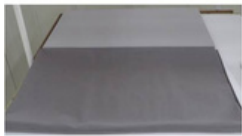


Description of Item



Polyurethane Foam Mattress

- Mass: 2.80 kg
- Contents: High density virgin polyurethane foam, polyester, nylon, etc
- Plastic packaging material: Plastic, wood, steel and cardboard

Functional unit

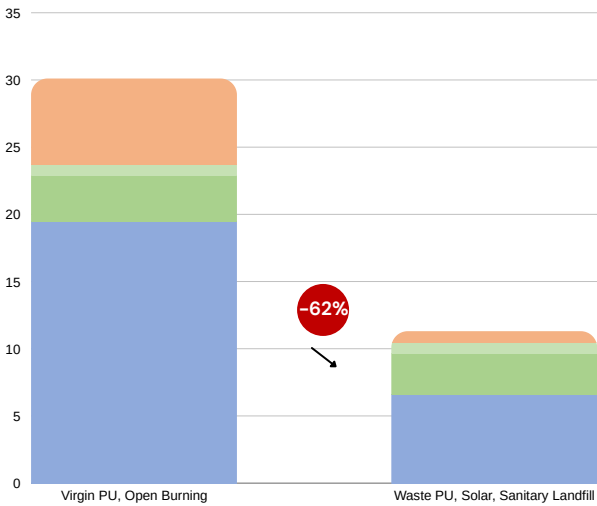
Use of 1 mattress for 10 years

Item	Use life	Reference Flows
Virgin PU	10	1
Good Quality, Recycled	10	1
Poor Quality, Recycled	8	1.25

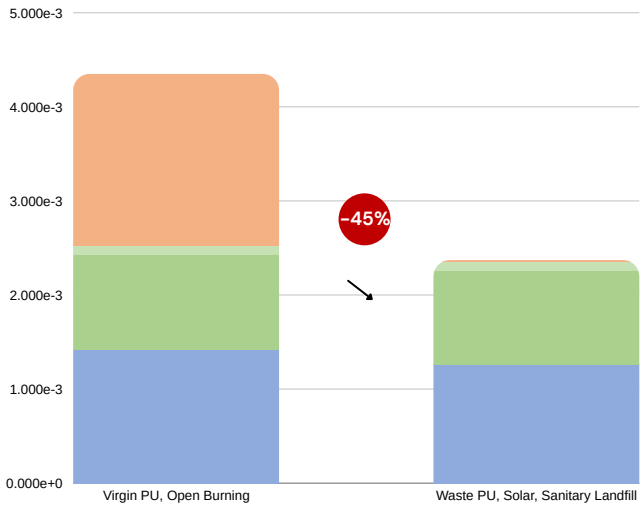
Assumptions

All variations are locally manufactured and sent to warehouse or distribution location via truck. Assumed not to be washed throughout its lifetime of 10 years. Assumed to be burnt in open pits at end-of-life.

Results of the computation



Stage	kgCO ₂ e	
	Scenario 1	Scenario 2
Raw Material	19.44	6.60
Production	3.43	3.03
Transportation	0.79	0.79
Use	0.00	0.00
End-of-Life	6.43	0.88

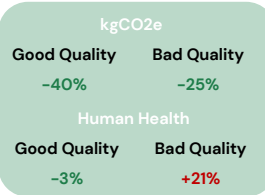


Stage	Human Health	
	Scenario 1	Scenario 2
Raw Material	1.42E-03	1.26E-03
Production	1.01E-03	9.93E-04
Transportation	9.52E-05	9.52E-05
Use	0.00E+00	0.00E+00
End-of-Life	1.82E-03	1.96E-05

Variations (% from baseline figures presented above)

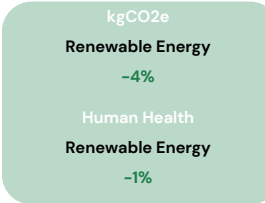
To use recycled material

Computation made by considering waste polyurethane – of good quality (10 years) & bad quality (8 years)



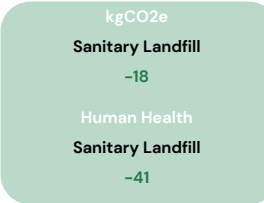
To use renewable energy during production

Computation made by considering 100% solar energy for electricity & heat



To switch to sanitary landfills

Computation made by considering sanitary landfill (moist infiltration class) at end-of-life



Best Possible Scenario

Computation made by considering waste PU produced with solar energy, disposed in a sanitary landfill



Analyses

Recycled materials and better waste management contribute the most to the impact reduction of the plastic mattress, with a strong dependence on quality and durability of the mattress.

For GHG emissions it is more pertinent to focus on reducing the impact on the primary raw material: virgin polyurethane foam. For impact on human health, the waste management methods make a much more significant impact on the overall impact of the mattress

Emission factors

The values displayed here are not per functional unit but per item. These values can be used to compute a carbon footprint of an organisation and can be adapted to a specific case using the tool

Name	GHG Protocol Categories	kgCO ₂ e/unit
Cradle-to-grave	N/A	30.11
Cradle-to-gate	3.1 Purchased Goods	22.89
Distribution freight	3.4 and/or 3.9 Transportation	0.79
Use phase	3.11 Use of distributed product	0
End-of life	3.12 End of life of distributed product	6.43

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About this project

Designing methodologies and performing life cycle analyses of high-impact items to build a GHG emission factor and environmental impact database adapted to the humanitarian sector with the goal of identifying key strategies to reduce environmental impacts.

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