

MALAYSIAN STANDARD
MS 2680:2017

ENERGY EFFICIENCY AND
USE OF RENEWABLE
ENERGY FOR RESIDENTIAL
BUILDINGS —
CODE OF PRACTICE



MS2680



**MALAYSIAN
STANDARD**

MS 2680:2017

Energy efficiency and use of renewable
energy for residential buildings -
Code of practice

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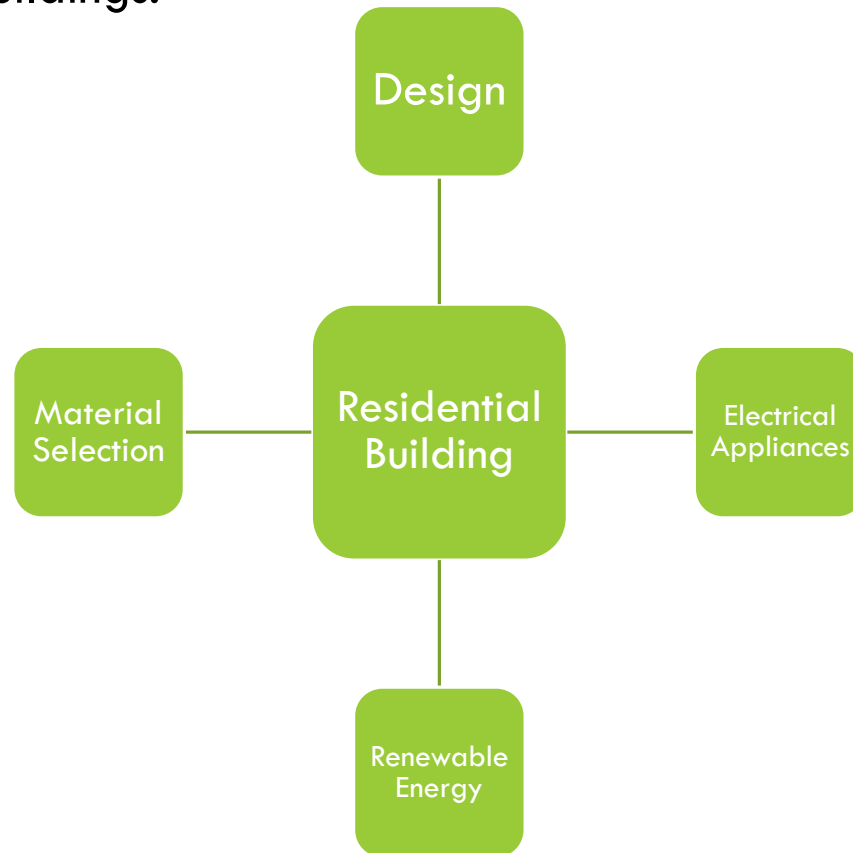
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DEPARTMENT OF STANDARDS MALAYSIA

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SCOPE OF MS2680

This code of practice gives guidance on the design, selection of materials and electrical appliances and efficient use of energy including the application of renewable energy in new and existing residential buildings.



SUSTAINABLE DESIGN APPROACH

- Designing within the contextual climate and site.
- Achieve indoor environmental quality (IEQ)
- Use environmentally friendly materials
- Minimise waste.
- A holistic architectural, engineering, site planning and landscaping approach to achieve energy efficiency.

PASSIVE DESIGN STRATEGY

- site planning and orientation
- daylighting
- roof
- façade
- natural ventilation
- strategic landscaping
- alternative/renewable energy

SITE PLANNING AND ORIENTATION

- geographical location (latitude, altitude, longitude)
- land form/topography (hill, valleys)
- existing vegetation (shading potential, channeling of wind, ambient temperature)
- site wind condition (wind direction, speed)
- water bodies (glare, reflection, humidity)
- adjacent development (heat island effect, microclimate)
- infrastructure (accessibility, water supply, reducing carbon emission).

DAYLIGHTING

Daylighting system

- space orientation and layout
- physical (shape and size) and optical properties of glazing through which daylight will transmit or penetrate
- internal floor, wall and ceiling surface properties (colour and reflectivity)
- visual contrast between adjacent surfaces
- protection from visual discomfort (e.g. glare and silhouette) caused by external and internal building elements.

ROOF

Roof designs

- Thermal properties (U Value, Roof Thermal Transfer Value)
- Solar Reflectance Index
- pitch to drain off heavy rains
- large overhangs to shade the walls and openings
- double roof design
- roof insulation and assemblies
- ceiling insulation
- roof ventilation.

FAÇADE

Exterior portions of a building through which thermal energy is transferred.

Building envelope design and orientation to facilitate

- sun shading
- daylighting
- natural ventilation.

Optimise daylighting and thermal comfort

Overall Thermal Transfer Value (OTTV)

The façade design providing view, daylight and minimising solar heat gain.

NATURAL VENTILATION & THERMAL COMFORT

- cross ventilation (wind-driven)
- stack ventilation (buoyancy-driven).
- Adaptive thermal comfort

STRATEGIC LANDSCAPING

Strategic landscaping

- shading from the sun, solar filtration for cooler microclimate around the building to reduce the temperature difference
- maximising areas allocated for landscape (softscape and hardscape) & aquascape
- Selection of plant types
- choice of materials for the hardscape to reduce the solar heat gain and reflection at the surrounding spaces.

ALTERNATIVE/RENEWABLE ENERGY

Appropriate applications of Renewable Energy for residential buildings

- solar thermal
- Photovoltaic
- rainwater harvesting.

ELECTRICAL APPLIANCES

- lighting
- air conditioners
- Fans
- refrigerators
- Televisions
- water heaters, washing machines, electric irons, microwaves, ovens/stoves.



MS2680 INTRODUCTION