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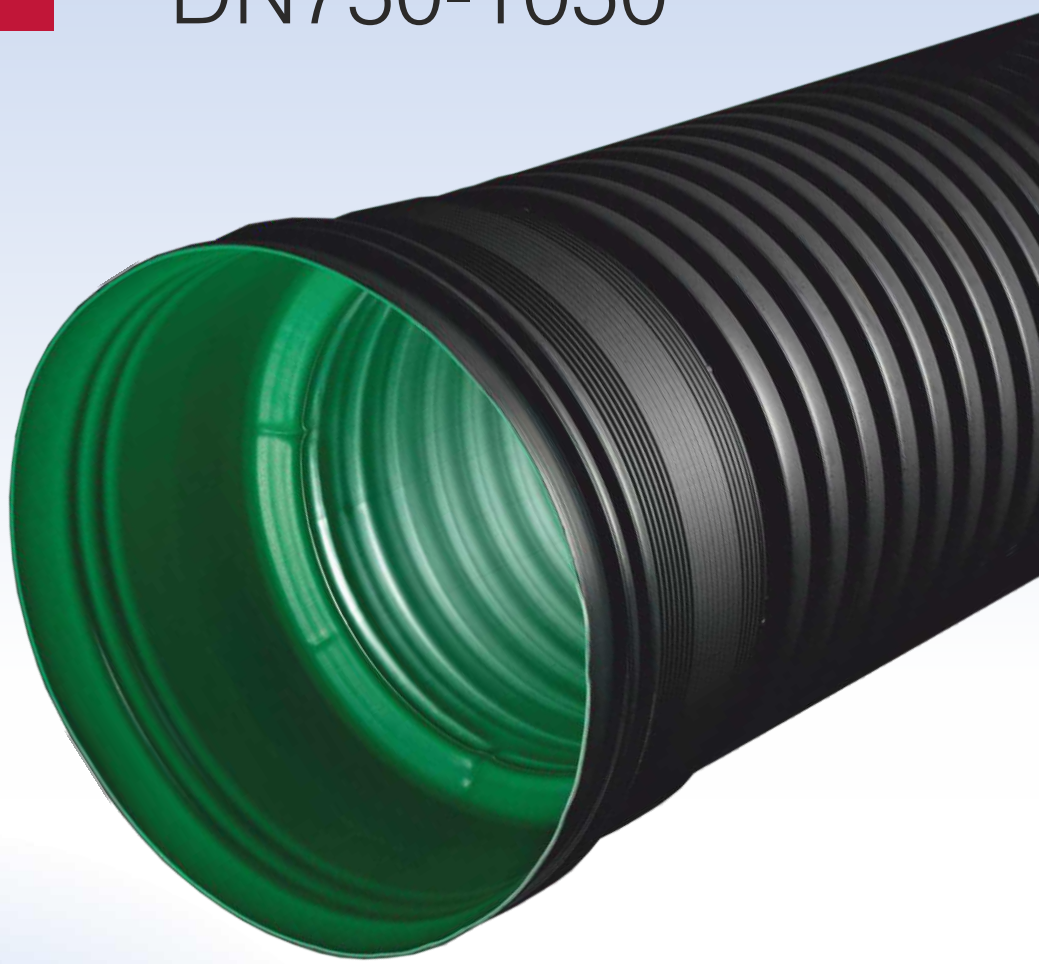
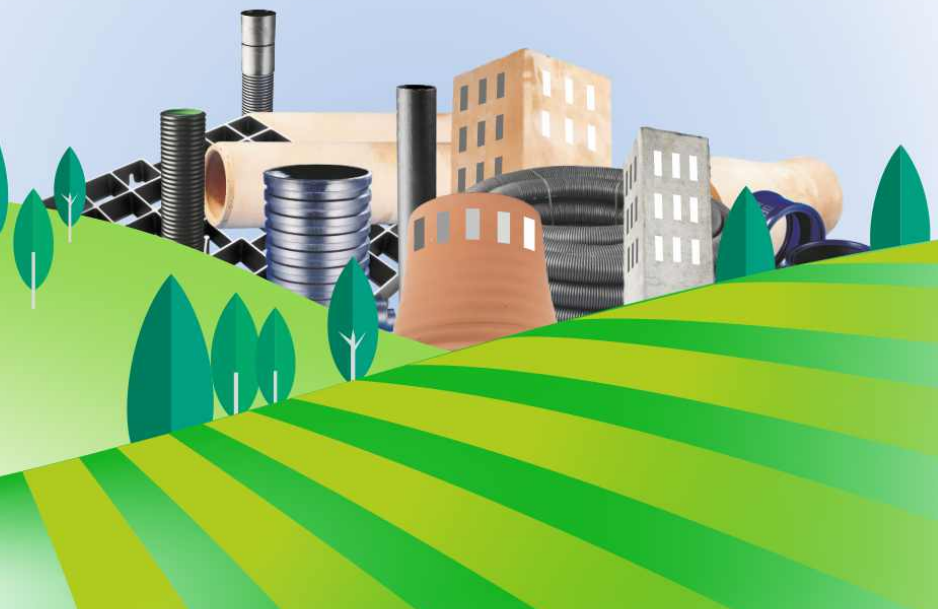
Socketed MetroDrain pipes DN750-1050



Environmental Product Declaration (EPD)



In accordance with
EN 15804+A2
& ISO 14025 / 21930

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Scope

This document is an Environmental Product Declaration of Naylor Socketed MetroDrain pipes from Cradle-to-gate with options, modules C1-C4 and module D for the expected 50-year service life in accordance with MCHW series 500 BBA. This is from raw material extraction to the end-of-life process for the product. The environmental impact will be recorded during each step and assessed at the end of the document to show where most emissions are created. The environmental burdens are calculated in relation to a declared unit. Manual labour is not included in the emissions. Operational and maintenance emissions are out of scope for the pipes as maintenance is not needed.

Manufacturer information

Manufacturer	Naylor Drainage Ltd
Address	Clough Green, Cawthorne, Barnsley S75 4AD
E-Mail	info@naylor.co.uk
Website	www.naylor.co.uk

Product Category Rules	This EPD uses CEN Standard EN 15804 as the core PCR
EPD Standards	This EPD is in accordance with the EN 15804+A2 and ISO 14025 standards
Reference service life	50 years
Declared unit	1kg of HDPE pipe
EPD type	Cradle-to-gate with options, modules C1-C4 and module D
Background database	EcoInvent 3.6
Date of EPD and Validity	July 2022 – July 2027

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

System boundary

In accordance with the EN15804:2012+A2:2019 requirements, this document is cradle-to-gate with options, modules C1-C4 and module D. This includes the processes covered in manufacturing, construction, use and end-of-life stages as well as considering the benefits and loads beyond the system boundary scenario.
The material use of 1kg HDPE is 70% recycled and 30% virgin material.

Product application

Socketed MetroDrain pipes are surface and underwater drainage in the following pipe diameters:750mm, 900mm & 1050mm.

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Product raw material consumption

Material	% Of product	Usability		
		Renewable	Non-renewable	Recycled
Plastic	100%			x

Environmental parameters derived from LCA

Product stage: Raw material extraction and processing, transportation to manufacturer, manufacturing.

- Production of raw material for HDPE pipes
- Transport of HDPE pipe raw material to converter
- Extrusion and packaging of pipes

Construction stage: Includes all energy provisions, waste management processes and during construction up to waste disposal.

- Transport of HDPE drainage pipe system to the location
- Installation of HDPE drainage pipe system

Use stage (maintenance and operational use): Includes transport and all energy provisions, waste management processes up to waste for the final disposal during this use stage.

- Operational use of HDPE drainage pipe
- Maintenance of HDPE drainage pipe

End-of-life stage: Includes all energy provisions during the end-of-life stage.

- Extraction of HDPE drainage pipe systems after 50 years of expected service life
- Transport of HDPE drainage pipe system after 50 years of expected service life to end of life
- End-of-life treatment of HDPE drainage pipe

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Product Stage

- Extraction of raw materials for HDPE pipes
- Transportation of raw materials to factory
- Production of HDPE pipes

Construction Stage

- Transport HDPE pipes to trenches
- Installation of HDPE pipes in required location

Use Stage

- Usage and maintenance of HDPE pipes in required location

End-of-life

- Disassembly of HDPE pipes after service life
- Transportation of HDPE pipes to end-of-life treatment
- End-of-life waste treatment of complete HDPE pipes

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Parameters describing environmental Impacts

Impact Category	Global warming potential - Fossil	Global warming potential - Biogenic	Global warming potential - LULUC	Ozone depletion	Acidification potential	Eutrophication potential - Fresh water	Eutrophication potential - Marine	Eutrophication potential - Terrestrial	Photochemical oxdiation creation potential
	kgCO2e	kgCO2e	kgCO2e	kg CFC-11 eq	Mol H+ eq	kg Po4 eq	kg N eq	Mol N eq	kg NMVOC nt
Product stage	2.23	4.82E-02	8.13E-04	6.75E-07	8.66E-03	7.87E-05	2.01E-03	2.2E-02	9.06E-03
Construction stage	9.06E-01	8.58E-01	3.67E-05	4.75E-08	2.19E-03	2.92E-06	9.8E-04	1.04E-02	2.98E-03
Use stage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
End-of-life stage	1.56	1.68E-04	2.92E-05	4.20E-08	2.15E-03	1.18E-06	9.89E-04	1.03E-02	2.85E-03
Total	4.7	9.06E-01	8.79E-04	7.65E-07	1.3E-02	8.28E-05	3.98E-03	4.26E-02	1.48E-02
External Impacts - D (not in totals)	-3.53E-01	2.06E-02	2.2E-04	-1.77E-07	-7.7E-04	-7.32E-06	-1.93E-04	-2.13E-03	-1.33E-03

Parameters describing resource input

Impact Category	PERE	PERM	PERT	PENRE	PENRM	PENRT
	MJ	MJ	MJ	MJ	MJ	MJ
Product stage	2.4	N/A	2.4	3.26E+01	3.82E+01	7.08E+01
Construction stage	2.91E-02	N/A	2.91E-02	3.12	N/A	3.12
Use stage	N/A	N/A	N/A	N/A	N/A	N/A
End-of-life stage	2.6E-02	N/A	2.6E-02	2.74	N/A	2.74
Total	2.46	N/A	2.46	3.84E+01	3.82E+01	7.66E+01
External impact (D)	7.78E-02	N/A	7.78E-02	-4.86	-1.43E+01	-1.92E+01

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PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials.

PERM = Use of renewable primary energy resources used as raw materials.

PERT = Total use of renewable primary energy resources.

PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials.

PENRM = Use of non-renewable primary energy resources used as raw material.

PENRT = Total use of non-renewable primary energy resource.

Parameters describing different waste categories

Environmental parameters	Hazardous waste	Non-hazardous waste	Nuclear waste
	kg	kg	kg
Product stage	4.22E-02	1.4	7.51E-05
Construction stage	1.52E-02	1.54	2.08E-05
Use stage	N/A	N/A	N/A
End-of-life stage	3E-03	6.29E-02	1.6E-05
Total	6.05E-02	3	1.12E-04
External impacts (D)	1.14E-02	5E-01	1.29E-05

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Parameters describing further output material flows

Parameters describing output material flows	Unit	Parameter unit expressed per functional unit
Components for re-use	kg	N/A
Materials for recycling	kg	1.97
Materials for energy recovery	kg	N/A

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Scenarios and additional technical information

Scenario	Parameter	Parameter unit
A2 – Transportation to manufacturer	Vehicle type used for transport or fuel type consumption of vehicle	HDPE pellets are transported overseas via cargo followed by lorry to manufacturers. Environmental burdens created during transport are calculated with "Transport, freight, sea, container ship" and records "Transport, freight, lorry 16-32 ton, EURO5".
A3 – Manufacturing	Energy usage during production	0.508kWh of electricity used during production for 1kg of plastic HDPE Pipe.
A4 – Transportation to building site	Vehicle type used for transport or fuel type consumption of vehicle	Since MetroDrain pipes can be sent anywhere, the distance of 100km was used, this can be extrapolated if needed. Fuel consumption is specified in EcoInvent V3.6 data records "Transport, freight, lorry 16-32 ton, EURO5" at 75% capacity utilisation.
A5 – Installation into building/location	Energy usage during installation	0.474kWh of diesel burned in trench production and backfill using EcoInvent V3.6 "Diesel, burned in building machine".
	Waste on building site after product installation	0.5kg of plastic packaging waste for recycling along with 1kg of wooden pallet. 50km (Number can be extrapolated based on actual distance) to nearest recycling plant using "Transport, freight, lorry 16-32 ton, EURO5".
	Emissions to ambient air, soil, and water	There are no direct emissions at the trench as emission are from extraction, transportation and mechanical and energy or waste management and treatment. These are included in the EcoInvent data records used for creating the environmental impacts.
C1-C4	End-of-life Treatment	After the service life of 50 years the HDPE pipes is removed and reused where possible. Unusable parts are incinerated; however, the entire product can be recycled. This leads to 100% of the product being sent 50km (Number can be extrapolated based on actual distance) to the nearest recycling and/or regranulation plant. This is calculated using "Transport, freight, lorry 16-32 ton, EURO5".

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Dated 1 October 2022