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ARAB ENGINEERING BUREAU

1 GENERAL

1.1 INTRODUCTION

1.1.1 Scope

- 1 This Section covers the type, quality and application of exterior wall and roof insulation, damp proof courses, waterproof; and related joints, caulking and insulation.
- 2 The purpose of QCS is to provide as a general technical guide for acceptable construction work practices in the State of Qatar, considering this; any addition for technology, material, specification, standard that are not mentioned in this section or their modification, shall be subject to approval as stated in the introduction of QCS (00-02).
- 3 Related Sections are as follows:

This Section

Part 2..... Building Insulation

Part 3..... Cold Stores

Section 1	General
Section 13	Masonry
Section 14	Roofing
Section 16	Structural Metalwork
Section 17	Metalwork
Section 24	Finishes to Buildings
Section 25	Glass and Glazing

1.1.2 References

- 1 The following standards are adopted and/or referred to in this Section:
 - ASTM C208.....Standard Specification for Cellulosic Fiber Insulating Board
 - ASTM C332.....Standard Specification for Lightweight Aggregates for Insulating Concrete
 - ASTM C549Standard Specification for Perlite Loose Fill Insulation
 - ASTM C578.....Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
 - ASTM C656.....Standard Specification for Structural Insulating Board, Calcium Silicate
 - ASTM C726.....Standard Specification for Mineral Wool Roof Insulation Board
 - ASTM C1014.....Standard Specification for Spray-Applied Mineral Fiber Thermal and Sound Absorbing Insulation
 - ASTM C1045Standard Practice for Calculating Thermal Transmission Properties Under Steady-State Conditions
 - ASTM C1355/C1355M Standard Specification for Glass Fiber Reinforced Gypsum Composites
 - ASTM C1410.....Standard Specification for Cellular Melamine Thermal and Sound-Absorbing Insulation
 - ASTM C1481.....Standard Guide for Use of Joint Sealants with Exterior Insulation and Finish Systems (EIFS)
 - ASTM C1482.....Standard Specification for Polyimide Flexible Cellular Thermal and Sound Absorbing Insulation

- ASTM C1535.....Standard Practice for Application of Exterior Insulation and Finish Systems Class PI
- ASTM C1696.....Standard Guide for Industrial Thermal Insulation Systems
- ASTM D4637/D4637M Standard Specification for EPDM Sheet Used In Single-Ply Roof Membrane (reinforced sheets only)
- ASTM D6221/D6221M Standard Specification for Reinforced Bituminous Flashing Sheets for Roofing and Waterproofing
- ASTM D7465/D7465M Standard Specification for Ethylene Propylene Diene Terpolymer (EPDM) Sheet Used In Geomembrane Applications (reinforced sheets only)
- ASTM E2110.....Standard Terminology for Exterior Insulation and Finish Systems (EIFS)
- ASTM E2190.....Standard Specification for Insulating Glass Unit Performance and Evaluation
- ASTM E2430/E2430M Standard Specification For Expanded Polystyrene ("EPS") Thermal Insulation Boards For Use In Exterior Insulation and Finish Systems ("EIFS")
- ASTM E2568.....Standard Specification for PB Exterior Insulation and Finish Systems
- BS 874.....Methods for determining thermal insulating properties (EN 12667 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance; EN 12664 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance; EN 12939 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Thick products of high and medium thermal resistance; ISO 8990 Thermal insulation — Determination of steady-state thermal transmission properties — Calibrated and guarded hot box)
- BS 1142Fibre building boards (EN 622 Fibreboards.)
- BS 1202Specification for nails
- BS 1210Specification for wood screws
- BS 1449Steel plate, sheet and strip.
- BS 2502Specification for manufacture of sectional cold rooms (walk-in type)
- BS 2972Methods of test for inorganic thermal insulating materials
- BS 3692ISO metric precision hexagon bolts, screws and nuts. Specification
- BS 3837Expanded polystyrene boards (EN 13163 Thermal insulation products for buildings - Factory made expanded polystyrene (EPS) products – Specification; EN 13164 Thermal insulation products for buildings. Factory made extruded polystyrene foam (XPS) products. Specification)
- BS 3927Specification for rigid phenolic foam (PF) for thermal insulation in the form of slabs and profiled sections (EN 13166 Thermal insulation products for buildings. Factory made phenolic foam (PF) products. Specification)

- BS 3958Thermal insulation materials (BS 3958-1 Thermal insulating materials - Magnesia preformed insulation; BS 3958-2 Thermal insulating materials - Calcium silicate preformed insulation)
- BS 4841Rigid polyisocyanurate (PIR) and polyurethane (PUR) products for building end-use applications
- BS 5250Management of moisture in buildings. Code of practice
- BS 5617Specification for urea-formaldehyde (UF) foam systems suitable for thermal insulation of cavity walls with masonry or concrete inner and outer leaves
- BS 5618Code of practice for thermal insulation of cavity walls (with masonry or concrete inner and outer leaves) by filling with urea-formaldehyde (UF) foam systems
- BS 5803Thermal insulation for use in pitched roof spaces in dwellings
- BS 6203Guide to fire characteristics and fire performance of expanded polystyrene materials (EPS and XPS) used in building applications
- BS 6676Thermal insulation of cavity walls using man-made mineral fibre batts (slabs) (EN 13162 Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification)
- BS 7021Code of practice for thermal insulation of roofs externally by means of sprayed rigid polyurethane (PUR) or polyisocyanurate (PIR) foam
- BS 7456Code of practice for stabilization and thermal insulation of cavity walls (with masonry or concrete inner and outer leaves) by filling with polyurethane (PUR) foam systems
- BS 8208Guide to assessment of suitability of external cavity walls for filling with thermal insulants
- BS 8216Code of practice for use of sprayed lightweight mineral coatings used for thermal insulation and sound absorption in buildings
- BS 8233Guidance on sound insulation and noise reduction for buildings
- EN 998-1Specification for mortar for masonry: Part 1: Rendering and plastering mortar
- EN 3261Unbacked flexible PVC flooring
- EN 13162Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification
- EN 13163Thermal insulation products for buildings. Factory made expanded polystyrene (EPS) products. Specification
- EN 13164Thermal insulation products for buildings. Factory made extruded polystyrene foam (XPS) products. Specification
- EN 13165Thermal insulation products for buildings. Factory made rigid polyurethane foam (PU) products. Specification
- EN 13166Thermal insulation products for buildings. Factory made phenolic foam (PF) products. Specification
- EN 13167Thermal insulation products for buildings. Factory made cellular glass (CG) products. Specification
- EN 13168Thermal insulation products for buildings. Factory made wood wool (WW) products. Specification

- EN 13169Thermal insulation products for buildings. Factory made expanded perlite board (EPB) products. Specification
- EN 13170Thermal insulation products for buildings. Factory made products of expanded cork (ICB). Specification
- EN 13171Thermal insulation products for buildings. Factory made wood fibre (WF) products. Specification
- EN 13172Thermal insulation products. Evaluation of conformity
- EN 13467Thermal insulating products for building equipment and industrial installations. Determination of dimensions, squareness and linearity of preformed pipe insulation
- EN 14319-1Thermal insulating products for building equipment and industrial installations. In-situ formed dispensed rigid polyurethane (PUR) and polyisocyanurate foam (PIR) products
- EN 14320-1Thermal insulating products for building equipment and industrial installations. In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate foam (PIR) products
- EN 14496Gypsum based adhesives for thermal/acoustic insulation composite panels and plasterboards. Definitions, requirements and test methods
- EN 1745Masonry and masonry products — Methods for determining design thermal values
- EN 12467Fibre-cement flat sheets - Product specification and test methods
- EN 13501-1Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests
- EN 13950Gypsum plasterboard thermal/acoustic insulation composite panels - Definitions, requirements and test methods
- ISO 12575-1Thermal insulation. Exterior insulating systems for foundations Material specification
- ISO 12575-2Thermal insulation products. Exterior insulating systems for foundations: Principal responsibilities of installers
- ISO 11925-2Reaction to fire tests -- Ignitability of products subjected to direct impingement of flame -- Part 2: Single-flame source test

1.2 MATERIALS

1.2.1 General Requirements

- 1 Types for insulation are: thermal /acoustic / fire / damp proof courses / waterproof
- 2 Thermal insulation materials shall meet requirements of BS 2972 for testing for inorganic thermal quality and expanded polystyrene materials shall meet fire requirements of BS 6203 or EN 13501-1 or ISO 11925-2.
- 3 Insulation material shall comply with any reference in paragraph 1.1.2 or comply with any relevant standard adopted by Qatar Standards, and shall be approved by the Engineer.
- 4 Insulation materials shall be approved by Civil Defence Department and any other concern authority.

1.2.2 Submittals

- 1 Submittals shall comply with the relevant provisions of Section 1, General.
- 2 The Contractor shall submit to the Engineer the manufacturer's literature and data for the following:
 - (a) insulation, each type used
 - (b) adhesives, each type used
 - (c) tape
- 3 The Contractor shall submit to the Engineer details of all insulation materials to be installed. The details shall include, but not be limited to, the type, dimensions and thermal/acoustic/damp proof courses/waterproof insulating properties of the insulation. References to all applicable standards shall be included with the submission.

1.2.3 Storage

- 1 Materials shall be stored in accordance with the relevant provisions of Section 1, General.

END OF PART