

Life Cycle Assessment - StockachAlu 2020



Assumptions & Explanations

LCA analysis is based on environmental profile report from EAA in 2018.

We use the EAA indicators for primary metal, process scrap and post consumer scrap and apply this to our mix.

The data in the profile report is reference data for LCA analysis. It represents average values for the European aluminium industry.

We therefore (reasonably) assume that our production and input metals are in line with European average and we apply this base data to our input mix.

In Charge:

LCA calculated by: Markus Wild

Date:

Date: 16.11.2021

Update Cycle:

Update cycle: LCA analysis will be revised on yearly basis

| | Primary | Process Scrap | EoL & similar scrap | | |
|------------------------------|---------|---------------|---------------------|--------|--------|
| Volumen (t) 2020 Metal input | | 3.748 | 58.474 | 15.668 | 77.890 |
| in % | | 5% | 75% | 20% | 100% |
| (Stockach Aluminium, 2020) | | | | | |

Source:

| EAA indicators (basis) | <i>per ton of primary ingot used (4.5.1.)</i> | <i>per ton of wrought ingot from scrap (8.8.2)</i> | <i>per ton of wrought ingot from scrap (8.8.2)</i> |
|---|---|--|--|
| <i>Chapter profile report</i> | | | |
| Abiotic Depletion (ADP elements) (kg Sb Equiv) | 0,0042000000 | 0,0001200000 | 0,0001200000 |
| Acidification Potential (AP) (kg SO2 Equiv) | 43,0000000000 | 0,6800000000 | 0,6800000000 |
| Eutrophication Potential (EP) (kg Phosphate Equiv) | 2,8000000000 | 0,0930000000 | 0,0930000000 |
| Global Warming Potential (GWP 100 years) (kg CO2 equiv) | 8.600,0000000000 | 330,0000000000 | 330,0000000000 |
| Ozone Layer Depletion Potential (ODP) (kg R11-Equiv) | 2,3000000000 | 0,0000000035 | 0,0000000035 |
| Primary energy demand from non-renewables (MJ) | 110.000,0000000000 | 5.400,0000000000 | 5.400,0000000000 |
| Primary energy demand from renewables (MJ) | 47.000,0000000000 | 480,0000000000 | 480,0000000000 |
| Total primary energy demand (MJ) | 157.000,0000000000 | 5.880,0000000000 | 5.880,0000000000 |

Calculation:

Application of EAA values for Stockach Aluminium 2020

| | | | |
|---|-----------------------|-----------------------|----------------------|
| Abiotic Depletion (ADP elements) (kg Sb Equiv) | 15,741600000 | 7,016880000 | 1,880160000 |
| Acidification Potential (AP) (kg SO2 Equiv) | 161.164,000000000 | 39.762,320000000 | 10.654,240000000 |
| Eutrophication Potential (EP) (kg Phosphate Equiv) | 10.494,400000000 | 5.438,082000000 | 1.457,124000000 |
| Global Warming Potential (GWP 100 years) (kg CO2 equiv) | 32.232.800,000000000 | 19.296.420,000000000 | 5.170.440,000000000 |
| Ozone Layer Depletion Potential (ODP) (kg R11-Equiv) | 8.620,400000000 | 0,000204659 | 0,000054838 |
| Primary energy demand from non-renewables (MJ) | 412.280.000,000000000 | 315.759.600,000000000 | 84.607.200,000000000 |
| Primary energy demand from renewables (MJ) | 176.156.000,000000000 | 28.067.520,000000000 | 7.520.640,000000000 |
| Total primary energy demand (MJ) | 588.436.000,000000000 | 343.827.120,000000000 | 92.127.840,000000000 |

| 2020 Total StockachAlu | Total | per t. scrap |
|---|----------------------|---------------------|
| Abiotic Depletion (ADP elements) (kg Sb Equiv) | 24,638640 | 0,000316326 |
| Acidification Potential (AP) (kg SO2 Equiv) | 211.580,560000 | 2,716402106 |
| Eutrophication Potential (EP) (kg Phosphate Equiv) | 17.389,606000 | 0,223258518 |
| Global Warming Potential (GWP 100 years) (kg CO2 equiv) | 56.699.660,000000 | 727,945307485 |
| Ozone Layer Depletion Potential (ODP) (kg R11-Equiv) | 8.620,400259 | 0,110674031 |
| Primary energy demand from non-renewables (MJ) | 812.646.800,000000 | 10.433,262292977 |
| Primary energy demand from renewables (MJ) | 211.744.160,000000 | 2.718,502503531 |
| Total primary energy demand (MJ) | 1.024.390.960,000000 | 13.151,764796508 |

Result:

| 2020 Total StockachAlu - applied per t. of final product | per t.Endprodukt (net slab/Sow) |
|---|--|
| Abiotic Depletion (ADP elements) (kg Sb Equiv) | 0,00 |
| Acidification Potential (AP) (kg SO2 Equiv) | 3,49 |
| Eutrophication Potential (EP) (kg Phosphate Equiv) | 0,29 |
| Global Warming Potential (GWP 100 years) (kg CO2 equiv) | 936,09 |
| Ozone Layer Depletion Potential (ODP) (kg R11-Equiv) | 0,14 |
| Primary energy demand from non-renewables (MJ) | 13.416,43 |
| Primary energy demand from renewables (MJ) | 3.495,80 |
| Total primary energy demand (MJ) | 16.912,23 |

Net Production rolling slabs & Sows (t)
2020

60.571