – A3	Transport A4	Installation/assembly A5	Usage B1	Inspection/Maintenance/ Cleaning B2	Repair B3	Replacement/Replacement B4	Improvement/Modernization B5	Operational energy use B6	Operational water use B7	Dismantling/demolition C1	Transport C2	Waste treatment C3	Elimination C4	Recycling potential D
PCF total	kg CO2 e	2.07E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF fossil	kg CO2 e	1.81E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF biogenic	kg CO2 e	7.17E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF land use	kg CO2 e	1.85E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF Aviation	kg CO2 e	1.52E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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INEOS Compounds

PVC COMPOUNDS

Packaging (Applies to all)	Unit	Production A1 – A3	Transport A4	Installation/assembly A5	Usage B1	Inspection/Maintenance/ Cleaning B2	Repair B3	Replacement/Replacement B4	Improvement/Modernization B5	Operational energy use B6	Operational water use B7	Dismantling/demolition C1	Transport C2	Waste treatment C3	Elimination C4	Recycling potential D
PCF total	kg CO2 e	-6.42E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF fossil	kg CO2 e	7.00E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF biogenic	kg CO2 e	-7.65E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF land use	kg CO2 e	1.16E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCF Aviation	kg CO2 e	5.53E-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND