

12-500 1 80+80mm

Nutzung: Decke/Dach
 Gegen aussen

Aussen

EN ISO 6946

1

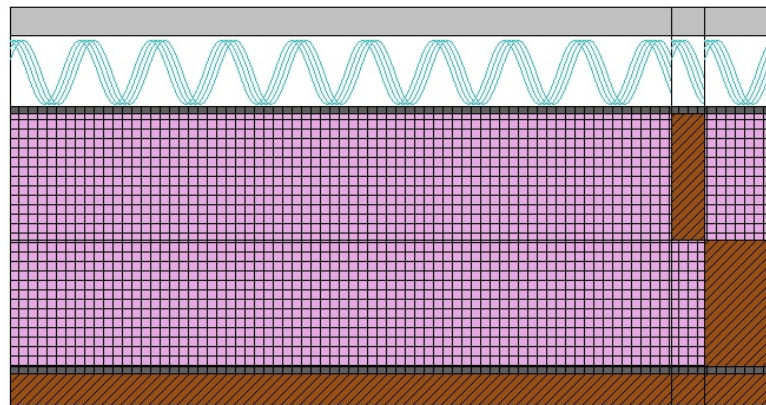
Wärmekapazität
 [kJ/m²K]

Cm 10cm (24h): 29
 Cm 3cm (2h): 22.3

Referenz: Custom

Geometrie

Dicke [mm]: 244



U-Wert

Statisch

0.2032 [W/m²K]

Rsi: 0.10 [m²K/W]

Innen

Rse: 0.04 [m²K/W]

Wetter: Zürich-MeteoSchweiz (CH), Höhe ü. M. des Gebäudes: 556 m

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m ³] | c [wh/kgK] | R [m ² K/W] |
|--|---------------|-----------|--------|------|----------------------|---------------|---------------------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 Isover : PB M 030 | 8 | 0.08 | 0.03 | 1 | 38 | 0.286 | 2.667 |
| 4 Isover : PB M 030 | 8 | 0.08 | 0.03 | 1 | 38 | 0.286 | 2.667 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m ² K], dUf= 0 [W/m ² K] | | | | | | dR | 0 |
| RT | | | | | | | 5.682 |

frsi = 0.980 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m ³] | c [wh/kgK] | R [m ² K/W] |
|--|---------------|-----------|--------|------|----------------------|---------------|---------------------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 Isover : PB M 030 | 8 | 0.08 | 0.03 | 1 | 38 | 0.286 | 2.667 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 8 | 2.4 | 0.14 | 30 | 480 | 0.611 | 0.571 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |

| | |
|--------------------------------|-----------------|
| Rse | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | dR 0 |
| | RT 3.586 |

frsi = 0.980 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 8 | 2.4 | 0.14 | 30 | 480 | 0.611 | 0.571 |
| 4 Isover : PB M 030 | 8 | 0.08 | 0.03 | 1 | 38 | 0.286 | 2.667 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 3.586 |

frsi = 0.980 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 8 | 2.4 | 0.14 | 30 | 480 | 0.611 | 0.571 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 8 | 2.4 | 0.14 | 30 | 480 | 0.611 | 0.571 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 1.491 |

frsi = 0.980 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Lebenszyklusanalyse

Berechnungsoptionen

Eigenschaften

Typ Dach
Gegen aussen

Norm : Minergie ECO /P-ECO /A
Project Typ : Neubau
Lebensdauer 60 Jahre

daten KBOB

Daten Hersteller

| | | | | |
|------------|---------------------------------|-------|---|--------------------|
| NRE | Nicht erneuerbare Primärenergie | 7.58 | - | [MJ/m²Jahr] |
| CED | Total Primärenergie | 16.44 | - | [MJ/m²Jahr] |
| GWP | Treibhausgasemissionen | 0.549 | - | [kg CO2-Eq/m²Jahr] |
| UBP | Umwelt Belastung Punkte | 628 | - | [Pts/m²Jahr] |

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.38 | 4.49 | 0.021 | 72 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.51 | 0.53 | 0.034 | 28 |
| Isover : PB M 030 Glaswolle, Isover | 8 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.08 | 1.7 | 0.052 | 85 |
| Isover : PB M 030 Glaswolle, Isover | 8 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.08 | 1.7 | 0.052 | 85 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.32 | 0.33 | 0.019 | 13 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 3.14 | 3.23 | 0.292 | 234 |

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.22 | 0.001 | 4 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| Isover : PB M 030 Glaswolle, Isover | 8 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.05 | 0.09 | 0.003 | 4 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 8 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.08 | 0.9 | 0.004 | 14 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 9.536E-04 | 6E-01 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.16 | 0.16 | 0.015 | 12 |

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|------------|-----------------------------|-----------------|--------|-------------------------------|-------------------------------|--|--------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.04 | 0.45 | 0.002 | 7 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.05 | 0.05 | 0.003 | 3 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 8 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.15 | 1.8 | 0.008 | 29 |
| Isover : PB M 030 Glaswolle, Isover | 8 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.11 | 0.17 | 0.005 | 8 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.31 | 0.32 | 0.029 | 23 |

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|------------|-----------------------------|-----------------|--------|-------------------------------|-------------------------------|--|--------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.88E-03 | 0.02 | 1.044E-04 | 4E-01 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.56E-03 | 2.63E-03 | 1.715E-04 | 1E-01 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 8 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 7.53E-03 | 0.09 | 4.175E-04 | 1 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 8 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 7.53E-03 | 0.09 | 4.175E-04 | 1 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.59E-03 | 1.65E-03 | 9.536E-05 | 6E-02 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 0.001 | 1 |

12-500 2 100+100mm

Nutzung: Decke/Dach
Gegen aussen

Aussen

EN ISO 6946

1

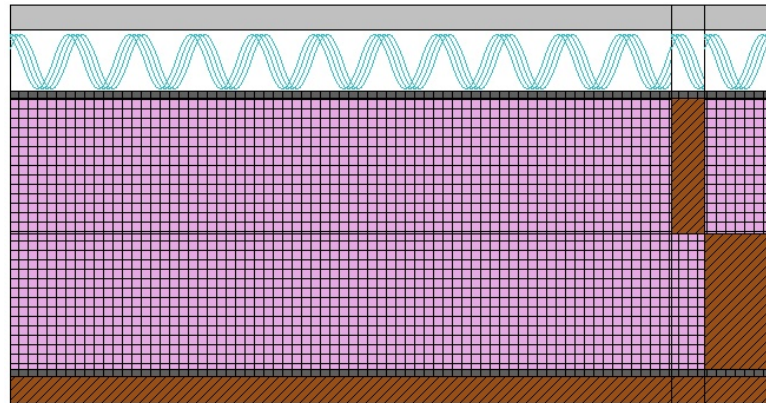
Wärmekapazität
[kJ/m²K]

Cm 10cm (24h): 29
Cm 3cm (2h): 22.3

Referenz: Custom

Geometrie

Dicke [mm]: 284



U-Wert

Statisch

0.165 [W/m²K]

Rsi: 0.10 [m²K/W]

Innen

Rse: 0.04 [m²K/W]

Wetter: Zürich-MeteoSchweiz (CH), Höhe ü. M. des Gebäudes: 556 m

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m ³] | c [wh/kgK] | R [m ² K/W] | |
|--|---------------|-----------|--------|------|----------------------|---------------|---------------------------|--------------|
| Rsi | | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 | |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 | |
| 3 Isover : PB M 030 | 10 | 0.1 | 0.03 | 1 | 38 | 0.286 | 3.333 | |
| 4 Isover : PB M 030 | 10 | 0.1 | 0.03 | 1 | 38 | 0.286 | 3.333 | |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 | |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 | |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 | |
| Rse | | | | | | | | 0.100 |
| dUg= 0 [W/m ² K], dUf= 0 [W/m ² K] | | | | | | | dR | 0 |
| | | | | | | | RT | 7.015 |

frsi = 0.984 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m ³] | c [wh/kgK] | R [m ² K/W] | |
|--|---------------|-----------|--------|------|----------------------|---------------|---------------------------|-------|
| Rsi | | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 | |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 | |
| 3 Isover : PB M 030 | 10 | 0.1 | 0.03 | 1 | 38 | 0.286 | 3.333 | |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 10 | 3 | 0.14 | 30 | 480 | 0.611 | 0.714 | |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 | |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 | |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 | |

| | |
|--------------------------------|-----------------|
| Rse | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | dR 0 |
| | RT 4.396 |

frsi = 0.984 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 10 | 3 | 0.14 | 30 | 480 | 0.611 | 0.714 |
| 4 Isover : PB M 030 | 10 | 0.1 | 0.03 | 1 | 38 | 0.286 | 3.333 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 4.396 |

frsi = 0.984 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 10 | 3 | 0.14 | 30 | 480 | 0.611 | 0.714 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 10 | 3 | 0.14 | 30 | 480 | 0.611 | 0.714 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 1.777 |

frsi = 0.984 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Lebenszyklusanalyse

Berechnungsoptionen

Eigenschaften

Typ Dach
Gegen aussen

Norm : Minergie ECO /P-ECO /A
Project Typ : Neubau
Lebensdauer 60 Jahre

daten KBOB

Daten Hersteller

| | | | | |
|------------|---------------------------------|-------|---|--------------------|
| NRE | Nicht erneuerbare Primärenergie | 8.22 | - | [MJ/m²Jahr] |
| CED | Total Primärenergie | 18.07 | - | [MJ/m²Jahr] |
| GWP | Treibhausgasemissionen | 0.581 | - | [kg CO2-Eq/m²Jahr] |
| UBP | Umwelt Belastung Punkte | 685 | - | [Pts/m²Jahr] |

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.38 | 4.49 | 0.021 | 72 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.51 | 0.53 | 0.034 | 28 |
| Isover : PB M 030 Glaswolle, Isover | 10 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.34 | 2.13 | 0.065 | 106 |
| Isover : PB M 030 Glaswolle, Isover | 10 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.34 | 2.13 | 0.065 | 106 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.32 | 0.33 | 0.019 | 13 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 3.14 | 3.23 | 0.292 | 234 |

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.22 | 0.001 | 4 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| Isover : PB M 030 Glaswolle, Isover | 10 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.07 | 0.11 | 0.003 | 5 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 10 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.09 | 1.12 | 0.005 | 18 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 9.536E-04 | 6E-01 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.16 | 0.16 | 0.015 | 12 |

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/ m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|---------------|--------------------------------|--------------------|--------|-------------------------------------|-------------------------------------|---|--------------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.04 | 0.45 | 0.002 | 7 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.05 | 0.05 | 0.003 | 3 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 10 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.19 | 2.25 | 0.01 | 36 |
| Isover : PB M 030 Glaswolle, Isover | 10 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.13 | 0.21 | 0.007 | 11 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.31 | 0.32 | 0.029 | 23 |

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/ m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|---------------|--------------------------------|--------------------|--------|-------------------------------------|-------------------------------------|---|--------------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.88E-03 | 0.02 | 1.044E-04 | 4E-01 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.56E-03 | 2.63E-03 | 1.715E-04 | 1E-01 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 10 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 9.42E-03 | 0.11 | 5.219E-04 | 2 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 10 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 9.42E-03 | 0.11 | 5.219E-04 | 2 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.59E-03 | 1.65E-03 | 9.536E-05 | 6E-02 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 0.001 | 1 |

12-500 3 120+120mm

Nutzung: Decke/Dach
Gegen aussen

Aussen

EN ISO 6946

1

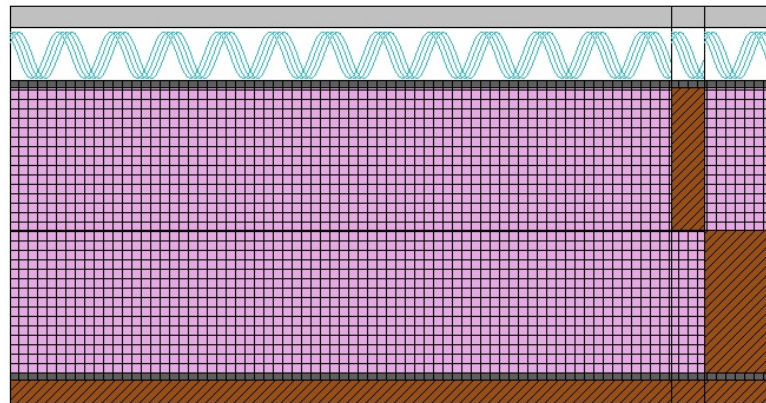
Wärmekapazität
[kJ/m²K]

Cm 10cm (24h): 29
Cm 3cm (2h): 22.3

Referenz: Custom

Geometrie

Dicke [mm]: 324



U-Wert

Statisch

0.1389 [W/m²K]

Rsi: 0.10 [m²K/W]

Rse: 0.04 [m²K/W]

Innen

Wetter: Zürich-MeteoSchweiz (CH), Höhe ü. M. des Gebäudes: 556 m

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] | |
|--|---------------|-----------|--------|------|---------|---------------|--------------|--------------|
| Rsi | | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 | |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 | |
| 3 Isover : PB M 030 | 12 | 0.12 | 0.03 | 1 | 38 | 0.286 | 4 | |
| 4 Isover : PB M 030 | 12 | 0.12 | 0.03 | 1 | 38 | 0.286 | 4 | |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 | |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 | |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 | |
| Rse | | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR | 0 |
| | | | | | | | RT | 8.348 |

frsi = 0.986 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] | |
|--|---------------|-----------|--------|------|---------|---------------|--------------|-------|
| Rsi | | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 | |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 | |
| 3 Isover : PB M 030 | 12 | 0.12 | 0.03 | 1 | 38 | 0.286 | 4 | |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 12 | 3.6 | 0.14 | 30 | 480 | 0.611 | 0.857 | |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 | |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 | |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 | |

| | |
|--------------------------------|----------|
| Rse | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | dR 0 |
| | RT 5.205 |

frsi = 0.986 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|--------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 12 | 3.6 | 0.14 | 30 | 480 | 0.611 | 0.857 |
| 4 Isover : PB M 030 | 12 | 0.12 | 0.03 | 1 | 38 | 0.286 | 4 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 5.205 |

frsi = 0.986 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|--------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 12 | 3.6 | 0.14 | 30 | 480 | 0.611 | 0.857 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 12 | 3.6 | 0.14 | 30 | 480 | 0.611 | 0.857 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 2.063 |

frsi = 0.986 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Lebenszyklusanalyse

Berechnungsoptionen

Eigenschaften

Typ Dach
Gegen aussen

Norm : Minergie ECO /P-ECO /A
Project Typ : Neubau
Lebensdauer 60 Jahre

daten KBOB

Daten Hersteller

| | | | | |
|------------|---------------------------------|-------|---|--------------------|
| NRE | Nicht erneuerbare Primärenergie | 8.85 | - | [MJ/m²Jahr] |
| CED | Total Primärenergie | 19.71 | - | [MJ/m²Jahr] |
| GWP | Treibhausgasemissionen | 0.612 | - | [kg CO2-Eq/m²Jahr] |
| UBP | Umwelt Belastung Punkte | 743 | - | [Pts/m²Jahr] |

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.38 | 4.49 | 0.021 | 72 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.51 | 0.53 | 0.034 | 28 |
| Isover : PB M 030 Glaswolle, Isover | 12 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.61 | 2.55 | 0.078 | 127 |
| Isover : PB M 030 Glaswolle, Isover | 12 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.61 | 2.55 | 0.078 | 127 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.32 | 0.33 | 0.019 | 13 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 3.14 | 3.23 | 0.292 | 234 |

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.22 | 0.001 | 4 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| Isover : PB M 030 Glaswolle, Isover | 12 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.08 | 0.13 | 0.004 | 6 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 12 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.11 | 1.35 | 0.006 | 22 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 9.536E-04 | 6E-01 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.16 | 0.16 | 0.015 | 12 |

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|------------|-----------------------------|-----------------|--------|-------------------------------|-------------------------------|--|--------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.04 | 0.45 | 0.002 | 7 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.05 | 0.05 | 0.003 | 3 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 12 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.23 | 2.69 | 0.013 | 43 |
| Isover : PB M 030 Glaswolle, Isover | 12 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.16 | 0.26 | 0.008 | 13 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.31 | 0.32 | 0.029 | 23 |

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|------------|-----------------------------|-----------------|--------|-------------------------------|-------------------------------|--|--------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.88E-03 | 0.02 | 1.044E-04 | 4E-01 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.56E-03 | 2.63E-03 | 1.715E-04 | 1E-01 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 12 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.01 | 0.13 | 6.262E-04 | 2 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 12 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.01 | 0.13 | 6.262E-04 | 2 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.59E-03 | 1.65E-03 | 9.536E-05 | 6E-02 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 0.001 | 1 |

12-500 4 140+120mm

Nutzung: Decke/Dach
Gegen aussen

Aussen

EN ISO 6946

1

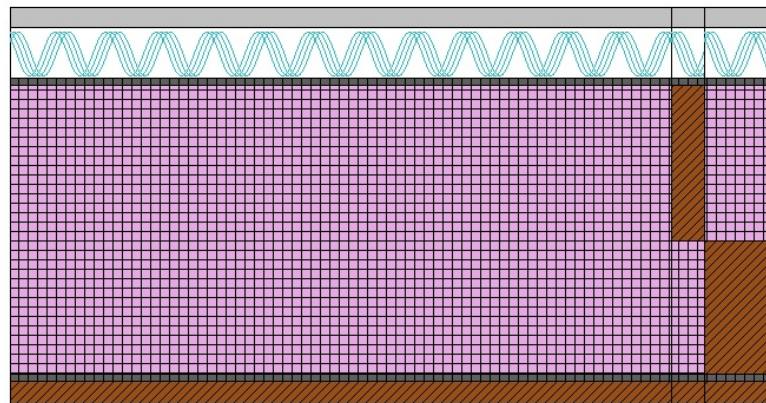
Wärmekapazität
[kJ/m²K]

Cm 10cm (24h): 29
Cm 3cm (2h): 22.3

Referenz: Custom

Geometrie

Dicke [mm]: 344



U-Wert

Statisch

0.1282 [W/m²K]

Rsi: 0.10 [m²K/W]

Rse: 0.04 [m²K/W]

Innen

Wetter: Zürich-MeteoSchweiz (CH), Höhe ü. M. des Gebäudes: 556 m

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] | |
|--|---------------|-----------|--------|------|---------|---------------|--------------|--------------|
| Rsi | | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 | |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 | |
| 3 Isover : PB M 030 | 12 | 0.12 | 0.03 | 1 | 38 | 0.286 | 4 | |
| 4 Isover : PB M 030 | 14 | 0.14 | 0.03 | 1 | 38 | 0.286 | 4.667 | |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 | |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 | |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 | |
| Rse | | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR | 0 |
| | | | | | | | RT | 9.015 |

frsi = 0.987 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] | |
|--|---------------|-----------|--------|------|---------|---------------|--------------|-------|
| Rsi | | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 | |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 | |
| 3 Isover : PB M 030 | 12 | 0.12 | 0.03 | 1 | 38 | 0.286 | 4 | |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 14 | 4.2 | 0.14 | 30 | 480 | 0.611 | 1 | |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 | |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 | |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 | |

| | |
|--------------------------------|-----------------|
| Rse | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | dR 0 |
| | RT 5.348 |

frsi = 0.987 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 12 | 3.6 | 0.14 | 30 | 480 | 0.611 | 0.857 |
| 4 Isover : PB M 030 | 14 | 0.14 | 0.03 | 1 | 38 | 0.286 | 4.667 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 5.872 |

frsi = 0.987 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 12 | 3.6 | 0.14 | 30 | 480 | 0.611 | 0.857 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 14 | 4.2 | 0.14 | 30 | 480 | 0.611 | 1 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 2.205 |

frsi = 0.987 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Lebenszyklusanalyse

Berechnungsoptionen

Eigenschaften

Typ Dach
Gegen aussen

Norm : Minergie ECO /P-ECO /A
Project Typ : Neubau
Lebensdauer 60 Jahre

daten KBOB

Daten Hersteller

| | | | | |
|------------|---------------------------------|-------|---|--------------------|
| NRE | Nicht erneuerbare Primärenergie | 9.17 | - | [MJ/m²Jahr] |
| CED | Total Primärenergie | 20.42 | - | [MJ/m²Jahr] |
| GWP | Treibhausgasemissionen | 0.628 | - | [kg CO2-Eq/m²Jahr] |
| UBP | Umwelt Belastung Punkte | 770 | - | [Pts/m²Jahr] |

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.38 | 4.49 | 0.021 | 72 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.51 | 0.53 | 0.034 | 28 |
| Isover : PB M 030 Glaswolle, Isover | 12 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.61 | 2.55 | 0.078 | 127 |
| Isover : PB M 030 Glaswolle, Isover | 14 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.88 | 2.98 | 0.092 | 149 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.32 | 0.33 | 0.019 | 13 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 3.14 | 3.23 | 0.292 | 234 |

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.22 | 0.001 | 4 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| Isover : PB M 030 Glaswolle, Isover | 12 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.08 | 0.13 | 0.004 | 6 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 14 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.13 | 1.57 | 0.007 | 25 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 9.536E-04 | 6E-01 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.16 | 0.16 | 0.015 | 12 |

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/ m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|---------------|--------------------------------|--------------------|--------|-------------------------------------|-------------------------------------|---|--------------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.04 | 0.45 | 0.002 | 7 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.05 | 0.05 | 0.003 | 3 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 12 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.23 | 2.69 | 0.013 | 43 |
| Isover : PB M 030 Glaswolle, Isover | 14 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.19 | 0.3 | 0.009 | 15 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.31 | 0.32 | 0.029 | 23 |

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/ m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|---------------|--------------------------------|--------------------|--------|-------------------------------------|-------------------------------------|---|--------------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.88E-03 | 0.02 | 1.044E-04 | 4E-01 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.56E-03 | 2.63E-03 | 1.715E-04 | 1E-01 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 12 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.01 | 0.13 | 6.262E-04 | 2 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 14 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.01 | 0.16 | 7.306E-04 | 3 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.59E-03 | 1.65E-03 | 9.536E-05 | 6E-02 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 0.001 | 1 |

12-500 5 160+160mmNutzung: Decke/Dach
Gegen aussen

Aussen

EN ISO 6946

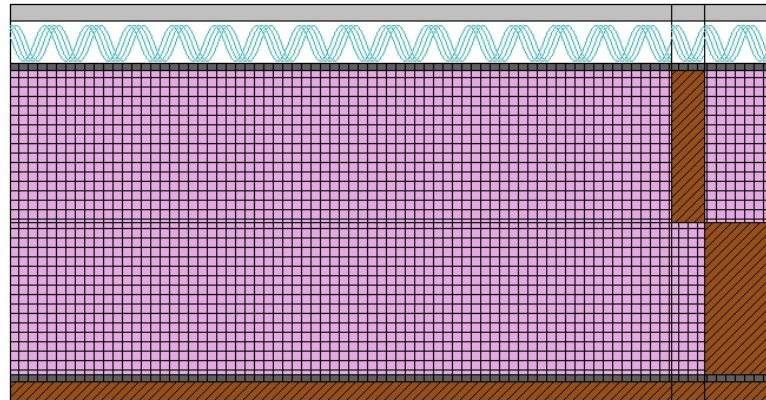
1

Wärmekapazität
[kJ/m²K]Cm 10cm (24h): 29
Cm 3cm (2h): 22.3

Referenz: Custom

Geometrie

Dicke [mm]: 404

**U-Wert**

Statisch

0.1055 [W/m²K]Rsi: 0.10 [m²K/W]Rse: 0.04 [m²K/W]

Innen

Wetter: Zürich-MeteoSchweiz (CH), Höhe ü. M. des Gebäudes: 556 m**Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)**

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m ³] | c [wh/kgK] | R [m ² K/W] |
|--|---------------|-----------|--------|------|----------------------|---------------|---------------------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 Isover : PB M 030 | 16 | 0.16 | 0.03 | 1 | 38 | 0.286 | 5.333 |
| 4 Isover : PB M 030 | 16 | 0.16 | 0.03 | 1 | 38 | 0.286 | 5.333 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m ² K], dUf= 0 [W/m ² K] | | | | | | dR | 0 |
| RT | | | | | | | 11.015 |

frsi = 0.989 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m ³] | c [wh/kgK] | R [m ² K/W] |
|--|---------------|-----------|--------|------|----------------------|---------------|---------------------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 Isover : PB M 030 | 16 | 0.16 | 0.03 | 1 | 38 | 0.286 | 5.333 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 16 | 4.8 | 0.14 | 30 | 480 | 0.611 | 1.143 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |

| | |
|--------------------------------|-----------------|
| Rse | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | dR 0 |
| | RT 6.825 |

frsi = 0.989 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 16 | 4.8 | 0.14 | 30 | 480 | 0.611 | 1.143 |
| 4 Isover : PB M 030 | 16 | 0.16 | 0.03 | 1 | 38 | 0.286 | 5.333 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 6.825 |

frsi = 0.989 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 16 | 4.8 | 0.14 | 30 | 480 | 0.611 | 1.143 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 16 | 4.8 | 0.14 | 30 | 480 | 0.611 | 1.143 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 2.634 |

frsi = 0.989 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Lebenszyklusanalyse

Berechnungsoptionen

Eigenschaften

Typ Dach
Gegen aussen

Norm : Minergie ECO /P-ECO /A
Project Typ : Neubau
Lebensdauer 60 Jahre

daten KBOB

Daten Hersteller

| | | | | |
|------------|---------------------------------|-------|---|--------------------|
| NRE | Nicht erneuerbare Primärenergie | 10.13 | - | [MJ/m²Jahr] |
| CED | Total Primärenergie | 22.97 | - | [MJ/m²Jahr] |
| GWP | Treibhausgasemissionen | 0.675 | - | [kg CO2-Eq/m²Jahr] |
| UBP | Umwelt Belastung Punkte | 857 | - | [Pts/m²Jahr] |

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.38 | 4.49 | 0.021 | 72 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.51 | 0.53 | 0.034 | 28 |
| Isover : PB M 030 Glaswolle, Isover | 16 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.15 | 3.4 | 0.105 | 170 |
| Isover : PB M 030 Glaswolle, Isover | 16 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.15 | 3.4 | 0.105 | 170 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.32 | 0.33 | 0.019 | 13 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 3.14 | 3.23 | 0.292 | 234 |

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m³] | Lebens. [Jahre] | | NRE [MJ/m²Ja hr] | CED [MJ/m²Ja hr] | GWP [kg CO2-Eq/m²Jahr] | UBP [Pts/m²Ja hr] |
|--|------------|----------------|-----------------|--------|------------------|------------------|------------------------|-------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.22 | 0.001 | 4 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| Isover : PB M 030 Glaswolle, Isover | 16 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.11 | 0.17 | 0.005 | 8 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 16 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.15 | 1.8 | 0.008 | 29 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 9.536E-04 | 6E-01 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.16 | 0.16 | 0.015 | 12 |

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/ m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|---------------|--------------------------------|--------------------|--------|-------------------------------------|-------------------------------------|---|--------------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.04 | 0.45 | 0.002 | 7 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.05 | 0.05 | 0.003 | 3 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 16 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.3 | 3.59 | 0.017 | 58 |
| Isover : PB M 030 Glaswolle, Isover | 16 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.22 | 0.34 | 0.01 | 17 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.31 | 0.32 | 0.029 | 23 |

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/ m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|---------------|--------------------------------|--------------------|--------|-------------------------------------|-------------------------------------|---|--------------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.88E-03 | 0.02 | 1.044E-04 | 4E-01 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.56E-03 | 2.63E-03 | 1.715E-04 | 1E-01 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 16 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.18 | 8.35E-04 | 3 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 16 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.18 | 8.35E-04 | 3 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.59E-03 | 1.65E-03 | 9.536E-05 | 6E-02 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 0.001 | 1 |

12-500 6 200+200mmNutzung: Decke/Dach
Gegen aussen

Aussen

EN ISO 6946

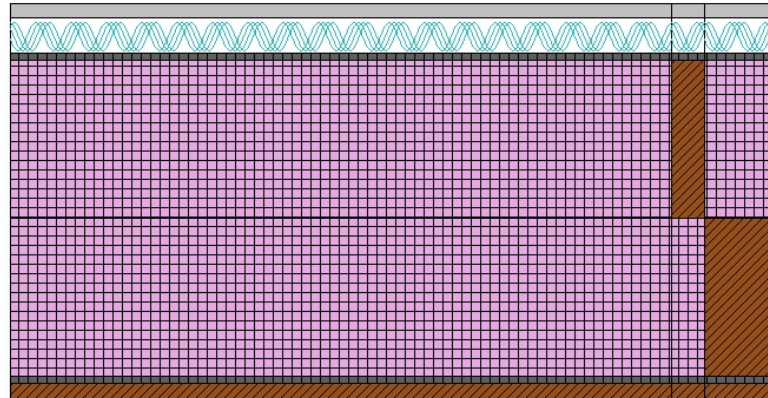
1

Wärmekapazität
[kJ/m²K]Cm 10cm (24h): 29
Cm 3cm (2h): 22.3

Referenz: Custom

Geometrie

Dicke [mm]: 484

**U-Wert**

Statisch

0.085 [W/m²K]Rsi: 0.10 [m²K/W]Rse: 0.04 [m²K/W]

Innen

Wetter: Zürich-MeteoSchweiz (CH), Höhe ü. M. des Gebäudes: 556 mQuerschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m ³] | c [wh/kgK] | R [m ² K/W] |
|--|---------------|-----------|--------|------|----------------------|---------------|---------------------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 Isover : PB M 030 | 20 | 0.2 | 0.03 | 1 | 38 | 0.286 | 6.667 |
| 4 Isover : PB M 030 | 20 | 0.2 | 0.03 | 1 | 38 | 0.286 | 6.667 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m ² K], dUf= 0 [W/m ² K] | | | | | | dR | 0 |
| RT | | | | | | | 13.682 |

frsi = 0.992 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m ³] | c [wh/kgK] | R [m ² K/W] |
|--|---------------|-----------|--------|------|----------------------|---------------|---------------------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 Isover : PB M 030 | 20 | 0.2 | 0.03 | 1 | 38 | 0.286 | 6.667 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 20 | 6 | 0.14 | 30 | 480 | 0.611 | 1.429 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |

| | |
|--------------------------------|-----------------|
| Rse | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | dR 0 |
| | RT 8.444 |

frsi = 0.992 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 20 | 6 | 0.14 | 30 | 480 | 0.611 | 1.429 |
| 4 Isover : PB M 030 | 20 | 0.2 | 0.03 | 1 | 38 | 0.286 | 6.667 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 8.444 |

frsi = 0.992 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Materialname: | Dicke [cm] | Sd [m] | [W/mK] | [-] | [kg/m³] | c [wh/kgK] | R [m²K/W] |
|--|---------------|-----------|--------|------|---------|---------------|-----------------|
| Rsi | | | | | | | 0.100 |
| 1 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 2 | 0.6 | 0.14 | 30 | 480 | 0.611 | 0.143 |
| 2 Isover : Vario KM Supraplex SKS | 0.06 | 2.3 | 0.2 | 3833 | 275 | 0.444 | 0.003 |
| 3 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 20 | 6 | 0.14 | 30 | 480 | 0.611 | 1.429 |
| 4 SIA 381/1 : Fichte-Tanne (Feuchte=15%) | 20 | 6 | 0.14 | 30 | 480 | 0.611 | 1.429 |
| 5 Project : ECRAN INTEGRA | 0.05 | 0.05 | 0.2 | 100 | 330 | 0.389 | 0.002 |
| 6 CEN : Luftschicht | 4.5 | 0.01 | 0.277 | 1 | 1.23 | 0.278 | 0 |
| 7 Project : Tonziegel | 1.8 | 0.63 | 1 | 35 | 2000 | 0.222 | 0 |
| Rse | | | | | | | 0.100 |
| dUg= 0 [W/m²K], dUf= 0 [W/m²K] | | | | | | | dR 0 |
| | | | | | | | RT 3.205 |

frsi = 0.992 [-], frsi,min,cond = 0.727 [-], frsi,min,moist = 0.750 [-]

Lebenszyklusanalyse

Berechnungsoptionen

Eigenschaften

Typ Dach
Gegen aussen

Norm : Minergie ECO /P-ECO /A
Project Typ : Neubau
Lebensdauer 60 Jahre

daten KBOB

Daten Hersteller

| | | | | |
|------------|---------------------------------|-------|---|--|
| NRE | Nicht erneuerbare Primärenergie | 11.41 | - | [MJ/m ² Jahr] |
| CED | Total Primärenergie | 26.24 | - | [MJ/m ² Jahr] |
| GWP | Treibhausgasemissionen | 0.738 | - | [kg CO ₂ -Eq/m ² Jahr] |
| UBP | Umwelt Belastung Punkte | 971 | - | [Pts/m ² Jahr] |

Querschnitt 1 (Flächenverhältnis des Querschnitts 87%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|------------|-----------------------------|-----------------|--------|-------------------------------|-------------------------------|--|--------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.38 | 4.49 | 0.021 | 72 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.51 | 0.53 | 0.034 | 28 |
| Isover : PB M 030 Glaswolle, Isover | 20 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.69 | 4.25 | 0.131 | 212 |
| Isover : PB M 030 Glaswolle, Isover | 20 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.69 | 4.25 | 0.131 | 212 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.32 | 0.33 | 0.019 | 13 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 3.14 | 3.23 | 0.292 | 234 |

Querschnitt 2 (Flächenverhältnis des Querschnitts 4%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|------------|-----------------------------|-----------------|--------|-------------------------------|-------------------------------|--|--------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.22 | 0.001 | 4 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| Isover : PB M 030 Glaswolle, Isover | 20 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.13 | 0.21 | 0.007 | 11 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 20 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.19 | 2.25 | 0.01 | 36 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 9.536E-04 | 6E-01 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.16 | 0.16 | 0.015 | 12 |

Querschnitt 3 (Flächenverhältnis des Querschnitts 9%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|------------|-----------------------------|-----------------|--------|-------------------------------|-------------------------------|--|--------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.04 | 0.45 | 0.002 | 7 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.05 | 0.05 | 0.003 | 3 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 20 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.38 | 4.49 | 0.021 | 72 |
| Isover : PB M 030 Glaswolle, Isover | 20 | 38 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.27 | 0.43 | 0.013 | 21 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.03 | 0.03 | 0.002 | 1 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.31 | 0.32 | 0.029 | 23 |

Querschnitt 4 (Flächenverhältnis des Querschnitts 0%)

| Baumaterial GUI Matériau KBOB | Dicke [cm] | Dichte [kg/m ³] | Lebens. [Jahre] | | NRE [MJ/m ² Ja hr] | CED [MJ/m ² Ja hr] | GWP [kg CO ₂ -Eq/m ² Jahr] | UBP [Pts/m ² Ja hr] |
|--|------------|-----------------------------|-----------------|--------|-------------------------------|-------------------------------|--|--------------------------------|
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 2 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.88E-03 | 0.02 | 1.044E-04 | 4E-01 |
| Isover : Vario KM Supraplex SKS Polyamid (PA) glasfaserverstärkt | 0.06 | 275 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 2.56E-03 | 2.63E-03 | 1.715E-04 | 1E-01 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 20 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.22 | 0.001 | 4 |
| SIA 381/1 : Fichte-Tanne (Feuchte=15%) Schnittholz, Koniferen, luftgetrocknet, rauh | 20 | 480 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.22 | 0.001 | 4 |
| Project : ECRAN INTEGRA Polyethylenfolie | 0.05 | 330 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 1.59E-03 | 1.65E-03 | 9.536E-05 | 6E-02 |
| CEN : Luftschicht Luft | 4.5 | 1.23 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0 | 0 | 0 | 0 |
| Project : Tonziegel Tonziegel | 1.8 | 2000 | 40 | Herst. | - | - | - | - |
| | | | | KBOB | 0.02 | 0.02 | 0.001 | 1 |