

## ภาคผนวก ก.

## ความรู้เบื้องต้นเกี่ยวกับความร้อนและพลังงานของวัสดุ

ตารางที่ ก.1 หน่วยวัดทางด้านพลังงานสำหรับปริมาณความร้อนในระบบ SI [7]

|                         |                                                     |                                                                                                                                                                             |
|-------------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Length                  | m                                                   | (metre)                                                                                                                                                                     |
| Mass                    | kg                                                  | (kilogram)                                                                                                                                                                  |
| Time                    | s                                                   | (second)                                                                                                                                                                    |
| Velocity, speed         | <b>m/s</b>                                          | i.e. unit length movement in unit time; the everyday unit is km/h, which is $1000\text{m}/3600\text{s} = 0.278 \text{ m/s}$ or conversely: $1 \text{ m/s} = 3.6\text{km/h}$ |
| Acceleration, force     | <b>m/s<sup>2</sup></b><br><b>kg.m/s<sup>2</sup></b> | i.e. unit velocity increase in unit time: (m/s)/s that which give unit acceleration to unit mass named Newton ( <b>N</b> )                                                  |
| Work, energy            | <b>Kg.m<sup>2</sup>/s<sup>2</sup></b>               | unit work is done when unit force is acting over unit length i.e. $\text{N} \times \text{m}$ named joule( <b>J</b> )                                                        |
| Power, energy flow rate | <b>Kg.m<sup>2</sup>/s<sup>3</sup></b>               | unit energy flow in unit time or unit work done in unit time i.e. $\text{J/s}$ named watt ( <b>W</b> )                                                                      |
| Pressure, stress        | <b>Kg.m<sup>2</sup>/s<sup>2</sup></b>               | unit force acting in unit area $(\text{Kg.m/s}^2)/\text{m}^2$ i.e. $\text{N/m}^2$ named pascal ( <b>Pa</b> )                                                                |

หน่วยวัดระบบ SI ได้มาจากชื่อของคน จำเป็นต้องเขียนด้วยอักษรตัวพิมพ์ใหญ่

ตารางที่ ก.2 คุณสมบัติทางด้านการนำความร้อนของวัสดุ [7]

| Materials                         | Conductivity<br>(W/m K) | Density<br>(kg/m <sup>3</sup> ) | Specific heat<br>(J/kg K) |
|-----------------------------------|-------------------------|---------------------------------|---------------------------|
| <i>Wall Materials</i>             |                         |                                 |                           |
| Adobe Blocks                      | 1.250                   | 2050                            | 1000                      |
| Brickwork, outer leaf             | 0.840                   | 1700                            | 800                       |
| Brickwork, inner leaf             | 0.620                   | 1700                            | 800                       |
| Brick, sand-lime                  | 1.080                   | 1840                            | 840                       |
| Concrete                          |                         |                                 |                           |
| Cast, dense                       | 1.400                   | 2100                            | 840                       |
| lightweight                       | 0.384                   | 1200                            | 1000                      |
| Concrete block, heavy             | 1.630                   | 2300                            | 1000                      |
| Concrete block, medium            | 0.510                   | 1400                            | 1000                      |
| Fiberboard (soft board)           | 0.600                   | 300                             | 1000                      |
| Fibrous cement sheet              | 0.360                   | 700                             | 1050                      |
| Glass                             | 1.100                   | 2500                            | 840                       |
| Plywood                           | 0.138                   | 620                             | 1300                      |
| Sand (dry)                        | 0.300                   | 1500                            | 800                       |
| Plasterboard                      | 0.160                   | 950                             | 840                       |
| Timber                            |                         |                                 |                           |
| softwood                          | 0.130                   | 610                             | 1420                      |
| hardwood                          | 0.150                   | 680                             | 1200                      |
| <i>Surfacing</i>                  |                         |                                 |                           |
| External rendering                | 0.500                   | 1300                            | 1000                      |
| Plastering                        |                         |                                 |                           |
| dense                             | 0.500                   | 1300                            | 1000                      |
| lightweight                       | 0.160                   | 600                             | 1000                      |
| <i>Roof &amp; floor materials</i> |                         |                                 |                           |
| Asphalt, bitum. felt              | 0.500                   | 1700                            | 1000                      |
| Concrete slab, dense              | 1.130                   | 2000                            | 1000                      |
| Concrete slab, aerated            | 0.160                   | 500                             | 840                       |
| <i>Insulating materials</i>       |                         |                                 |                           |
| Cork                              | 0.038                   | 144                             | 1800                      |
| EPS (exp. polystyrene)            | 0.035                   | 25                              | 1400                      |
| Glass fiber                       |                         |                                 |                           |
| quilt                             | 0.040                   | 12                              | 840                       |
| batt                              | 0.035                   | 25                              | 1000                      |