



CSIR - Structural Engineering Research Centre (CSIR-SERC), Chennai, is a constituent laboratory of the Council of Scientific and Industrial Research (CSIR), Government of India. Established in the year 1965, CSIR-SERC has built up excellent facilities and expertise for carrying out R&D in the field of structural engineering covering analysis, design and testing of model / prototype structures as well as structural components. The centre has developed many cutting-edge technologies for the construction industry and also offers various services to public and private sector organisations.

ADVANCED MATERIALS LABORATORY (AML)

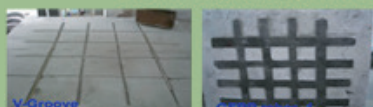
The Advanced Materials Laboratory (AML) is actively involved in high-quality research in the area of concrete technology and concrete durability by focussing towards sustainable development of new advanced cementitious and non-cementitious materials relevant to industry and society. The service to industry is provided by technical advisory, support and testing through sponsored and consultancy projects.

The areas of expertise of the group includes special concretes, sustainable materials, alternate binders and aggregates for concrete, durability of concrete, condition assessment of Reinforced Concrete (RC) structures using NDT techniques and repair & retrofitting techniques, performance evaluation of admixtures, reinforcing bar couplers, balanced draft assembly & coupler assembly and shock transmission unit, etc.

In the last decade, AML has developed technologies and know-how for polymer concrete, natural rubber latex concrete, fibre reinforced concrete, slurry infiltrated fibrous concrete, laced reinforced concrete, Fibre Reinforced Polymer (FRP), high performance concrete, ultra high performance concrete, self-compacting concrete, geopolymer concrete and EPS technology for housing applications.



Various strengthening patterns for



Strengthening of RC Slabs with CFRP



Precast Structural Systems under Seismic Loading



Fly Ash Aggregate for Structural Applications



Performance Evaluation of Draft and Couplers for Indian Railways



Ultra High Performance Concrete Structural Sections



Fly ash Concrete Mixes for Thermal Power Project

RESEARCH

Active areas of research in AML include:

- Development of geopolymer concrete using different source materials and alternative aggregate for sustainable infrastructure
- Demonstration of utilising high-volume fly ash for structural applications
- Investigation on RC beams reinforced with FRP and GFRP rebars
- Retrofitting of RC beams using Ultra-High Performance Concrete (UHPC)
- Development of technologies for mass housing using precast components
- Studies on durability of pre-cracked RC members using fly ash concrete
- Study on the durability parameters of concrete with manufactured sand (M-sand) and concrete with river sand (R-sand)
- Evaluation of durability parameters for the assessment and quality control of new / existing concrete
- Condition assessment of deteriorated reinforced concrete structures

MAJOR FACILITIES

- 25-ton Servo Hydraulic Universal Testing Machine
- 100-ton Universal Testing Machine
- 250-ton Servo Hydraulic Universal Testing Machine
- 300-ton Servo Hydraulic Compression Testing Machine
- Different types of thermo-cyclic chambers to accelerate curing and carbonation
- Concrete mixers - Drum mixer (300kg), Planetary mixer (300kg, 20kg) and Concrete pan mixer (50kg, 80 kg and 120 kg)
- (i) Rapid chloride permeability test (ii) Water permeability apparatus (DIN standard) Sorptivity measurement (iv) Walk-in fog chamber (v) Resistivity measurement (vi) Air permeability (vii) Ultrasonic Pulse Velocity (UPV) (viii) Rebound hammer (ix) Half-cell measurement etc
- Thermogravimetric analyser
- Particle size analyser
- Zetasizer Nano ZS
- X-ray diffractometer

MAJOR PROJECTS

- Pilot-cum-demonstration study on use of fly ash in geopolymer concrete pavement construction, NTPC, Unchahar
- Static and bend tests on coupler head assembly with balanced draft gear, Faiveley Transport Rail Technologies India Limited, New Delhi
- Performance evaluation of 32mm, 36mm and 40mm diameter reinforcement bar couplers, M/s Dextra, Mumbai
- Testing and evaluation of AAR-H tight-lock coupler, balanced draft, gear and semi-permanent coupler, Escorts, Faridabad
- Performance evaluation of snubber assembly, NPCIL, Narora
- Integrity assessment of concrete in the boiler supporting foundations of Stage 1, NTPC, Vindhyannagar

For further details, please contact:

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