# COMPETITION GUIDELINES

## Oil Spill Cleanup Mechanism

On the competition day, we will give every team the same tray, the same water, the same oil, and weigh out the same mass of your material. The only thing that will differ is what you made.

Teams must use one of the following mechanisms for cleaning oil spills:

- **Absorption** – oil soaks into the material and is held inside it, like a sponge.
- **Adsorption** – oil sticks to the outside surface of the material, like oil clinging to a powder/granules.

**Not allowed:** skimming or scooping, filtering, booms or barriers, pumps, motors or electricity, and any chemical added to the water (detergents, dispersants, solidifiers).

You may use a mesh bag, net or string to hold loose material together so you can lift it out.

## Your Material

- On the day of the competition, we will weigh out exactly **10 g of your dry material**. Every team will have 10 g of material to ensure fair comparison.
- Your material must fit inside a **10 × 10 × 5 cm box**.
- Bring at least 40 g of your dry material.
- You must be able to explain how you prepared your material.

**Don't use:** anything toxic, corrosive or flammable materials, commercial oil-absorbent pads or spill kits, petroleum fuels.

**For safety:** Test your materials at home/school using cooking oil and water only.

## Hydrophobicity

- Your material must be **hydrophobic** and should selectively remove oil while rejecting water. That matters because a material full of water has no room left for oil, and it sinks away from the oil layer.
- On the day of the competition, we will put a drop of water over your material to see if it is absorbing water. Ideally, the material should not absorb water and water droplet should not spread over the surface.

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## The Test

A fresh 10 g of your material will be weighed dry ($m_0$). Oil will be poured on the water, you will place your material on it for 3 min, lift it straight out, let it drain for 30 seconds, and it is weighed again ($m_1$). During this procedure, your material will not be squeezed or pressed.

| Tray | Water | Oil | Your material | Contact time |
|---|---|---|---|---|
| 15 × 15 cm | 500 mL | 25 mL sunflower oil | 10 g | 3 minutes |

## Your Presentation

Each team will give a **5–10 minute presentation** explaining their design to the judges. Be prepared to explain:

- What materials you used and why
- How you prepared your material
- How your design removes oil from water
- Why your material is hydrophobic
- How you considered sustainability, cost, and safety
- What you tested and what you learned

Teams may use slides or posters to support their presentation.

## Your Score

The performance of the material will be evaluated based on the oil uptake capacity as follows:

$$\text{Oil uptake capacity (g/g)} = (m_1 - m_0) / m_0$$

Teams will be scored according to the below matrix:

**40%**
Oil uptake capacity

**20%**
Hydrophobicity (water-drop test)

**20%**
Your explanation

**20%**
Sustainability & cost

**Remember**

**There is no single correct material. Test many things, measure, and improve what you have!**