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| **** AGUA = | **1000** | kg /m3 |
| 1 m3 = | **1000** | Litros |

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| --- | --- | --- | --- | --- | --- |
| D1 | **102** | mm | | 0,008171 | m2 (A1) |
| Q | **235** | Lt /min | | 0,0039 | m3 /s |
| y1 | **5,4** | m | |  |  |
| h2 | **5** | m | |  |  |
| D2 | **38** | mm | | 0,001134 | m2 (A2) |
| v1 =Q /A1 | | **v1** | | **0,4793** | **m/s** |
| v2 =Q /A2 | | **v2** | | **3,4535** | **m/s** |
|  |  |  | |  |  |
|  | y2 =((g\*(y1-h2)+(v1^2-v2^2)/2)/g)\*100 | | | | |
|  |  | **y2** | **-19,6782** | | **cm** |

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| **AGUA** |  |  |
| **c** AGUA = | **1,0** | cal /gr-ºC |
| **HIELO** |  |  |
| **c** HIELO = | **0,5** | cal /gr-ºC |
| **** HIELO = | **0,92** | gr /cm3 |
| **L*f***HIELO = | **80,0** | cal /gr |
| **CORCHO** |  |  |
| **k** CORCHO = | **0,0004** | cal/ cm-s-ºC |
| **** CORCHO = | **0,15** | gr /cm3 |

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| --- | --- | --- | --- | --- |
| t INT | **-15,0** | ºC | -15,0 | ºC |
| t EXT | **20,0** | ºC | 20,0 | ºC |
| x | **50** | cm |  |  |
| y | **50** | cm | 11.000,0 | cm2 (A) |
| z | **30** | cm | 75.000,0 | cm3 (Vol) |
|  | **2,0** | días | 69.000,0 | gr (m) |
|  | **18,0** | horas | 237.600,0 | s (t) |
| Q = m \*(cHIELO\*abs( tINT) +L*f* HIELO +cAGUA\*abs( tEXT)) | | | | |
|  |  | ** Q** | **7.417.500** | **cal** |
|  | Esp = t\* (A \*k \*(abs(t EXT) + abs(t INT)) / Q | | | |
|  |  | **e** | **4,9330** | **cm** |

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| **PATM =** | **101325** | Pa |
| ** MADERA =** | **810** | kg /m3 |
| ** ALUMUNIO =** | **2700** | kg /m3 |
| ** AGUA =** | **1000** | kg /m3 |

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| a MAD | **190** | mm | 0,0069 | m3 (VM) |
| aALUM | **95** | mm | 0,0009 | m3 (VA) |
|  |  |  | 5,5558 | kg (mM) |
|  |  |  | 2,3149 | kg (mA) |
|  |  |  | 54,4467 | N (wM) |
|  |  |  | 22,6861 | N (wA) |
|  |  |  | 67,2182 | N (EM) |
|  |  |  | 8,4023 | N (EA) |
|  |  | F = wM +wA -EM -EA | |  |
|  |  | **F** | **1,5124** | **N** |

|  |  |  |
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| **ALUMINIO** |  |  |
| **c** ALUM = | **0,2100** | cal /gr-ºC |
| **** ALUM =. | **2,7000** | gr /cm3 |
| **MERCURIO** |  |  |
| **c** MERC = | **0,0330** | cal /gr-ºC |
| **** MERC = | **13,6000** | gr /cm3 |
| **PLOMO** |  |  |
| **c** PLOMO = | **0,0310** | cal /gr-ºC |
| **** PLOMO =. | **11,4000** | gr /cm3 |
| **P.fusión** PLOMO =. | **327,00** | ºC |

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| mALUM | **150,0** | gr |  |  |
| vMERC | **395,0** | cm3 | 5.372,0000 | gr |
| T1 | **20,0** | ºC |  |  |
| mPLOM | **230,0** | gr |  |  |
| T2 | **320,0** | ºC |  |  |
| T3 = (T1\*(mALUM\*cALUM +mMERC\*cMERC ) +mPLOM\*cPLOM\*T2) | | | | |
| (mALUM\*cALUM +mMERC\*cMERC +mPLOM\*cPLOM) | | | | |
|  |  | **T3** | **29,9071** | **ºC** |