

POROCON CHALLENGE 2025

CEPT
UNIVERSITY
FACULTY
OF TECHNOLOGY

INNOVATE BEYOND LIMITS
Let your concrete change the future

PERVIOUS CONCRETE CHALLENGE 2025

POROCON

Organized by

Faculty of Technology, CEPT University

Venue: CEPT University, Ahmedabad

Who Can Participate?

For Details Contact UG/PG Civil Engineering and Architecture students

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Registration Fees: 600/- Per Group

Group Size: 2 - 4 Students in a Group

Compete & Win

Exciting Cash Prizes

REGISTER NOW!



Scan For Registration

Registration Closes on

15TH March



Stay Tuned
@cept_ftug

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About Us

With the Indian construction industry rapidly expanding multifold, there is an increasing need for efficient and qualified professionals to sustain this growth. Our course lays the foundation for students to engage in the dynamics of the industry and understand the construction and design process. With a strong foothold on fundamentals and well-rounded exposure, students step out well-equipped to plan, design and construct human habitats.

CEPT established the School of Building Science and Technology (SBST) in 1982 that focuses on issues concerning Planning, Design, Construction & Management of Human Habitats. SBST has now been renamed as Faculty of Technology (FT).

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About the challenge

POROCON is the annual technical competition of the Faculty of Technology, CEPT University focusing on pervious concrete—an innovative material known for its high permeability and sustainability. This competition provides a platform for students, researchers, and professionals to explore and enhance the potential of pervious concrete in construction and urban development. Pervious Concrete has been used for over 30 years. Because of its high porosity, the most common usage has been in the area of stormwater management.

Permeability and compressive strength tests are essential for evaluating the performance of pervious concrete. The permeability test measures how easily water passes through the concrete, ensuring proper drainage and reducing surface runoff. On the other hand, the compressive strength test determines the concrete's ability to withstand crushing loads. Both tests are crucial for balancing structural strength and porosity, ensuring durability and functionality in construction applications.

The event challenges participants to design and develop pervious concrete mixes with optimized strength and permeability, addressing real-world issues such as water drainage, urban flooding, and sustainable infrastructure. Through hands-on experimentation and technical evaluation, Porocon fosters innovation in material science while promoting eco-friendly construction solutions. Participants will engage in rigorous testing, performance analysis, and creative problem-solving, making Porocon not just a competition but an opportunity to contribute to the future of sustainable engineering.

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Testing Criteria

Strength Test

The participants need to bring three concrete cubes made up of the same concrete mix. The cube blocks will have dimensions of 100 mm*100 mm*100 mm with an allowance of +/- 5 mm on all sides. Any failure to adhere to these dimensions will lead to a penalty in the total score, which may further lead to the disqualification of teams.

Water Permeability Test

The cylinder and a slab should also be made of the same concrete mix. The cylinder will have dimensions of 100 mm diameter*200 mm length with an allowance of +/- 5 mm on all sides while the slab will have 200 mm* 200 mm of length and width. There is no restriction on the thickness of slab. The shape of the cylinder is well maintained otherwise, the penalty is awarded in the total score, which may also lead to the disqualification of teams.

The testing will be done in three rounds: Density, compressive strength and permeability test.

First Round

Density, the concrete slab will be used to measure unit weight. To measure the unit weight of concrete, a weighing machine will be used, and the weight of the specimen will be taken up to 2 decimal places and will be used for judging.

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Second Round

Compressive strength, The concrete cubes will undergo a compressive strength test using a Compressive Testing Machine (CTM) at a loading rate of 1 kN/sec. The compressive strength of each cube will be recorded to two decimal places for all three cubes. The average compressive strength will then be calculated based on the results of the tested cubes.

Penalty: If any dimension (x) of a cube/slab/ cylinder deviates by more than +/- 5 mm, it will not be tested. Only specimens within the specified tolerance will be used to determine the unit weight, average compressive strength and water permeability

Third Round

Step 1: The permeability of the cylinder will be measured using the falling head permeability test. Before testing, the cylinder will be wrapped with a provided sheet to prevent leakage. The time taken for water to drain through the specimen will be recorded and used for evaluation.

Step 2: The permeability of the slab will be measured using the falling head permeability test. Before testing, the slab will be wrapped with a provided sheet to prevent leakage. The time taken for water to drain through the specimen will be recorded and used for evaluation.

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Evaluation Criteria

The specimen with the maximum Total Score (T) will be declared the winner. In case of a tie, preference will be given to the specimen with the highest permeability performance in Round 3. All values will be considered up to 2 decimal points.

Scoring System

Round 1: Unit Weight Test Score Formula:

$$S1 = 1000 - (w/10)$$

Where w = Weight of the 200mm × 200mm slab in grams.

Round 2: Compressive strength test Score Formula:

$$S2 = 10 * \text{mean of tested cubes compressive strength (MPa)}$$

Round 3: Permeability

Stage 1: Time taken by the water to be drained through the cylinder in seconds (t_c).

$$S3 = 1000 / \text{sqrt}(t_c)$$

Stage 2: Time taken by the muddy water to be drained through the cylinder in seconds (t_s).

$$S4 = 1000 / \text{sqrt}(t_s)$$

Final Score: -

$$\text{Total Score (T)} = S1 + S2 + S3 + S4 - P$$

The specimen with the maximum Total Score (T) will be declared the winner. In case of a tie, preference will be given to the specimen with the highest permeability performance in Round 3 ($S3 + S4$). All values will be considered up to 2 decimal points.

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Report

A report must be submitted, which should include the following:

1. Technical mix design report, which includes material specifications, mix proportions, amount and type of admixture used, casting procedure, and curing procedure, and mention the formulae of section modulus of your beam structure e.g.- Water content, Mass of cement, Mass of aggregate.
2. The date of casting the cubes, cylinder and slab structure.
3. While casting, a short 2-minute video must be shot by the participants by keeping the Stiffness structure and cubes side by side to ensure that participants have used the same mix to cast all the samples.
4. The report should not exceed 6 sides of an A4 sheet.
5. Each report will be examined by the POROCON team.

Penalties (P)

Penalties will be reduced based on deviations and non-compliance.

1. **Dimensional Accuracy:** If any dimension (x) of the slab deviates beyond ± 5 mm, a penalty of $P = 10$ points will be deducted per deviated dimension.
2. **Structural Integrity:** If the slab breaks during testing, it will be disqualified.
3. **Mislabeled Reports:** If two teams from the same college submit identical reports, both teams will get $S_4 = 0$ and a penalty of $P = 5$ points.


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General Rules

1. Bring from home competition so certificates will be awarded to every qualified entry.
2. Students should form a team of 2 to 4 members. Students from different colleges can also form a single team.
3. The one slab structure, one cylinder, and three concrete cubes are to be brought by each team.
4. The length of the cylinder must be 200 mm.
5. The size of the slab structure must be 200 mm* 200 mm.
6. No restriction on the use of the type of aggregates and chemical admixture.
7. Replacement of cement with other supplementary cementitious materials are permitted (preferred).
8. No steel fibers should be used. If found, will lead to direct disqualification.
9. Any curing method can be adopted.
10. No paint should be added or used; it will lead to direct disqualification.
11. Teams not submitting the report will be disqualified.
12. No certificate will be provided for disqualified teams.
13. The report will be judged by POROCON Team thoroughly.
14. The decision of the POROCON team will be final, POROCON CEPT University reserves the right to disqualify any team if they do not follow the above-mentioned instructions.
15. POROCON, CEPT University reserves the right to change any or all of the above rules as they deem fit. Changes in rules, if there are any, will notified to the registered participants.

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Important Dates

Events	Timeline	Forms/Links
Announcement	6 th March 2025	https://bit.ly/porocon 
Proposal Submission and Registration	15 th March 2025	
Confirmation	16 th March 2025	
Submission of Video and Report	19 th March 2025	
Final Testing at our Main Event	19 th April 2025	

For any queries,

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