ADMATERIALS TECHNOLOGIES PTE LTD

“Bright People. Right Solution”

An Advanced Materials Testing Laboratory

www.admaterials.com.sg
Admaterials Technologies Pte Ltd is an advanced materials testing laboratory accredited by the Singapore Accreditation Council. We provide complete solutions for a wide range of construction and related fields and we specialize mainly, but not restricted to areas concerning construction materials, materials specifications and materials testing.

Admaterials Technologies Pte Ltd is also a certification body accredited by the Singapore Accreditation Council to ISO/IEC Guide 65 and IAF Guidance on the application of ISO/IEC Guide 65, and SAC CT 05- SAC Criteria for Certification Bodies (Ready-Mixed Concrete).

Admaterials Technologies Pte Ltd has a pool of trained and experienced professional team, which provides research and development, consultancy services for materials ranging from building materials, coatings, polymer and plastic to chemical and environmental materials, using state-of-art analytical equipments, proprietary product and practical experiences. We also provide quality testing services for a wide range of building materials used in construction.
Admaterials is one of the leading testing and consultancy Laboratories in Singapore, with operations spanning the civil engineering, chemical and environmental industries and certification sectors. Within Admaterials, we are rich in employee talent and passion. This talent and passion, combined with our corporate culture of excellence, makes us a dynamic, growing company that continues to thrive in the most challenging economic conditions.

Bright People. Right Solutions. At Admaterials, we epitomize the value we bring to our clients, and this is what differentiates us within the industry.

“Bright People. Right Solution”

Our corporate culture cultivates passionate, talented problem-solvers who deliver valuable resources with industry-leading teamwork and responsiveness. We provide the right solutions by achieving a deep understanding of our clients’ businesses and needs. Their challenges are treated with urgency and respect, and we work relentlessly to meet or exceed their expectations.

Our expertise is research and development, and we build on these two avenues to create, develop and support a wide range of services.

These extensive capabilities benefit our clients in numerous ways. Whether it is supporting the Singapore Government bodies like BCA, HDB, LTA, JTC, working with local material suppliers or contractors, we focus on clients’ needs and strive to exceed their expectations.

For more information about our business, please refer to the particular sections within our brochure. Admaterials’ website (www.admaterials.com.sg) provides a wider perspective and more detailed focus information of the respective services you are looking for.

For any question or enquiry, please contact us at general@admaterials.com.sg.
Admaterials models itself as a one stop service platform. From Materials, Chemical, Mechanical and Environmental Testing to Ready-Mix Concrete Certification and Consultancy Services for special projects, you name it, we have it. Our flexibility is unrivalled, so is our professionalism.

A wide range of standard and non-standard laboratory tests can be carried out including ad-hoc tests tailored for specific project or client requirements.

Admaterials is an accredited laboratory conducting a full range of construction materials testing in accordance with SS, ASTM, ISO, BS, EN and in-house methods. In addition, our skilled engineers provide professional advice and technical support based on their knowledge of the properties and composition of the different types of construction materials to ensure complete satisfaction in your finished construction project.

We operate a fully equipped, state-of-the-art materials testing laboratory specifically devoted to the testing and analysis of construction materials. We provide comprehensive tests for aggregates, concrete, cement, admixture, repair and building materials.
Admaterials provides a comprehensive package of physical, mechanical and chemical aggregate testing to determine the properties of aggregates using SS, BS, EN and ASTM methods.

- Physical: Grading, Shape, Relative Density, Bulk Density, Water Absorption
- Strength: AIV, ACV and TFV
- Mechanical: Los Angeles Abrasion
- Durability: Sulphate Soundness, Methylene Blue, Drying Shrinkage
- Chemical: Organic Matter, Chloride, Sulphate or full analysis
- Specialist: ASR Assessment using Petrography, Chemical Test, Mortar Bar and Accelerated Mortar Bar and Concrete Prism Method

TESTING OF IMPORTED AGGREGATES

1. Petrographic Examination (ASTM C295),
2. Alkali Silica Reactivity–Mortar Bar Method (ASTM C1260),
3. Water Soluble Chloride Content (EN 1744-1, Clause 7),
4. Acid Soluble Sulphate Content (EN 1744-1, Clause 12)

We are the expert in ASR tests
- We have tested thousands of samples for ASR, Petrographic Examination and Mortar Bar Method.
- We are under the list of BCA Acceptable Analysts with in-house capabilities to conduct ASR Test.
- We are also SAC-SINGLAS Accredited for the ASR test (conforming to EN, BS, ASTM Standards).
Petrographic examinations of concrete are typically performed when problems arise during construction phase or premature failure of an existing concrete structure occur. Petrographic examinations are also often performed as part of a condition study to determine if a concrete structure needs to be replaced or if it can be rehabilitated.

Our concrete petrography experts can assist you with the investigation the following hardened concrete/aggregate parameters:

- Aggregate type (mineralogical), characteristics, size & distribution
- Cement type
- Mineral additives (ground granulated blast furnace slag, fly ash, silica fume, etc.)
- Early freezing, bleeding & segregation, micro-cracking, crack age
- Degree of cement hydration, air void content, and water cement (w/c) ratio
- Compaction and micro-porosity
- Carbonation depth, secondary deposits, contamination
- Alkali silica reaction (ASR), Alkali carbonate reaction (ACR)
- Sulphate attack (Ettringite & Thaumasite), delayed Ettringite formation (DEF)
- Fire damage

Petrographic examinations may be performed on concrete aggregates for a number of reasons. A full petrographic examination can be performed to completely characterise the aggregate source. This examination will determine the amount of the various rock and mineral constituents present in the aggregate. This examination will also characterise the quality, condition and chemical stability of the individual constituents. This type of examination is often performed to determine if a particular aggregate source is suitable for use in concrete.

Detailed petrographic examinations can also be performed on concrete aggregates. Some examples of this are given below:

- Determination of the amount of a given constituent (ie. pyrite, chert, coal, shale) present in an aggregate sample
- Determination of constituents that may be susceptible to alkali-silica reactions in concrete.
- Identification of constituents that may be susceptible to pop-out distress when used for concrete in freeze/thaw environments.

Petrographic Examination of Concrete Aggregates

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- Fire damage
Admaterials is capable of performing the following tests to assess the fresh concrete properties:

- Sampling
- Slump test
- Flow Table test
- Air content test
- Density test

**TESTING OF HARDENED CONCRETE**

Admaterials provides the testing services for the hardened concrete for the following properties:

- Density test
- Flexural strength
- Compressive strength
- Tensile Splitting Strength
- Water absorption
- Water permeability
- Water penetration
- Drying Shrinkage
- Modulus of elasticity
- Sulphate resistance
- Coefficient of permeability
- Initial surface water absorption
- Rapid Chloride Permeability Test

**TESTING OF ADMIXTURE**

We are also able to provide full range of admixture tests as required in SS EN 934 for general and specific requirement:

- Water reduction
- Compressive Strength
- Air Content-Pressure Method
- Increase in Consistence
- Retention of Consistence
- Bleeding
- Setting Time
- Capillary Absorption
- Effective Component
- Absolute Density
- pH Value
- Alkali Content
- Silicon Dioxide Content
- Water Soluble Chloride
- Conventional Dry Material Content
To ensure and maintain high standard of building quality, materials used in construction projects shall meet regulations and standards. These materials are required to go through a rigorous screening and testing process to ensure that they meet performance standards and statutory requirements. Through implementing a quality control program, Housing & Development Board (HDB) screens and provides a comprehensive selection of quality products needed for HDB construction projects through HDB’s Materials List with a set of product evaluation requirement.

Admaterials provides such testing services based on a set of product evaluation requirements complying with the required standards and technical specifications.

### Repair Materials
- Non-Shrink Grout
- Polymer Modified Cement Mortar
- Bonding Agent
- Waterproofing
- Epoxy Mortar
- Epoxy Resin

### Building Materials
- Tile Adhesive
- Tile Grout
- Prepared Floor Screed/Prepacked Waterproof Screed
- Prepacked Plaster/Prepacked Mortar
- Prepacked Skim Coat
- Acrylic Polymer Cementitious Coating
- Self-Leveling Screed
- Tiles

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**Repair & Building Materials Testing**

- **UV Weathering Test**
- **Deep Abrasion Test**
- **Electrical Resistivity Test**
Admaterials Technologies Pte Ltd

TESTING OF
SOIL

Direct Shear Box Test

Admaterials is capable of carrying out the following soil test services:
- Particle Size Distribution
- Direct Shear Box test
- Compaction Test (Maximum & Minimum Dry Density)
- Moisture
- Unconfined Compressive Strength
- Atterberg Limit
- Linear Shrinkage
- California Bearing Ratio
- Constant Head Permeability
- Sand Replacement
- pH Value
- Organic Matter
- Mass Loss on Ignition
- Sulphate Content
- Carbonate Content
- Chloride Content
- Total Dissolved Salt

CBR Test

TESTING OF
ROCK

Admaterials also provides rock testing services:
- Unconfined Compressive Strength
- Water (Moisture) Content
- Point Load Strength Index

Admaterials Technologies Pte Ltd
Admaterials offers a comprehensive range of cement testing encompassing both physical and chemical properties.

**Physical test**
- Strength
- Setting Time
- Soundness
- Fineness
- Activity Index

**Chemical Analysis:** Loss on Ignition, Residual Insoluble, SO₃, S²⁻, Mn, SiO₂, Fe₂O₃, CaO, MgO, Al₂O₃, CO₂, Alkali (Na₂O & K₂O), Cl⁻, Heat of Hydration, Pozzolanicity
We are able to analyze the following elements:
As, Al, Ag, B, Be, Ba, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Se, Sn, Sr, Ti, V, Zn and Hg.
Besides the environmental samples, ICP-AES has been used in many applications such as:
• Analysis Children’s toys and Child Care products
• Toxicity test
• Medical/Pharmacy Products to look for metal contaminants
• Compositional Analysis: RoHS Testing

ICP-OES

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• Compositional Analysis: RoHS Testing

EDXRF

Energy Dispersive X-ray Fluorescence (EDXRF) analysis techniques provide major, minor and trace element quantification across the broadest range of samples, including bulk solids, granules, powders, thin films and all manner of liquids with extreme ease of sample preparation. It can be used for a wide range of elements, from carbon (9) to uranium (92) and wide variety of industries and applications including: cement production, mining, mineral beneficiation, iron, steel and non-ferrous metals, RoHS screening and quantification, petroleum and petrochemicals, polymers and related industries, glass production, pharmaceuticals, healthcare products, environmental, food and cosmetics.
In many kinds of applications, FTIR can be used to identify chemicals from spills, paints, polymers, coatings, drugs, and contaminants. Admaterials primarily uses FTIR to assist our customers with identifying and analyzing materials.

- Identification of unknown materials
- Identification of polymers, plastics, and resins
- Quantitative determination of compounds in mixtures
- Determining the quality or consistency of a sample

Our TGA/DSC is used for testing in many applications at temperatures up to 1100°C over a wide range of heating rates. This technique is particularly useful for the following types of measurements:

- Compositional analysis of multi-component materials or blends
- Thermal stabilities
- Effects of reactive atmospheres on materials
- Moisture and volatiles content
- Analysis of hydrophilic samples
- Collection of thermodynamic mass loss information
- Identification of hidden transitions obscured by mass loss

Spark optical emission spectrometers (S-OES) are the ideal instruments for metal analysis. Optical emission spectrometry using Arc/Spark excitation is the reference technique for rapid, elemental analysis of solid metallic samples. We provide metal composition analysis for the following application:

- Iron & steel and its alloys
- Aluminum and its alloys
- Copper and its alloys
The scope of our Mechanical Testing includes:

- Hardness tests (Brinell, Rockwell and Vickers)
- Tensile, bend, shear, impact, compressive & flexural strength
- Creep, fatigue, wear, stress rupture, tear slip & life cycle strength test
- Hydrostatic pressure test, flow measurement, mechanical load test
- Vical test, heat distortion test, stress relief test, endurance, mechanical load test
Admaterials provides a wide range of environmental analytical testing services, specializing in the analysis of soil, sediment, sludge, water and leachates. Our environmental laboratory testing services for these matrices includes routine, trace and ultra-trace level organics (volatile and semi volatile), metals, nutrients and inorganic non-metallics.

Admaterials offers comprehensive environmental testing services for the following areas.

Water Quality Testing
- Potable Water
- Non-potable Water
- Sewage, effluents and trade wastes
- Water for industrial purposes
- Swimming pool water
- Ground water
- RO water
- Sea water

Environmental Samples
- Soil, Sediment, Sludge

Analytical methods are based on well-established, internationally-recognized procedures such as those published by the United States Environmental Protection Agency (USEPA) and the American Public Health Association (APHA), as well as Singapore standards.
**SITE SERVICES**

**CONCRETE NON-DESTRUCTIVE TESTING**

With our qualified background in civil engineering testing, Admaterials offers a comprehensive non-destructive testing service, including:

- Visual inspection
- Half-cell electrical potential method
- Schmidt/rebound hammer test
- Carbonation depth measurement
- Penetration resistance or Windsor probe test
- Covermeter testing
- Strain measurement
- Initial surface absorption test
- Ultrasonic pulse velocity testing

**IN-SITU SOIL TESTING**

Admaterials also provides in-situ soil testing:

- Plate loading test
- In-situ density by sand replacement method
- In-place density and water content of by nuclear methods
SITE INVESTIGATION & FAILURE ANALYSIS

We have extensive experience in diagnosing and solving concrete related problems during construction or at some subsequent time. These services include:

- Corrosion Status of Concrete Structure
- Chloride Content of Concrete Structure
- Adhesion Bonding Strength of Coating and Paints
- Adhesion Bonding Strength of Tiling
- Waterproofing Membrane
- Carbonation Depth
- Sealant

The scope of our Failure Analysis includes:

- Fire damage
- Structure distress
- Leaks and dampness in structure
- Cracking of concrete structure
- Concrete problem (Delay setting, low strength, cracking, water seepage, ASR, Chemical attack, delayed Ettringite)
- Tiling failure
- Stone problems (Breakage, pitting, discoloration, staining, cracking)
- Staining of building
- Paint/coating defects (Blistering, peeling, flaking, chalking)
- Flooring failure (Pitting, abrasion wear, cracking, debonding, peeling)

SPECIALIST TESTING

To compliment our site services work, Admaterials also offers a range of specialist services, including:

- Structural investigation
- Temperature monitoring
- Thermographic scanning
- Ground-penetrating radar (GPR) survey
- Slip resistance testing of floor and paving surfaces

We deliver a team of people who can provide comprehensive support, covering all aspects of investigation and failure analysis, including programming and damage analysis.
Singapore Accreditation Council (SAC) on 12 February 2010 accredited Admaterials Technologies Pte Ltd as a Certification Body providing certification of Ready-Mixed Concrete (RMC) product suppliers in compliant to SAC certification criteria. Our Company is among the pioneer batch of 3 certification bodies accredited by SAC to provide such service.

The requirement for third-party certification of RMC producers, which was initially targeted to commence on 1 Oct 2010, was postponed and will now come into effect on 1 April 2011 for all projects involving major building works where the first submission for approval of structural plans is made on or after this date.

Admaterials has certified over 70 plants in Singapore and Malaysia. Among our valued clients are Island Concrete (Pte) Ltd, Pan-United Concrete Pte Ltd, YTL Concrete (S) Pte Ltd, Top-Mix Concrete Pte Ltd, Holcim (Singapore) Pte Ltd and Alliance Concrete (S) Pte Ltd.

The basis of the certification for the RMC product producers will be guided by SS EN 206-1, SS 544-Part 1 & Part 2 and SAC CT-06 and other relevant SS and EN material specifications and conformities.
Admaterials successfully completed a few consultancy jobs, notably Consultancy for Thermal Cracking of Pile Raft at Parkview Eclat Condo Site of Grange Road and “Penyiasatan Keretakan untuk Cadangan Membina dan Menyiapkan Bangunan Gunasama Persekutuan Seberang Perai Utara, Pulau Pinang.”

Admaterials was awarded with a research project: Provision of Consultancy Services for Rock Usage by JTC Corporation on 3 September 2008.

Admaterials also had completed the following projects:

1. Usage of incinerator bottom ash (IBA) as aggregate to produce concrete for Keppel Seghers Engineering Singapore Pte Ltd.
2. Substitution of natural sand by sea sand through the development of chloride absorption admixture for concrete.
3. Consultancy and testing of raw materials for marine clay stabilisation.

Having years of experiences involving all aspects of civil engineering, building industries, inspection and materials testing; we can expertly guide you through appropriate processes in building and construction materials development and work closely with you to create the processes tailored to your needs.
Admaterials has a team of experts who can provide complete development work from concept development, evaluation, prototyping and pilot production. In addition, we also provide consultancy service based on each client individual and unique requirements. Our completed projects include:

VivoCity Feature Wall: Shotcrete Mortar System

VivoCity Feature Wall: Shotcrete Mortar System

Development of lightweight acoustic and thermal insulation composite panels containing recycled spent catalyst

With our comprehensive capabilities and capacity, highly experienced team, and state-of-the art facilities and equipment, we provide broad services ranging from the development of advanced materials and new applications in industrial R&D, from fundamental research to highly applied development in both the process and product areas.

Research and Development on Rehabilitation, Monitoring and Protection of Marine Concrete Structures
QUALITY MANAGEMENT SYSTEM

Organisations that implement good practice of quality assurance and management system will win the trust of customers and employees, reduce costs and increase profitability, improve the quality of your output, and at the same time overcome daily challenges more easily. In addition, an effective management system serves to create the basis for continual improvement leading to increased customer satisfaction and ultimately to the success of the organisation.

Admaterials will guide you through the process of selecting the relevant rules and regulations for your products and services, including relevant standards and specifications for which you need to document compliance. We can perform testing or help you find a suitable laboratory. When you are ready to show your compliance documentation, we will examine these in a professional and systematic manner.

ISO/IEC 17025 CONSULTANCY

ISO/IEC 17025 specifies two requirements to demonstrate the competency of testing and calibration laboratories — management and technical requirements. Management requirements are related to the operation and effectiveness of the quality management system within the laboratory, and this clause has similar requirements to ISO 9001. Technical requirements address the competence of staff; testing methodology; equipment and quality; and reporting of test and calibration results.

Through our numerous and extensive direct involvement in the ISO/IEC 17025 accreditation under SAC-SINGLAS, we can guide you through the accreditation process that give you confidence to apply for the accreditation and implement it.

Admaterials provides full support and assistance to meet your needs, from start to finish; we can put you on the right track to ISO/IEC 17025 accreditation.

SINGLAS Accreditation
- Develop Quality Manual
- Conduct Internal Audit
- Guide on Equipment Calibration Program
- Testing Methods Evaluation and Verification
Increasing global environmental awareness has created a demand for and the supply of green products. By certifying, and promoting your environmentally responsible product, service or company; you can boost your profitability and enhance your brand at the same time.

The Singapore Green Labeling Scheme (SGLS) was launched in May 1992 by the Ministry of the Environment. The Green Label can be used on products which meet the eco standards specified by the scheme. As the criteria and standard have been set up, manufacturers and distributors may apply for the Green Label. The product compliance to the criterion must be 100% and all required documents/test reports and methodologies must be submitted along with the application.

With our professional team of experts, Admaterials provides consultancy and testing services according to the required standard and regulation. Admaterials is a corporate member of the SGBC, and is also a member of the Recycled Materials Taskforce.

The Singapore Green Building Council (SGBC)’s Green Building Product Certification Scheme, was launched on 14 September 2010 as a key initiative to support the building industry in the drive towards sustainability and environment-friendly built environment.

With years’ experiences in the building and construction materials, Admaterials is also providing the consultancy for this Green Building Product Certification Scheme. We’ll provide you a comprehensive guidance for your product assessment as well the testing services according to the required standard and regulation. Admaterials is a corporate member of the SGBC, and is also a member of the Recycled Materials Taskforce.

GREEN BUILDING CONSULTANCY

Promoting Green Building
We are playing our part in moving the Singapore building and construction industry towards environmental sustainability by promoting green building design, practices and technologies

GREEN LABEL CONSULTANCY AND TESTING

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Green Label Certification
• Product Category Identification
• Information Compilation
• Test Requirements
• Estimated Cost and Schedule
• Coordination for samples testing
• Test Reports and Product Information Compilation
• Application Submission
• Follow up with Application Results

With our professional team of experts, Admaterials provides consultancy and testing services for Green Label certification.

Admaterials Technologies Pte Ltd
CONTRIBUTION
PARTICIPATION

With our deep concern in our professional community development and the sustainability for the future generation, we actively participate and contribute our time and effort in industry events.

Admaterials co-organized the seminar “Aggregate for use in Concrete - Selection, Diagnostics and Risk Control” (29 August 2008)

Our Executive Director, Lu Jin Ping was invited by Trisakti University, Indonesia as a speaker to present a paper “Testing and Specification of Drymix Mortar in Singapore” at the International Conference: Questions We Ask Related to Green Development in Indonesia “The Contribution of Premix Mortar Products and Technology” 24th November 2008 — Flores Room, Borobudur Hotel, Jakarta (24 November 2008)

Admaterials was a of gold sponsor for ACI Seminar: Impact of EN on Singapore Standards: Concrete Perspective (23 July 2009)

Our Executive Director, Lu Jin Ping and Business Development Manager, Soh Guan Hong attended the 6th Asia Symposium on Polymers in Concrete, Tongji University, Shanghai and presented 3 papers at the Symposium (29-30 October 2009)
Our Executive Director, Lu Jin Ping received a Merit award for his contribution to the national Standardisation Programme (17 November 2009)

Our Executive Director presented a paper in 14th International Congress on Polymers in Concrete, Shanghai, China (17-20 April 2013)

Our Executive Director, Lu Jin Ping received a Merit award for his contribution to the national Standardisation Programme (17 November 2009)

Training for BCA Staff: Identification of Harmful Essential Construction Materials to the Concrete Production (24 April 2013)

Our Executive Director was invited as key-note speaker at the Conference on High Performance Concrete and Ultra-High performance Concrete, Shen Zhen, China (28-29, October 2010)

We presented 3 papers at the 35th Conference on OUR WORLD IN CONCRETE & STRUCTURES, Singapore (25–27 August 2010)

Our Executive Director was invited by KLIUC to give public lecture on high performance concrete in Kuala Lumpur (17 Dec 2010)

Our Executive Director presented a paper in 14th International Congress on Polymers in Concrete, Shanghai, China (17-20 April 2013)