SUSTAINABILITY CONTRIBUTION DECLARATION

LEED v4®
(Leadership in Energy and Environmental Design)

Düker SML pipe system

Düker supplies a comprehensive range of no-hub SML pipes and fittings from DN 50 up to DN 300, in part up to DN 400. SML pipes are also called SMU pipes by some users. Apart from the simple fittings such as bends, branches and reductions, Düker also supplies special fittings for the connection of toilets and wash basins, siphons, inspection pipes, down pipe supports and connection pieces of other pipe materials, normally from stock.

SML (SMU) pipes are suitable for installation inside buildings. SML pipes and fittings can also be laid in concrete without problems, as the length expansion coefficient of cast iron and concrete are very similar, and as concrete protects cast iron from corrosion.

SML pipes can also be installed outside on buildings (as a rain water down pipe) or for example in underground parkings. In case of such a visible installation with danger of corrosion, we recommend to apply an additional rust protection coating as known in the steel construction trade for optical reasons.
Outside, Düker SML pipes bear a reddish brown base coat in accordance with EN 877, which can be overpainted with customary coating systems.

Inside SML pipes have an ochre-coloured, fully cross-linked epoxy coating, which surpasses the requirements of EN 877 by far.

SML fittings bear an epoxy coating of the same quality inside and outside, which, however, is also reddish-brown to adapt them to the outside colour of the pipes.

SUSTAINABILITY CONTRIBUTION DECLARATION

Materials & Resources (MR)

Building product disclosure and optimization - environmental product declarations
→ To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts.

Item	Value
Critically reviewed LCA acc. to ISO 14044?	No. Manufacturer's declaration.
Author of the LCA	thinkstep AG, Hauptstraße 111-113, 70771 Leinfelden-Echterdingen, Germany
Declared unit	1 kg
Declared module (EN 15804):	A1 - A3 (Product stage)
Results of the LCA – ENVIRONMENTAL IMPACTS	
GWP [kg CO_2-eq.]	8,79E-01
ODP [kg CFC11-eq.]	2,03E-11
AP [kg SO_2^- eq.]	1,01E-03
EP [kg PO_4^{3-} eq.]	1,49E-04
POCP [kg Ethen eq.]	1,20E-04
ADPE [kg Sb- eq.]	4,57E-07
ADPF [MJ]	9,44E+00
Results of the LCA – RESOURCE USE	
PERE [MJ]	1,72E+00
PERM [MJ]	0,00E+00
PERT [MJ]	1,72E+00
PENRE [MJ]	1,04E+01
PENRM [MJ]	0,00E+00
PENRT [MJ]	1,04E+01
SM [MJ]	1,01E+00
RSF [MJ]	0,00E+00
NRSF [MJ]	0,00E+00
FW [m^3]	2,66E-03
Results of the LCA – OUTPUT FLOWS AND WASTE CATEGORIES	
HWD [kg]	2,52E-08
NHWD [kg]	6,06E-02
RWD [kg]	3,83E-04
CRU [kg]	0,00E+00
MFR [kg]	0,00E+00
MER [kg]	0,00E+00
EEE [MJ]	0,00E+00
EET [MJ]	0,00E+00

Note: Detailed names of the given abbreviations can be found in the Glossary.

Materials & Resources (MR)

Building product disclosure and optimization – sourcing of raw materials
→ To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically and socially preferable life-cycle impacts and sourcing.

Product information

Option 1. raw material source and extraction reporting (1 point)		**Description**
Third-party verified corporate sustainability report (CSR)?	No, but we have a sustainability report with an own format, named "Nachhaltigkeitsdatenblatt".	Can be provided upon request.
Option 2. leadership extraction practices (1 point)		**Description / Unit**
Participation in an extended producer responsibility program?	No specific program – scrap is looped as its trade is well established.	
Materials reuse	As the pipes are made from cast iron, they can be reused.	
Postconsumer recycled content	100	%
Preconsumer recycled content	0	%

The pipes are made of 100 % iron and steel scrap from local suppliers.

Building product disclosure and optimization – material ingredients
→ To reward the selection of products verified to minimize the use and generation of harmful substances based on an accepted methodology for chemical ingredient listing.

Product information

Type of reporting	**Certification program (e.g. Green screen, cradle to cradle version/level, REACH)**	**Comment**
Option 1: material ingredient reporting	Health Product Declaration	No
	Manufacturer Inventory	No
Option 2: Material ingredient optimization	GreenScreen v1.2 Benchmark	No
	Cradle to Cradle Certified	No
	International Alternative Compliance Path – REACH Optimization	Yes. The pipes do **not** contain any substance that meets REACH criteria for substances of very high concern in concentrations above 0.1 % of mass.
	USGBC approved program	No

SUSTAINABILITY CONTRIBUTION DECLARATION

Indoor Environmental Quality (IEQ)

Low-emitting materials
→ To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

Product information

When delivered, the pipe coatings are completely cured and do not release any volatile organic compounds (VOC).

Indoor Environmental Quality (IEQ)

Acoustic performance
→ To provide workspaces and classrooms that promote occupants' well-being, productivity, and communications through effective acoustic design.

Product information

Recent tests comply with the DIN EN 14366 2005-02 "Measurement of noise from waste water installations". To prevent structure-borne noise Düker recommends to avoid contact with the masonry. In very sensitive areas, Düker recommends the use of an acoustic decoupler for effective anti-structure-borne sound.

SUSTAINABILITY CONTRIBUTION DECLARATION

General Information

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Homepage:	www.dueker-germany.com
Date:	30.01.2016

Technical data

Description	Value	Unit
Type of used metal	Cast iron with lamellar graphite / gray cast iron min. EN-GJL - 150 DIN EN 561	
Density	ca. 71,5	KN/m³
Thermal conductivity	50-60	W/mK (at 20 °C)
Coefficient of linear expansion	0,0105	mm/m*K
Minimum tensile strength	Pipes 200 Fittings 150	MPa
Compressive strength	approximately three- to fourfold value of the minimum tensile strength	
Shear strength	1,1- to 1,6-fold value of the Minimum tensile strength	
Ring crush strength	DN < 250: 350 DN ≥ 250: 332	MPa
Max. Brinell Hardness Number	260	HB
Reaction to fire	SML pipe system: A1 MLK-protec, TML, MLB pipe system A2, s1, d0 DIN EN 13501-1	
Melting Point	ca. 1150	°C

Glossary

ADPE	Abiotic depletion potential for non-fossil resources
ADPF	Abiotic depletion potential for fossil resources
AP	Acidification potential of land and water
CRU	Components for re-use
EE	Exported energy per energy carrier
EP	Eutrophication potential
FW	Use of net fresh water
GWP	Global warming potential
HWD	Hazardous waste disposed
MER	Materials for energy recovery
MFR	Materials for recycling
NHWD	Non-hazardous waste disposed
NRSF	Use of non-renewable secondary fuels
ODP	Depletion potential of the stratospheric ozone layer
PE total	Total use of primary energy resources (=PERT+PENRT)
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 materials
PENRT	Total use of non-renewable primary energy resources
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM	Use of renewable primary energy resources used as raw materials
PERT	Total use of renewable primary energy resources
POCP	Formation potential of tropospheric ozone photochemical oxidants
REACH	Registration, Evaluation, Authorization of Chemicals
RSF	Use of renewable secondary fuels
RWD	Radioactive waste disposed
SM	Use of secondary material