G2P DuoCast™

SDS-PAGE Gel Casting Kit · 50 mini gels

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Product Information

Category: Buffers & Solutions
Catalogue number: BUF37-50
Pack size: 50 gels · one pack only
Gel format: 1.0 mm mini, hand-cast

Gel Options & Applications

10% or 12% resolving gel
5% stacking gel
50 gels total, in any combination
SDS-PAGE & Western blot workflows

Principle and Intended Use

The G2P DuoCast SDS-PAGE Gel Casting Kit provides matched reagents for hand-casting discontinuous polyacrylamide gels used in protein electrophoresis. A lower-percentage stacking layer concentrates proteins into narrow starting zones, while the 10% or 12% resolving layer separates proteins according to their apparent molecular mass in a Tris-glycine-SDS electrophoresis system.

One pack supports 50 complete 1.0 mm mini gels; choose either resolving-gel formulation for each gel.

Kit Contents — Single 50-Gel Pack

Supplied component	Quantity	Storage
DuoCast A — acrylamide solution	120 mL	2–8°C
DuoCast R — resolving solution	65 mL	Room temperature
DuoCast S — stacking solution	25 mL	Room temperature
DuoCast APS	0.5 g (10 mg × 4)	2–8°C, dry
DuoCast TEMED	500 µL	2–8°C

Required but not supplied: purified water, casting plates/spacers and combs, compatible casting frame, isopropanol or water-saturated butanol for overlay, running buffer, and appropriate laboratory PPE.

Gel Preparation — One 1.0 mm Mini Gel

Prepare approximately 5.0 mL of resolving gel and 2.0 mL of stacking gel per cassette. The formulations below are from the supplied G2P gel-casting method.

Component	10% resolving	12% resolving	5% stacking
Purified water	2.034 mL	1.694 mL	1.137 mL
DuoCast A	1.660 mL	2.000 mL	0.330 mL
DuoCast R	1.250 mL	1.250 mL	—
DuoCast S	—	—	0.500 mL
Fresh 10% APS	50 µL	50 µL	30 µL
DuoCast TEMED	6 µL	6 µL	3 µL
Final prepared volume	5.00 mL	5.00 mL	2.00 mL

Before You Begin

1. Prepare APS fresh

Dissolve one 10 mg DuoCast APS aliquot in 100 µL purified water to obtain 10% (w/v) APS. Keep chilled and use promptly. It expires in 3 months at 4°. Use another vial to make solution after 3 months.

2. Equilibrate and assemble

Bring DuoCast A to room temperature, mix gently by inversion and ensure it is homogeneous. Assemble clean, leak-free 1.0 mm mini-gel cassettes.

3. Plan the gel percentage

Choose 10% or 12% resolving gel based on the target protein-size range. Prepare the common 5% stacking layer separately.

4. Add initiators last

APS and TEMED initiate gel polymerization. Add both immediately before pouring; avoid bubbles and work without unnecessary delay.

Casting Protocol

01 Prepare resolving gel

Add purified water, DuoCast A and DuoCast R in the order shown in the selected resolving-gel recipe. Mix gently.

02 Initiate polymerization

Add 50 µL fresh 10% APS and 6 µL DuoCast TEMED to each 5 mL resolving mixture. Mix gently and pour immediately.

03 Allow resolving layer to set

Leave adequate space for the stacking gel and comb. Overlay with isopropanol or water-saturated butanol. Allow 20–30 minutes at room temperature.

04 Remove overlay

Remove the overlay completely. Rinse the polymerized gel surface with purified water and drain before adding the stacking gel.

05 Prepare the stacking layer

Prepare 2 mL of 5% stacking gel using DuoCast A and DuoCast S. Add 30 µL fresh 10% APS and 3 µL DuoCast TEMED last.

06 Cast stacking gel

Mix gently, pour above the resolving gel and insert the comb without trapping bubbles. Allow 20–30 minutes to polymerize.

07 Prepare for electrophoresis

Remove the comb carefully and rinse the wells with 1× running buffer. Assemble the gel in the electrophoresis tank and load samples.

Suggested Electrophoresis Conditions

Parameter	Suggested condition
Running buffer	1× Tris-glycine-SDS: 25 mM Tris, 192 mM glycine, 0.1% SDS
Stacking phase	Approx. 80 V until samples enter resolving layer
Resolving phase	Approx. 120–150 V; monitor temperature and band migration
Run endpoint	Stop before the tracking dye runs off the gel
Downstream use	Coomassie/silver staining or transfer to PVDF/nitrocellulose

Optimize voltage, buffer volume and run time for the electrophoresis system and sample characteristics.

Practical Notes and Troubleshooting

Observation	Possible cause and action
Gel fails to polymerize	APS is inactive, TEMED omitted, or oxygen exposure was excessive. Prepare fresh APS; verify additions and casting temperature.
Gel is soft or fragile	Polymerization is incomplete or reagent volumes are incorrect. Recheck the recipe and allow adequate setting time.
Broad bands / poor stacking	Incorrect stacking solution, overloaded or salty samples, damaged wells. Confirm gel layer and reduce sample load.
Smiling bands / overheating	Excess voltage or uneven buffer/heat distribution. Lower voltage and verify buffer level and cooling.
Leaking or uneven gels	Misaligned spacers or poorly sealed cassette. Reassemble clean plates and confirm a leak-free casting frame.

Handling and Safety

Warning — unpolymerized acrylamide is toxic and can be absorbed through skin. DuoCast TEMED is flammable/corrosive, APS is an oxidizer and SDS may irritate skin and eyes. Wear gloves, a lab coat and eye protection; follow local chemical safety rules and the current SDS.

Storage: Keep each reagent at the temperature listed under Kit Contents. Protect the acrylamide solution from excessive light and do not freeze the supplied liquids. Reconstitute APS only when needed.

Reagent Use Across 50 Gels

The supplied quantities are intended for 50 mini gels in any mix of 10% and 12% resolving layers. The table shows the maximum consumption when all 50 gels use the 12% resolving recipe.

Component	50 gels required (max.)	Supplied
DuoCast A	116.5 mL	120 mL
DuoCast R	62.5 mL	65 mL
DuoCast S	25.0 mL	27 mL
APS powder	400 mg	500 mg
DuoCast TEMED	450 µL	500 µL

Scientific Basis and Compatibility

The kit follows the discontinuous Laemmli SDS-PAGE principle and is intended for common 1.0 mm hand-cast mini-gel systems, including Mini-PROTEAN-format plates. Instrument brands are cited for dimensional compatibility only; no affiliation or endorsement is implied.

Reference: Laemmli UK. Cleavage of structural proteins during the assembly of the head of bacteriophage T4. Nature. 1970;227:680–685. doi:10.1038/227680a0.