

TINY HOUSE	Column1
Area [m ²]	34
Volume [m ³]	119,5
Length [m]	11,75
Windows [w * l]	60*80
Door [w * l]	90*210

Replacement tiny house	ted lifetime [years]
Concrete roof tiles	40 - 60
Wood paneling	40 - 50
GFRP tiny house and roof	100 +

Material equivalent tiny house	
Lenght [m]	11
With [m]	3
Height [m]	3,6
Area wood paneling [m ²]	100,8
Area concrete roof tiles [m ²]	33

Emission roof and paneling	
emission [kg CO2/kg roof]	0,171267
Amount of roof tiles [kg / m ²]	53
Total amount of roof tiles [kg]	1749
Total emission roof tiles [kg CO2]	299,5
Emission [kg CO2/m ² panel]	0,772809
Total emission panel [kg CO2]	77,9

Energy roof and paneling	
Energy [MJ/kg roof]	0,071
Amount of roof tiles [kg / m ²]	53
Total amount of roof tiles [kg]	1749
Total energy roof tiles [MJ]	124,14
Energy [MJ/m ² panel]	0,037
Total energy panel [MJ]	3,68

Total emission and energy for tiny ho	Column1
Emission [kg CO2]	377,4
Energy [MJ]	127,82

Emission roof and paneling	
emission [kg CO2/kg roof]	0,171267
Area concrete roof tiles [m ²]	33

Amount of roof tiles [kg/m ²]	53
Total amount of roof tiles [kg]	1749
Total emission roof tiles [kg CO₂]	299,5
Area wood paneling [m ²]	100,8
Emission [kg CO ₂ / m ² panel]	0,772809
Total emission panel [kg CO₂]	77,9

Energy roof and paneling	
Energy [MJ/kg roof]	0,071
Area concrete roof tiles [m ²]	33
Amount of roof tiles [kg/m ²]	53
Total amount of roof tiles [kg]	1749
Total energy roof tiles [MJ]	124,14
Area wood paneling [m ²]	100,8
Energy [MJ/m ² panel]	0,037
Total energy panel [MJ]	3,68

Total emission and energy for each ti Column1	
Emission [kg CO ₂]	377,4
Energy [MJ]	127,82

Emissions and energy tiny house	Emission	Energy
Tiny house	377,4	127,8
90 tiny houses	33970	11504
Single roof	762,5	316
90 roofs	68623	28439



Roofing

Blades as roof	Column1
Roof area [m ²]	84

Emission roof	
Area [m ²]	84
Amount of roof tiles [kg / m ²]	53
Total amount of roof tiles [kg]	4452
Emission [kg CO ₂ / kg roof]	0,171
Total emission [kg CO₂]	762,5

Energy roof	
Area [m ²]	84
Amount of roof tiles [kg / m ²]	53
Total amount of roof tiles [kg]	4452
Energy [MJ / kg roof]	0,071

Total energy [MJ]	316
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Emission roof	
Area [m ²]	84
Amount of roof tiles [kg / m ²]	53
Total amount of roof tiles [kg]	4452
Emission [kg CO ₂ / kg roof]	0,171
Emission per roof [kg CO ₂]	762,5
Total emission 90 roofs [kg CO₂]	68623,3
Energy [MJ / kg roof]	0,071
Energy per roof [MJ]	316
Total energy 90 roofs [MJ]	28439,1



Overview scenario

Transportation from port to factory in Column1	
Mass [tonne]	594
Distance [km]	20
Emission [kg CO ₂ / tkm]	0,14
Total emission [kg CO₂]	1662,887
Energy [MJ / tkm]	0,0089
Total energy [MJ]	105,237
Cost [EUR / tkm]	0,35
Total cost [EUR]	4158

Kolonne1	Energy [MJ]	Emission [kg]
Transportation per tkm	0,0089	0,14
Total	105,732	1663,2

Type	Energy [MJ]	Emission [kg CO ₂]
Transportation to factory	105,237	1662,887
Tiny house equivalent	11504	33970
Concrete roof tiels	28439	68623
Total	40048,337	104256,187

	Unit	Values
Area	m ²	84
Amount of roof tiles	kg/m ²	53
Total amount of roof tiles	kg/m²	4452

Kolonne1	Unit	Energy [MJ]
per kg roof	[]/kg	0.071
Per roof	-	316

Total for 90 roofs - **28,439**

Kolonne1	Unit	Value
Area of concrete roof tiles	m^2	33
Amount of roof tiles	kg/m^2	53
Total amount of roof tiles	kg	1749
Area of wood panelling	m^2	100.8

Kolonne1	Unit	Energy [MJ]
Per kg roof	[]/kg	0.071
For roof	-	124
Per m^2 wood panelling	[]/m^2	0.037
For wood panelling	-	3,68
Per tiny house	-	128
Total for 90 tiny houses	-	11,504

View material process 'Concrete roof tile (RoW) production | Cut-off, S'

Documentation	Input/output	Parameters	System description
Products			
Outputs to technosphere: Products and co-products			
	Amount	Unit	Quantity Al
Concrete roof tile (RoW) production Cut-off, S	1	kg	Mass 1i
Outputs to technosphere: Avoided products			
	Amount	Unit	Distribution SD2 or
Inputs			
Inputs from nature			
	Sub-compartment	Amount	Unit Di
Potassium chloride	in ground	4,8909460E-6	kg Ur
Carbon dioxide, in air	in air	6,1555798E-3	kg Ur
Energy, gross calorific value, in biomass	biotic	7,0996709E-2	MJ Ur
Occupation, construction site	land	1,1581929E-5	m2a Ur

View material process 'Concrete roof tile (RoW) production | Cut-off, S'

Documentation	Input/output	Parameters	System description
Cadmium		nign. pop.	3,1498437E-1 kg
Cadmium		stratosphere + troposphere	9,0554948E-1 kg
Calcium			3,0746293E-8 kg
Calcium		low. pop.	1,8474458E-8 kg
Calcium		low. pop., long-term	3,1198272E-8 kg
Calcium		high. pop.	3,0152268E-7 kg
Carbon dioxide, biogenic			2,3240366E-3 kg
Carbon dioxide, biogenic		low. pop.	4,0253301E-4 kg
Carbon dioxide, biogenic		high. pop.	3,6427379E-3 kg
Carbon dioxide, fossil			1,7126721E-1 kg
Carbon dioxide, fossil		low. pop.	4,2310007E-2 kg
Carbon dioxide, fossil		low. pop., long-term	3,1717068E-6 kg
Carbon dioxide, fossil		high. pop.	1,9019082E-2 kg
Carbon dioxide, fossil		stratosphere + troposphere	2,8197218E-7 kg

View material process 'Wood cladding, softwood (GLO) market for | Cut-off, S'

Documentation	Input/output	Parameters	System description
Products			
Outputs to technosphere: Products and co-products			
	Amount	Unit	Q
Wood cladding, softwood (GLO) market for Cut-off, S	1	m2	Ar

Outputs to technosphere: Avoided products		Amount	Unit	Distribut
Inputs				
Inputs from nature	Sub-compartment	Amount	Unit	Ur
Potassium chloride	in ground	3,3845415E-4	kg	
Carbon dioxide, in air	in air	3,2448212E1	kg	
Energy, gross calorific value, in biomass	biotic	3,6549225E2	M	
Occupation, construction site	land	3,0444699E-4	m	

View material process 'Wood cladding, softwood (GLO) market for | Cut-off, S'

Documentation	Input/output	Parameters	System description	Amount	Unit
	Calcium			1,1916128E-6	kg
	Calcium	low. pop.		9,8069313E-7	kg
	Calcium	low. pop., long-term		2,3451162E-6	kg
	Calcium	high. pop.		1,1393357E-4	kg
	Carbon dioxide, biogenic			1,1055829E-2	kg
	Carbon dioxide, biogenic	low. pop.		1,7014800E-2	kg
	Carbon dioxide, biogenic	high. pop.		2,6411755E0	kg
	Carbon dioxide, fossil			7,7280915E-1	kg
	Carbon dioxide, fossil	low. pop.		2,5439031E0	kg

Cost [EUR]
0,35
4158

Cost [EUR]
4158
-
-
4158

Co2 [kg]
0.171
762.5

68,623

- .
- .
- .
- .
- .

CO2 eq [kg]
0.171
299,5
0.773
77.9
377
33,970

Allocation	Waste type	C
100 %	Cement	

±2SD Min Max

Distribution	SD2 or 2SD	!
undefined		
undefined		
undefined		
undefined		

Undefined
Undefined
Undefined
Undefined
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Undefined
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Undefined
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Undefined
Undefined

Quantity	Allocation \
area	100 %

