

Ruleset for the Spring Meeting 2026 Glass Strengthening Competition

1. Overview

The Glass Strengthening Competition is a hands-on technical challenge that combines creativity and materials engineering.

Participants will receive identical glass sheets approximately one month before the Spring Meeting and will compete by treating their glass sheet with a strengthening method of their choice, within the limits described in this document.

Final glass sheet samples will be tested on-site using a standardized ball-drop impact setup to determine the team with the strongest glass sheet.

2. Eligibility

Open to all students, researchers, and professionals from academia and research institutes attending the Spring Meeting.

- Participants may compete as individuals or in teams of up to four members.
- A single institution may have multiple teams and/or individual participants.

3. Registration and Materials Distribution

Registration opens on February 2 and closes February 25, 2026.

Each registered competitor or team will receive six identical glass sheets by March 15, 2026:

- Five sheets for experimentation, optimization, and mechanical testing prior to the conference.
- One sheet as the final test sample to be brought to the Spring Meeting for the official competition.

Competitors may receive their supplies earlier than March 15 if they sign up early.

Float soda-lime-silicate glass sheet size will be approximately 75 mm x 50 mm with a thickness of approximately 6 mm. This may be modified based on final considerations.

NOTE: While we will do our best to provide high-quality samples, we cannot guarantee that the glass sheets will be free of pre-existing flaws from the supplier or from normal handling.

4. Allowed Treatments

Participants may apply chemical, thermal, or mechanical strengthening approaches, provided all methods **comply with institutional safety standards and the requirements outlined in Sections 5 and 9.**

Permitted approaches may include, but are not limited to:

- Ion exchange conducted only under qualified faculty supervision in appropriate laboratory facilities.
- Heat treatment, annealing, or thermal tempering.
- Thin-film deposition using non-hazardous materials suitable for academic laboratory environments.
- Dipping, spraying, sol-gel processing, or similar surface modification techniques that meet transparency and thickness requirements.
- A combination of permitted approaches.

All treatments must preserve the original dimensions of the provided glass sheet and comply with transparency limits described in Section 4.1.

Participants are responsible for ensuring that any method selected is performed safely, with proper training, safety data sheet documentation, and experienced oversight.

Make sure that the work you do for this Glass Strengthening Competition is in accordance with your lab, university, or institution, and that you respect the rules and processes established by laboratory supervisors. This competition should not encourage unsafe or unsupervised experimentation.

4.1 Coating Thickness and Transparency Limits

If applying any coating or other surface treatment, the overall thickness of the sample must not exceed 6.15 mm (with +0.05 mm considered measurement uncertainty). If the measured thickness exceeds 6.20 mm, the sample will be disqualified.

Thickness will be measured at the event using digital calipers or micrometers (± 0.01 mm accuracy). Participants are required to provide evidence of their coating thickness if coatings are used.

The final sample must remain transparent. If printed text placed beneath the glass can be clearly read through the sample, it will be considered compliant.

5. Prohibited Materials and Practices

For safety, fairness, and consistency, participants may NOT:

- Apply treatments that reduce transparency beyond allowable limits.
- Use coatings or treatments exceeding specified thickness limits.
- Use hazardous, explosive, highly reactive, or industrial-only materials.
- Embed foreign objects, reinforcements, laminates, or structural interlayers.
- Modify the original dimensions of the glass sheet.
- Submit multilayer or externally supported assemblies.

All entries must maintain the fundamental form and dimensions of the supplied glass sheet.

6. Required Technical Summary and Research Abstract

Each competitor or team must submit two written summaries.

A. Initial Technical Summary at Registration (500-word maximum).

B. Final Research Summary and Presentation at Check-In including final methods, data, observations, strengthening mechanism, and changes from original proposal.

7. Day-of-Competition Procedure

- Participants submit final test sheet and technical summary.
- Event staff verify thickness and transparency compliance.
- Steel ball (45.5 g, 7/8 inch diameter) dropped from 25–200 cm.
- Failure defined as substantial crack or fracture.
- Maximum survived height recorded. Tie-breaking procedures apply.
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8. Competition Scoring

Winner determined by highest drop height survived without failure. Tie-breaking procedures based on failure severity and attempts apply.

Prizes (Proposed):

- 1st Place: \$500 + certificate.
- 2nd Place: \$300 + certificate.
- 3rd Place: \$200 + certificate.

9. Safety Requirements

Safety is mandatory for all participants and spectators.

Strengthening Methods (Prior to Event):

- Any strengthening method involving hazardous chemicals, molten salts, high temperatures, pressurized systems, or other high-risk processes must be conducted under the direct supervision of qualified faculty or trained laboratory personnel.
- Participants may only undertake high-risk techniques if they have appropriate training, experience, and access to suitable laboratory facilities.
- If proper supervision, training, or facilities are not available, low-risk strengthening methods must be selected.

Competition Testing (On-Site):

- Safety glasses are required near testing apparatus.
- Testing conducted inside transparent enclosure.
- Only staff operate apparatus.
- Participants stand behind safety line.
- Broken glass handled with proper tools and protection.

10. Provided Equipment and Materials

- Standardized glass sheets.
- Steel ball (7/8 inch ball bearing).

At the competition, participants may only test their final treated sample.

11. Timeline Summary

- February 25, 2026: Registration deadline.
- February 27, 2026: Confirmation of accepted groups.
- Week of March 2, 2026: Glass sheets shipped.
- April 12, 2026: On-site competition.

12. Ethical and Professional Conduct

- All work must be conducted by registered team members.
- Rule violations result in disqualification.
- Judges' decisions are final.