

There is a new version of this data under RIVM report number 2020-  
[This file be found at: https://www.rivm.nl/bibliotheek/rapporten/2020-](https://www.rivm.nl/bibliotheek/rapporten/2020-)

Name

Untreated wood

id\_code

SSML\_DL001

Contributors

Erik Dekker, Mark Montforts, Joris Quik

## General

Functional unit

100m of railroad track for 50 years

## Safety

### Tier 1 (content)

Life cycle_x	Substance type	Presence
	<b>ZZS</b>	No
	<b>Biocides</b>	No
	<b>Others</b>	yes

### Tier 2 (Leaching/exposure)

Life cycle_x	Substance type	Substance name
1	<b>Others</b>	
2		
3		

## Sustainability

### Tier 1

Circularity	Circularity improved
<b>Recycling options</b>	No
<b>Product demand / Market volume material; negligible</b>	Yes

### Tier 2

Environmental impact	Impact (A1 + A3)
<b>Carbonfootprint</b>	2418
<b>Landuse footprint</b>	44550

### Circularity

	Value
<b>SSML-R-1</b>	1.00
<b>SSML-R+1</b>	0.00
<b>MCI</b>	0.00
<b>Life span</b>	12.00

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**Certainty/data quality References (; delimit Comments, e.g. Substance names**

Product data		ZZS refers to substance properties. How
Product data		By definition natural wood is not treated v
Material data	Szczepkowski, A. and D.	Heavy metals

**Leaching/exposure Units and other info Certainty/data qualReferences (; delin**

			Szczepkowski, A. ar

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**Certainty/data quality References (; delimited)**

Material data		
Material data	EuroStat (2020), EU production	Sawlogs and veneer logs non-co

Benefit (D)	Track bed	<b>Units and other inf</b>	<b>Certainty/data qual</b>
32096		0 kg CO2-eq	Material data
		m2a crop-eq	Material data

**Units and other info Certainty/data quality Method References (; delin**

-	Material data	CB'23: %secondary	content; %renewabl
-	Material data	SSML: Recyclability	
-	Material data	Madaster Material	Circularity Indicator
years	Product data		

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ever, natural wood is not placed on the market as a mixture, hence exempt from REACH registration with wood preservatives or other biocides

**Safety threshold      threshold\_ Reference**

id D. Nicewicz (2008). "The content of heavy metals in the wood of healthy and dying oak trees


niferous under bark

**LCA method      References (; delimited)**

Simplified SSML-M2ivl (2018), Comparative LCA of Railway Sleepers; 1 kg Cleft timber, measured as dry mass {RoW} hardwood forestry, oak, s

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ration.

(*Quercus robur* L., *Q. Petraea* (Matt.) Liebl.)" *Acta Scientiarum Polonorum* 7(4): 55-65

ured as dry mass {RoW}| hardwood forestry, oak, sustainable forest management | Cut-off, U (of p  
ustainable forest management | Cut-off, U (of project Ecoinvent 3 - allocation, cut-off by classifica

project Ecoinvent 3 - allocation, cut-off by classification - unit); co2emissiefactoren.nl  
tion - unit)

Name

Treated wood (oak)

id\_code

SSML\_DL002

Contributors

Erik Dekker, Mark Montforts, Joris Quik

### General

Functional unit

100m of railroad track for 50 years

### Safety

#### Tier 1 (content)

Life cycle_x	Substance type	Presence
	ZZS	Yes
	Biocides	Yes
	Others	No

#### Tier 2 (Leaching/exposure)

Life cycle_x	Substance type	Substance name
1	Biocides	copper
2	Biocides	tebuconazole
3	Biocides	propiconazole

  

Life cycle_x	Substance type	Substance name
1	Biocides	copper
2	Biocides	tebuconazole
3	Biocides	propiconazole

### Sustainability

#### Tier 1

Circularity	Circularity improved
Recycling options	No
Product demand / Market volume material; negligible	Yes

#### Tier 2

Environmental Impact	Impact (A1 + A3)
Carbonfootprint	1161
Landuse footprint	22809

Circularity	Value
SSML-R-1	0.94
SSML-R+1	0.00
MCI	0.14
Life span	25.00

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**Certainty/data quality References (; delimit Comments, e.g. Substance names**

Product data	<a href="https://ec.europa.eu/tra">https://ec.europa.eu/tra</a>	tebuconazole, propiconazole
Product data	<a href="https://echa.europa.eu">https://echa.europa.eu</a>	copper, tebuconazole, propiconazole
Product data		

**Exposure Soil Units and other info Certainty/data qualReferences (; delin**

3.13	mg/kg wwt	Product data	<a href="https://ec.europa.">https://ec.europa.</a>
0.001	mg/kg wwt	Product data	<a href="https://ec.europa.">https://ec.europa.</a>
0.002	mg/kg wwt	Product data	<a href="https://ec.europa.">https://ec.europa.</a>

**Exposure groundwaterUnits and other info Certainty/data qualReferences (; delin**

0.35	µg/L	Product data	<a href="https://ec.europa.">https://ec.europa.</a>
<0.1	µg/L	Product data	<a href="https://ec.europa.">https://ec.europa.</a>
<0.1	µg/L	Product data	<a href="https://ec.europa.">https://ec.europa.</a>

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**Certainty/data quality References (; delimited)**

Material data	
Material data	EuroStat (2020), EU production Sawlogs and veneer logs non-co

**Benefit (D) Track bed Units and other inf Certainty/data qual**

16433	0 kg CO2-eq	Material data
	m2a crop-eq	Material data

**Units and other info Certainty/data quality Method References (; delin**

-	Material data	CB'23: %secondary content; %renewabl
-	Material data	SSML: Recyclability
-	Material data	Madaster Material Circularity Indicator
years	Product data	

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Safety treshold	treshold_Reference
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40.35	<a href="https://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-">https://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-</a>
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0.1	<a href="https://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-">https://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-</a>
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0.2	<a href="https://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-">https://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-</a>
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Safety treshold	treshold_Reference
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15.00	<a href="https://rvs.rivm.nl/">https://rvs.rivm.nl/</a>
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0.1	BPR 528/2012
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0.1	BPR 528/2012
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niferous under bark

LCA method	References (; delimited)
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Simplified SSML-M2ivl (2018), Comparative LCA of Railway Sleepers; 1 kg Cleft timber, measu	
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Simplified SSML-M21 kg Cleft timber, measured as dry mass {RoW}  hardwood forestry, oak, s	
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211-F1-EN-MAIN-PART-6.PDF  
211-F1-EN-MAIN-PART-6.PDF  
211-F1-EN-MAIN-PART-6.PDF

ured as dry mass {RoW}| hardwood forestry, oak, sustainable forest management | Cut-off, U (of p  
ustainable forest management | Cut-off, U (of project Ecoinvent 3 - allocation, cut-off by classifica

project Ecoinvent 3 - allocation, cut-off by classification - unit); co2emissiefactoren.nl  
tion - unit)

Name

Concrete (NS90)

id\_code

SSML\_DL003

Contributors

Erik Dekker, Mark Montforts, Joris Quik

### General

Functional unit

100m of railroad track for 50 years

### Safety

Tier 1 (content)

Life cycle\_x

Substance type

Presence

ZZS

Unknown

Biocides

Unknown

Others

Yes

Tier 2 (Leaching/exposure)

Life cycle\_x

Substance type

Substance name

1

Others

metals

2

3

### Sustainability

Tier 1

Circularity

Circularity improved

Recycling options

No

Product demand / Market volume material; negligible

Yes

Tier 2

Environmental impact

Impact (A1 + A3)

Carbonfootprint

17615

Landuse footprint

76

Circularity

Value

SSML-R-1

0.00

SSML-R+1

0.25

MCI

0.10

Life span

45.00

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**Certainty/data quality References (; delimit Comments, e.g. Substance names**

High uncertainty		Metals

**Leaching/exposure Units and other info Certainty/data qualReferences (; delin**


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**Certainty/data quality References (; delimited)**

Material data	

**Benefit (D) Track bed Units and other inf Certainty/data qual**

5214	160	kg CO2-eq	Product data
		m2a crop-eq	Material data

**Units and other info Certainty/data quality Method References (; delin**

-	Product data		
-	Material data		
-	Combi		
years	Product data		

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Safety treshold	treshold_Reference
	Appendix A of the Soil Quality Decree

LCA method	References (; delimited)
EN15804 based	SGS Search Consultancy (2019), Ongetoetst LCA rapport voor Dwarsligge
Simplified SSML-M2	

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er NS90

Name

Sulphur concrete

id\_code

SSML\_DL004

Contributors

Erik Dekker, Mark Montforts, Joris Quik

## General

Functional unit

100m of railroad track for 50 years

## Safety

### Tier 1 (content)

Life cycle_x	Substance type	Presence
	<b>ZZS</b>	Unknown
	<b>Biocides</b>	Unknown
	<b>Others</b>	Yes

### Tier 2 (Leaching/exposure)

Life cycle_x	Substance type	Substance name
1	<b>Others</b>	metals
2		
3		

## Sustainability

### Tier 1

Circularity	Circularity improved
<b>Recycling options</b>	Yes
<b>Product demand / Market volume material; negligible</b>	Unknown

### Tier 2

Environmental impact	Impact (A1 + A3)
<b>Carbonfootprint</b>	7365
<b>Landuse footprint</b>	unknown

### Circularity

	Value
<b>SSML-R-1</b>	0.00
<b>SSML-R+1</b>	0.95
<b>MCI</b>	0.58
<b>Life span</b>	50.00



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**Certainty/data quality References (; delimit Comments, e.g. Substance names**

High uncertainty		Metals

**Leaching/exposure Units and other info Certainty/data qualReferences (; delin**


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**Certainty/data quality References (; delimited)**

Product data	

**Benefit (D) Track bed Units and other inf Certainty/data qual**

4141	160	kg CO2-eq	Product data
unknown		m2a crop-eq	

**Units and other info Certainty/data quality Method References (; delin**

-	Product data	CB'23: %secondary	content; %renewabl
-	Product data	SSML: Recyclability	
-	Product data	Madaster Material	Circularity Indicator
years	Material data		

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Safety treshold	treshold_Reference
	Appendix A of the Soil Quality Decree

LCA method	References (; delimited)
EN15804 based	De Bonte (2018), Thiotrack test met EoL

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Name

Virgin PE

id\_code

SSML\_DL005

Contributors

Erik Dekker, Mark Montforts, Joris Quik

### General

Functional unit

100m of railroad track for 50 years

### Safety

#### Tier 1 (content)

Life cycle\_x

Substance type

Presence

ZZS

Yes

Biocides

Yes

Others

Yes

#### Tier 2 (Leaching/exposure)

Life cycle\_x

Substance type

Substance name

1

Others Sb, As, Ba, Cd, Cr, Pb,

2

ZZS

all ZZS

3

### Sustainability

#### Tier 1

Circularity

Circularity improved

Recycling options

Yes

Product demand / Market volume material; negligible

Yes

#### Tier 2

Environmental impact

Impact (A1 + A3)

Carbonfootprint

31553

Landuse footprint

190

Circularity

Value

SSML-R-1

0.00

SSML-R+1

0.95

MCI

0.53

Life span

50.00

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**Certainty/data quality References (; delimit) Comments, e.g. Substance names**

High uncertainty	Groh KJ, Backhaus T, Carne	DEHP, PBDE
High uncertainty	Groh KJ, Backhaus T, Carne	triclosan
High uncertainty	Groh KJ, Backhaus T, Carne	DEP; metals

**Leaching/exposure Units and other info Certainty/data qualReferences (; delin**

<1	mg/kg (leaching)	Material data	Lankhorst (2019) Proeft
	% (w/w)	High uncertainty	Groh KJ, Backhaus T, Ca

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**Certainty/data quality References (; delimited)**

Material data	

**Benefit (D) Track bed Units and other inf Certainty/data qual**

29385	160	kg CO2-eq	Material data
		m2a crop-eq	Material data

**Units and other info Certainty/data quality Method References (; delin**

-		CB'23: %secondary	content; %renewabl
-		SSML: Recyclability	
-		Madaster Material	Circularity Indicator
years	Material data		

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Safety treshold	treshold_Reference
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>=25	European standard EN 71 specifies safety requirements for toys. EN 71-3:
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0.1	REACH. See <a href="https://lap3.nl/beleidskader/deel-b-afvalbeheer/b14-zeer/">https://lap3.nl/beleidskader/deel-b-afvalbeheer/b14-zeer/</a>
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LCA method	References (; delimited)
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Simplified SSML-M2	EcoInvent v3
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Simplified SSML-M2	EcoInvent v3
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e content

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Specification for migration of certain elements.

<b>Name</b>	<b>Recycled PE</b>
<b>id_code</b>	SSML_DL006
<b>Contributors</b>	Erik Dekker, Mark Montforts, Joris Quik

## General

<b>Functional unit</b>	100m of railroad track for 50 years
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## Safety

### Tier 1 (content)

Life cycle_x	Substance type	Presence
	<b>ZZS</b>	Yes
	<b>Biocides</b>	Yes
	<b>Others</b>	Yes

### Tier 2 (Leaching/exposure)

Life cycle_x	Substance type	Substance name
1	<b>Others</b>	Sb, As, Ba, Cd, Cr, Pb,
2	<b>ZZS</b>	all ZZS
3		

## Sustainability

### Tier 1

Circularity	Circularity improved
<b>Recycling options</b>	Yes
<b>Product demand / Market volume material; negligible</b>	No

### Tier 2

Environmental impact	Impact (A1 + A3)
<b>Carbonfootprint</b>	9135
<b>Landuse footprint</b>	190

Circularity	Value
<b>SSML-R-1</b>	0.95
<b>SSML-R+1</b>	0.95
<b>MCI</b>	0.97
<b>Life span</b>	50.00

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**Certainty/data quality References (; delimit Comments, e.g. Substance names**

High uncertainty	Groh KJ, Backhaus T, Carne	DEHP, PBDE
High uncertainty	Groh KJ, Backhaus T, Carne	triclosan
High uncertainty	Groh KJ, Backhaus T, Carne	DEP; metals

**Leaching/exposure Units and other info Certainty/data qualReferences (; delin**

<1	mg/kg (leaching)	Material data	Lankhorst (2019) Proeft
	% (w/w)	High uncertainty	Groh KJ, Backhaus T, Ca

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**Certainty/data quality References (; delimited)**

Product data	
	Ce Delft (2019), Plasticgebruik en verwerking van plastic afval in

**Benefit (D) Track bed Units and other inf Certainty/data qual**

31552	160	kg CO2-eq	Product data
		m2a crop-eq	Material data

**Units and other info Certainty/data quality Method References (; delin**

		CB'23: %secondary	content; %renewabl
-		SSML: Recyclability	
		Madaster Material	Circularity Indicator
years	Material data		

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Safety treshold	treshold_Reference
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>=25	European standard EN 71 specifies safety requirements for toys. EN 71-3:
0.1	REACH. See <a href="https://lap3.nl/beleidskader/deel-b-afvalbeheer/b14-zeer/">https://lap3.nl/beleidskader/deel-b-afvalbeheer/b14-zeer/</a>

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Nederland; Kawecki et al. (2018), Probabilistic Material Flow Analysis of Seven Commodity Pl

LCA method	Referenties (; tussen meerdere)
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EN15804 based	ivl (2018), Comparative LCA of Railway Sleepers; Tauw (2018), Sneek, La
Simplified SSML-M2	

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e content

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Specification for migration of certain elements.

astics in Europe; Afvalfonds Verpakkingen (2018), Resultaten inzameling en recycling

.nkhorst CO2-Footprint voor KLP materiaal

Name

PU + glassfibre

id\_code

SSML\_DL007

Contributors

Erik Dekker, Mark Montforts, Joris Quik

### General

Functional unit

100m of railroad track for 50 years

### Safety

#### Tier 1 (content)

Life cycle_x	Substance type	Presence
	ZZS	Unknown
	Biocides	Unknown
	Others	Unknown

#### Tier 2 (Leaching/exposure)

Life cycle_x	Substance type	Substance name
1	Others	
2		
3		

### Sustainability

#### Tier 1

Circularity	Circularity improved
Recycling options	Yes
Product demand / Market volume material; negligible	Yes

#### Tier 2

Environmental impact	Impact (A1 + A3)
Carbonfootprint	50676
Landuse footprint	715

#### Circularity

	Value
SSML-R-1	0.00
SSML-R+1	0.95
MCI	0.59
Life span	50.00

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**Certainty/data quality References (; delimit Comments, e.g. Substance names**

High uncertainty		
High uncertainty		
High uncertainty		

**Leaching/exposure Units and other info Certainty/data qualReferences (; delin**


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**Certainty/data quality References (; delimited)**

Product data	

**Benefit (D) Track bed Units and other inf Certainty/data qual**

17543	160	kg CO2-eq	Product data
		m2a crop-eq	Material data

**Units and other info Certainty/data quality Method References (; delin**

		CB'23: %secondary	content; %renewabl
		SSML: Recyclability	
		Madaster Material	Circularity Indicator
years	Material data		

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**Safety treshold    treshold\_Reference**


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**LCA method            References (; delimited)**

EN15804 based	SGS search (2020), LCA Background report FFU sleepers
Simplified SSML-M2	

**ited)**

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## Uitleg/interpretatie

### Presence

Yes	Gemeten in product of materiaal type dat in product wordt gebruikt.
No	Niet aangetoond bij metingen in product of materiaal type (kan ook recycle)
Others	Geen informatie gevonden of beschikbaar mbt metingen ZZS, gebruik bio

### Substance type

ZZS

Biocides

Others

### Zekerheid

High uncertainty	Slechts 1 meting, of geen kwantitatieve info, Expert judgement etc.
Material data	Er zijn data of metingen beschikbaar voor dit materiaal type ongeacht toep
Product data	Er zijn data of metingen beschikbaar voor materiaal in dit specifieke produ

### Certainty/data quality LCA

Material data	Gebruik van generieke data uit openbare databases
Product data	Data van LCA met gebruik van NL bepalingmethode GWW
Combi	Combi van beide type data
High uncertainty	Still high uncertainty no actual proof

### Circularity improved

Yes

No

Unknown

### LCA method

EN15804 based

Simplified SSML-M2

Other

ed PE zijn)  
ciden.

passing (gebruikt in product/dwarsligger)  
ct (bijv. De dwarsligger)