Easy tab ECL prime tablets

WESTERN BLOTTING REAGENTS

ECL (enhanced chemiluminescent) detection is a critical step in Western blotting, performed after protein separation and transfer to nitrocellulose (NC) or polyvinylidene fluoride (PVDF) membranes. Horseradish peroxidase (HRP)-conjugated secondary antibodies react with an ECL substrate to emit light, which is captured by film or digital imagers such as the Amersham™ ImageQuant™ 800. Traditional liquid ECL reagents are supplied as two separate solutions that must be mixed at a 1:1 ratio before use, introducing variability, pipetting errors, reagent waste, and inconsistent signal quality.

Easy tab ECL prime tablets (Fig 1) deliver the trusted sensitivity and signal performance of solution based Amersham ECL Prime solution, but in a premeasured, single-use tablet format. Two tablets (A and B) dissolve in 5 mL of distilled water in approximately 8 min, producing fresh, ready-to-use ECL detection reagent. By eliminating manual mixing and ensuring consistent stoichiometry every time, the tablets improve reproducibility, reduce waste, and lower the risk of cross-contamination, particularly in shared or multiuser laboratory environments.

Key features of Easy tab ECL prime tablets:

- **Premeasured, single-use tablet format** eliminates manual mixing and pipetting steps, delivering consistent results regardless of your experience.
- **Proven femtogram-level sensitivity** matches trusted Amersham ECL Prime solution performance, enabling confident detection of low-abundance proteins.
- **Long-lasting signal stability of up to 24 h** supports flexible reimaging schedules and processing of multiple blots in large experimental series.
- **Fresh ECL reagent generated on demand** ensures optimal chemistry for each experiment, reducing the risk of using contaminated or degraded reagents.
- **Reduced waste and lower carbon footprint** with a compact blister pack containing less than 15% plastic content, upto 80% less plastic packaging than two-bottle liquid formats, and ambient-temperature shipping that removes the need for cold-chain freight.



Fig 1. Easy tab ECL prime tablets are dissolved in distilled water to produce a ready-to-use ECL detection reagent.

Higher signal intensity vs ECL Prime solution

The performance of Easy tab ECL prime tablets was compared to that of solution-based Amersham ECL Prime, with both formats containing the same ECL Prime chemistry. However, the tablet format delivers not only the full femtogram-level detection capability of the liquid-based reagent, but a measurably higher integrated signal intensity, extending the effective limit of detection.

Figure 2 shows the result of slot-blots performed using a serial dilution of α-rabbit HRP secondary antibody (24 to 0.01 pg) applied in 200 µL dots onto AmershamProtran™ membranes in triplicate. We developed the membranes using either Easy tab reagent or ECL Prime solution under identical conditions, and band signal intensity was quantitated using the ImageQuant 800 system.

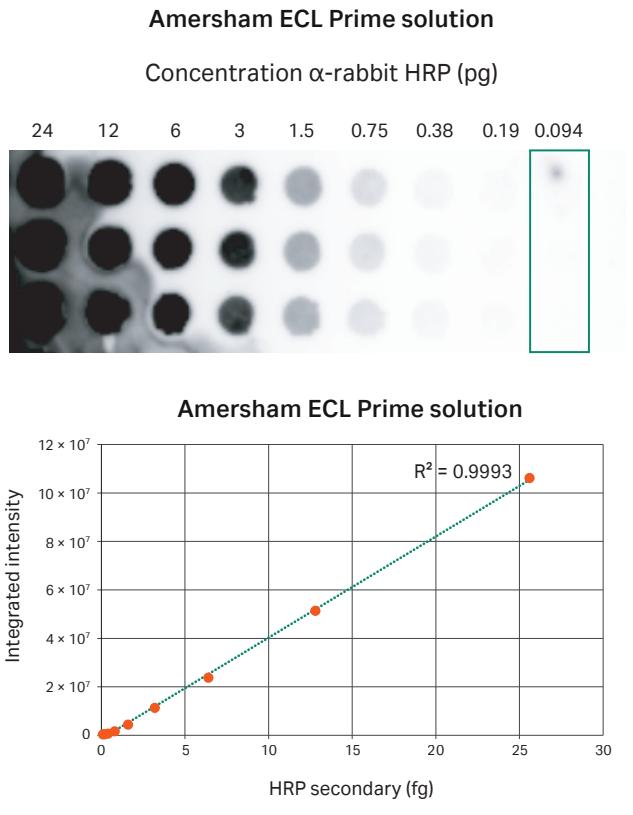


Fig 2. Slot-blot comparison of ECL Prime solution and Easy tab ECL prime tablet across an α-rabbit HRP dilution series, showing higher integrated signal intensity and detection down to 94 fg (as highlighted in the image) for the Easy tab ECL prime reagent.

To confirm that the sensitivity observed in the dot-blot format translates to a complete Western blotting workflow, in which target proteins are resolved by size and detected against a complex cellular background, a full assay was performed. Western blots using A-431 cell lysate (Abcam) were run on SDS-PAGE gels across a serial dilution from 0.25 to 0.02 µg of total protein. Gels were transferred onto 0.45 µm PVDF membrane, blocked for 30 min with 2% of ECL Prime blocking reagent, washed, and probed with primary α-GAPDH (1:5000; target M_r ~ 37 000), then washed again and probed with secondary α-rabbit HRP (1:50 000). We prepared 2.5 mL of Easy tab ECL prime reagent, incubated for 5 min, and imaged using the ImageQuant 800 imaging system. To assess the working stability of the reconstituted reagent, we applied freshly dissolved Easy tab to replicate blots and imaged immediately and again at 2, 5, and 24 h after reconstitution (Fig 3).

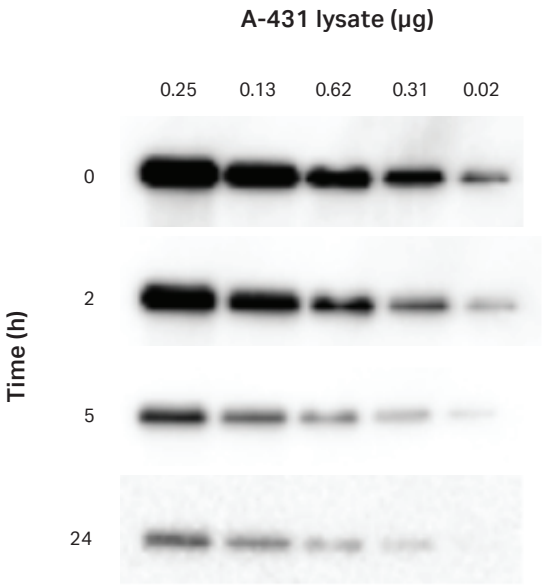


Fig 3. Western blot of A-431 cell lysate (0.25 to 0.02 µg) probed for GAPDH and detected with Easy tab ECL prime tablets. Blots were imaged immediately and again at 2, 5, and 24 h after reconstitution to assess the stability of the dissolved reagent. Signal intensity analyzed on Amersham ImageQuant 800 system.

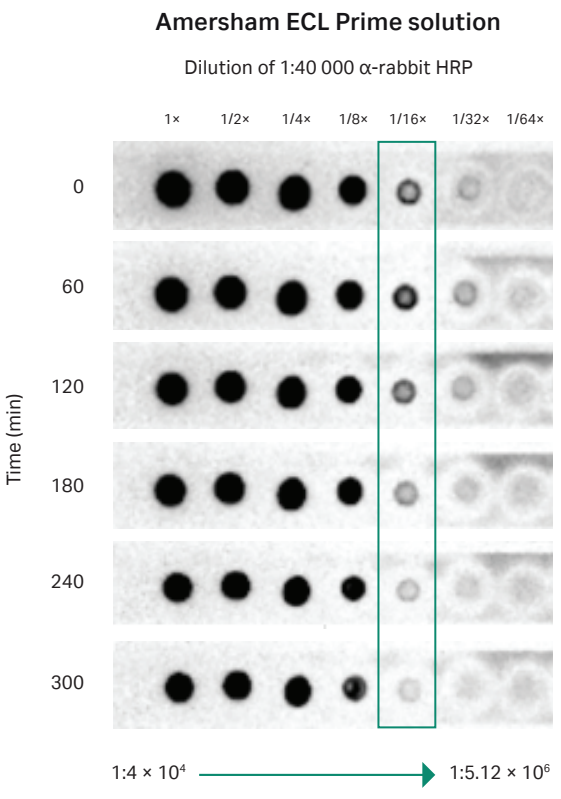
Easy tab ECL prime tablets detected GAPDH as a single, specific band at the expected molecular weight (M_r) of approximately 37 000, with low background across the full dilution series and clear signal maintained down to the lowest 0.02 µg lysate load (Fig 3). This confirms that the femtogram-level sensitivity established in the dot-blot format (Fig 2) is retained in a genuine Western blotting context, where target proteins must be resolved by size and detected against a complex lysate background rather than as an isolated antibody spot. Importantly, blots developed with reagent held for 2, 5, and 24 h after reconstitution showed comparable band intensity and specificity, with only minimal signal decay over the time course, demonstrating that the dissolved tablet remains fully active for up to approximately 24 h. This extended working window allows

you to reimage blots, optimize exposures, and process multiple membranes from a single preparation without loss of performance, a practical advantage examined quantitatively in the following section.

Signal stability and duration

A key advantage of the Easy tab format is the long-lasting, stable chemiluminescent signal it produces. Signal stability was assessed by imaging blots at defined intervals following substrate application. The tablet produced a signal that remained detectable for up to approximately 24 h, providing you with the flexibility to process and reimage multiple blots without signal decay.

In a dot-blot experiment to determine signal duration and stability of the tablets, we spotted serial dilutions of α-rabbit HRP, from a starting dilution of 1:40 000 down to 1:5.12 × 10^6 in 10 µL aliquots. ECL Prime solution was prepared 1:1 and Easy tab ECL prime tablets were dissolved to prepare freshly made solutions. We tested the membranes with post-prepared solutions every hour for 5 h to determine the solution stability and duration and to demonstrate how Easy tab performs in comparison to ECL Prime solution (Fig 4).



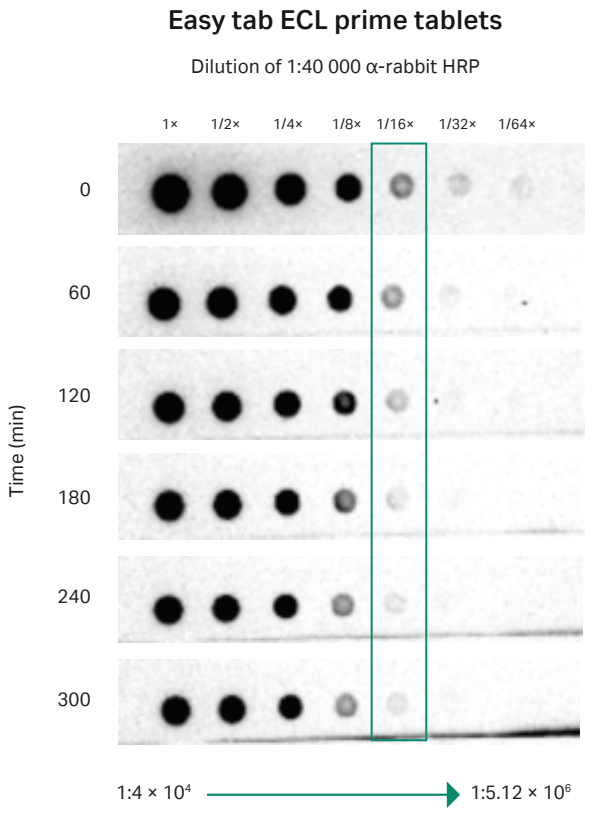


Fig 4. Direct comparison of signal duration and stability on Protran membranes between ECL Prime solution and Easy tab ECL prime tablet.

At every time point, freshly prepared tablet solution maintained detectable signal down to the same detection endpoint (the highest dilution still yielding measurable signal) of 1:6.4 × 10^5 as ECL Prime solution (Fig.4), confirming that reconstituting the tablet does not compromise the working sensitivity of the reagent. Critically, the dissolved Easy tab continued to generate strong, usable signal at each hourly interval across the full 5 h window, demonstrating that a single preparation remains active throughout a typical working session and can be applied to multiple membranes without loss of performance.

Table 1 quantitates the corresponding signal decay following substrate application.

Table 1. Signal remaining (%) over time for Easy tab ECL prime tablet compared to ECL Prime solution at a dilution of 1: 6.4 × 10^5

Time after substrate application (min)	Easy tab ECL prime tablet solution (% signal intensity remaining)	ECL Prime solution (% signal remaining)
0	100	100
120	52	79
240	18	21

Following substrate application, both formats followed a broadly comparable pattern of signal decay. While ECL Prime solution appears to retain a marginally higher proportion of its initial signal after 120 and 240 min, this reflects the consistently higher background generated by the solution rather than a genuine advantage in specific band intensity.

Because the percentage remaining is calculated relative to a higher, background-inflated starting value, it overstates the truly usable signal; Easy tab, by comparison produces a cleaner signal with markedly lower background, so a greater proportion of its measured intensity corresponds to specific, on-target detection. Taken together with the dilution-series and hourly reagent-stability data in Figure 4, these results show that Easy tab ECL prime tablets deliver signal durability at least equivalent to ECL Prime solution while offering an improved signal-to-noise ratio. In practical terms, you can expect a consistent, long-lived, low-background signal window that supports flexible exposure optimization and the imaging of multiple blots from a single tablet preparation.

Reproducibility across users

The premeasured tablet format is specifically designed to remove operator-dependent variability from ECL preparation. Unlike liquid formats, where pipetting accuracy and mixing technique directly affect stoichiometry and signal quality, Easy tab delivers a fixed, pre-optimized ratio of reagents every time. This makes it particularly suited to shared labs, core facilities, and training environments where multiple users of varying experience levels perform Western blots.

Dissolution and preparation

The Easy tab ECL prime tablets are designed for rapid, simple preparation. The recommended protocol requires only three steps:

1. Add one Tablet A and one Tablet B to 5 mL of distilled water in a 15 mL centrifuge tube.
2. Dissolve at room temperature (approximately 8 min).
3. Apply dissolved solution to membrane and image.

Storage at +4°C is recommended.

Membrane compatibility

The tablets deliver consistent, high-sensitivity detection independent of membrane chemistry. This is demonstrated in Figure 5, where we probed identical serial dilutions of A-431 lysate for GAPDH and detected with tablet on the two most widely used membrane types: PVDF (top row) and NC (bottom row). Both membranes produced comparable band intensity, equivalent low background, and the same detection sensitivity across the dilution series, with no shift in the lowest detectable load between the two surfaces.

This equivalence is expected on mechanistic grounds—the chemiluminescent signal is generated by the HRP—substrate reaction at the antibody, not by any interaction with the membrane itself, so the choice of PVDF or NC membrane has no measurable effect on the sensitivity or stability of the reagent. In practical terms, this means you can retain your preferred membrane and existing protocols without recalibration, while still benefiting from the high signal intensity required to detect low-abundance proteins on either surface.

This equivalence holds across the two dominant membrane chemistries used in Western blotting. In Figure 5, the hydrophobic PVDF surface (top row) and the Protran NC surface (bottom row) yielded matching band intensity, background, and detection limits despite their different protein-binding properties. Easy tab therefore integrates seamlessly into established PVDF- and NC-based protocols alike, allowing you to standardize on a single detection reagent regardless of the membrane format that your workflow requires.

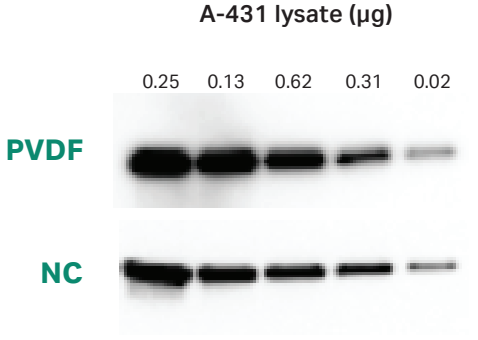


Fig 5. Membrane comparison of Easy tab ECL prime detection on PVDF (top) versus NC (bottom). A-431 lysate (5 mg/mL) was serially diluted from 0.25 mg/mL down to 0.016 mg/mL and transferred in parallel onto 0.45 µm PVDF (top row) and Protran NC (bottom row) membranes.

Competitive benchmarking

Easy tab ECL prime tablets offer a distinct, tablet-based alternative to traditional liquid ECL substrates. The table below summarizes key differentiators.

Table 2. Competitive comparison of ECL detection substrates. Competitor data sourced from publicly available product datasheets and ECL Prime datafile[1]

Feature	Easy tab ECL prime tablets	Amersham ECL Prime solution	ThermoFisher SuperSignal West Dura	Merck Millipore Crescendo
Format	Tablet (reconstitute in water)	Two-bottle liquid (1:1 mix)	Two-bottle liquid (1:1 mix)	Ready-to-use solution
Sensitivity	Low femtogram	Low femtogram	Mid-femtogram	Mid-femtogram
Signal stability	~ 24 h	Up to 24 h	24 h	24 h
Manual mixing required	Dissolve in water	Yes (1:1)	Yes (1:1)	No (ready-to-use)
Pipetting precision required	No	Yes (equal volumes)	Yes (equal volumes)	No
Cross-contamination risk	Eliminated (single-use sealed tablets)	Present due to shared bottles	Present due to shared bottles	Present due to shared bottles
Storage conditions	Refrigerated (+4°C)	Room temperature	Refrigerated (+4°C) to room temp.	Refrigerated (+4°C)
Cold-chain shipping	Ambient	Ambient	Required	Required
Sustainability	Compact blister pack with < 15% plastic content	Plastic bottles	Plastic bottles	Plastic bottles
Shelf life	18 mo	18 mo	12 mo	12 mo

Designed-in sustainability

Cytiva is committed to advancing sustainable laboratory practices and reducing the environmental impact of routine research workflows. Easy tab ECL prime tablets were developed with sustainability as a core design principle, targeting three key areas: material reduction, logistics efficiency, and energy-conscious distribution.

Eliminating liquid reagent from the supply chain

Traditional liquid ECL detection reagents require the shipment of 100 mL of aqueous solution in two plastic bottles, all of which must be kept under refrigerated conditions throughout transport. Easy tab replaces this with compact, dry tablets that you reconstitute in distilled water prior to use. This simple change removes the liquid from the supply chain entirely, delivering measurable reductions across multiple sustainability metrics:

- **Approximately 67% reduction in total shipped weight** by eliminating solution and replacing plastic bottles with a compact blister pack.
- **Up to 80% reduction in plastic packaging** compared to traditional two-bottle liquid ECL formats.
- **Approximately 87% reduction in package volume**, enabling significantly more packs per pallet and fewer shipments per order cycle.

Lighter, ambient logistics

The tablets ship at ambient temperature, removing the requirement for refrigerated freight and the associated fuel and energy overhead of cold-chain transport. Combined with the lighter weight and smaller packaging, this contributes to a significant reduction in shipping-related CO_2 emissions compared to chilled liquid ECL formats.

Reduced waste

The premeasured, single-use tablet format helps reduce reagent waste from over-preparation, a common issue with liquid ECL substrates where excess mixed reagent is routinely discarded. Each sealed tablet delivers a fixed dose, ensuring no reagent is wasted through inaccurate pipetting or unused leftover solution. The 18 mo shelf life further reduces the risk of expired stock compared to 12 mo liquid formats.

To minimize paper usage, we have provided the instructions for use in digital format, accessible by scanning the QR code on the product label.

Together, these design choices reflect our commitment to developing products that support researchers in achieving their scientific goals while contributing to more sustainable laboratory operations.

Specifications

Specification	Parameter
Sensitivity	Femtogram-level; limit of detection of 94 fg, matching and extending the sensitivity of ECL Prime solution
Signal stability	Up to 24 h
Dissolution time	8 min at room temperature
Working volume	5 mL (two tablets dissolved in distilled water)
Membrane compatibility	PVDF, NC
Primary antibody dilution range	1:1000 to 1:50 000
Secondary antibody dilution range	1:50 000 to 1:250 000
Storage conditions	+4°C
Shelf life	18 mo

Product contents

Component	Quantity
Easy tab ECL prime tablet A (blister-packed)	20 units
Easy tab ECL prime tablet B (blister-packed)	20 units

Pack provides 20 individual reactions
(40 tablets total, 2 per reaction).

Ordering information

Product	Pack size	Product code
Easy tab ECL prime tablets	20 reactions	RPN2237

Related products

- Amersham Hybond and Protran blotting membranes
- Amersham rainbow molecular weight markers
- Amersham ECL HRP-conjugated antibodies
- Signal clear stripping buffer
- Amersham ImageQuant 800 imaging system
- ImageQuant TL image analysis software

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