

## PROTEIN QUANTITATION

# Quick Start™ Bradford Protein Assay

### Convenience, Time Savings, and Flexibility

- **Prediluted standard sets in 0.125 to 2.0 mg/ml concentrations**
- **1x dye reagent**
- **Standard, microplate, and microassay protocols**
- **Order kits or individual kit components**

## Ready-to-Use Bradford Assay

### The Quick Start Advantage

The Quick Start Bradford protein assay is a simple and accurate procedure for determining the concentration of protein in solution. Like the Bio-Rad protein assay, it is based on the classic method of Bradford (1976). The Quick Start assay is ready to use: it supplies the dye reagent at 1x concentration and a choice of two protein standards at seven prediluted concentrations. The prediluted standards are conveniently packaged in two sets of seven 2 ml screwcap vials. This packaging eliminates sharp, wasteful ampoules and ensures stability of the standards over the shelf life of the product. Standards are also available in five vials of 2 mg/ml for dilution to other concentrations when desired.

### Selecting the Right Protein Standard

In any protein assay, the best protein to use as a standard is a purified preparation of the protein being assayed. In the absence of such an absolute reference protein, another protein must be selected as a relative standard. The best relative standard to use is one that gives a color yield similar to that of the protein being assayed. Selecting such a protein standard is generally done empirically. If only relative protein values are desired, any purified protein may be selected as a standard. The two most common protein standards used for protein assays are bovine serum albumin (BSA) and bovine  $\gamma$ -globulin.

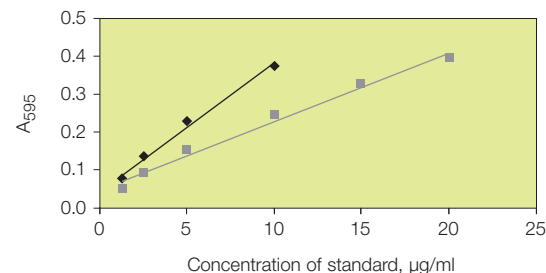
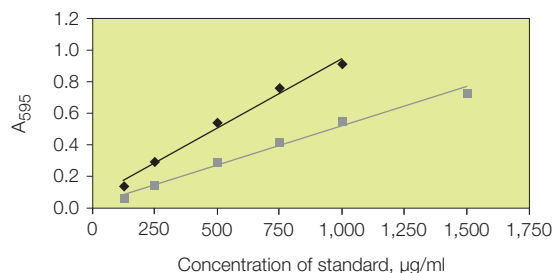
With the Quick Start Bradford protein assay, the extent of dye color development is significantly greater with BSA than with most other proteins, including  $\gamma$ -globulin. Therefore, the BSA standard is an appropriate standard if the sample contains primarily albumin, or if the protein being assayed gives similar response to the dye. For a color response that is typical of many proteins, the  $\gamma$ -globulin standard is appropriate.

### Convenience and Time Savings

The Quick Start Bradford protein assay kit is available in sets of prediluted BSA or  $\gamma$ -globulin standards at seven concentrations (0.125–2.0 mg/ml). Each kit contains two vials of each concentration. The prediluted standards and 1x dye reagent allow you to determine protein concentration in one simple step, with no need for time-consuming preparation of standards and reagents.

### Flexibility

The kit provides a 1x dye reagent and can be used for 5 ml standard assays, 1 ml standard assays, microplate assays, and microassays. The Quick Start Bradford protein assay kit provides all necessary reagents for 200 standard assays or 4,000 microplate assays.



Typical standard curves obtained in the Quick Start Bradford standard assay (left) and microassay (right) using BSA (◆) and  $\gamma$ -globulin (■).

**BIO-RAD**



#### Reagents compatible with the Quick Start Bradford protein assay.

Acetone, 10%	Nonidet P-40, 0.25%
Acetonitrile, 10%	Octylglucoside, 0.5%
Ammonium sulfate, 1 M	Octyl $\beta$ -thioglucopyranoside, 1%
Ampholytes, pH 3–10, 0.5%	PBS
ASB-14, 0.025%	Phenol Red, 0.5 mg/ml
Ascorbic acid, 50 mM	PIPES, 0.2 M
Bis-Tris, pH 6.5, 0.2 M	PMSF, 2 mM
$\beta$ -Mercaptoethanol, 1 M	Potassium chloride, 2 M
Calcium chloride, 40 mM	Potassium phosphate, 0.5 M
CHAPS, 10%	SB 3–10, 0.1%
CHAPSO, 10%	SDS, 0.025%
Deoxycholic acid, 0.2%	Sodium acetate, pH 4.8, 0.2 M
Dithioerythritol (DTE), 10 mM	Sodium azide, 0.5%
Dithiothreitol (DTT), 10 mM	Sodium bicarbonate, 0.2 M
DMSO, 5%	Sodium carbonate, 0.1 M
Eagle's MEM	Sodium chloride, 2.5 M
Earle's salt solution	Sodium citrate, pH 4.8 or 6.4, 0.2 M
EDTA, 0.2 M	Sodium hydroxide, 0.1 M
EGTA, 0.2 M	Sodium phosphate, 0.5 M
Ethanol, 10%	Sucrose, 10%
Glucose, 20%	Tributylphosphine (TBP), 5 mM
Glycerol, 5%	TBS (25 mM Tris, 0.15 M NaCl, pH 7.6), 0.5x
Glycine, 0.1 M	TCEP, 20 mM
Guanidine-HCl, 2 M	Thiourea, 1 M
Hank's salt solution	Tricine, pH 8, 50 mM
HCl, 0.1 M	Triethanolamine, pH 7.8, 50 mM
HEPES, 0.1 M	Tris, 1 M
Imidazole, 0.2 M	Tris-glycine (25 mM Tris, 192 mM glycine)
Magnesium chloride, 1 M	Tris-glycine-SDS (25 mM Tris, 192 mM glycine, 0.1% SDS), 0.5x
MES, 0.1 M	Tween 20, 0.01%
Methanol, 10%	Urea, 4 M
Modified Dulbecco's PBS	
MOPS, 0.1 M	
NAD, 2 mM	

Triton is a trademark of Union Carbide. Tween is a trademark of ICI Americas, Inc.

#### Disposable Cuvettes

Disposable cuvettes are ideal for protein assays. Optically clear on two sides, disposable cuvettes can be used as mixing vessels and then used directly in the spectrophotometer.



#### Kit Components

Quick Start Bradford protein assay kits are available with a combination of the components below. See ordering information for a list of components belonging to each kit. Each component and reagent has a 1-year shelf life at 4°C, and can be purchased separately.

**Quick Start 1x dye reagent** — 1 L of dye solution containing methanol and phosphoric acid. One bottle of dye reagent is sufficient for 200 assays using the standard 5 ml procedure or 4,000 assays using the microplate procedure.

**BSA standard, 2 mg/ml** — 5 x 2 ml vials containing BSA.

**Bovine  $\gamma$ -globulin standard, 2 mg/ml** — 5 x 2 ml vials containing  $\gamma$ -globulin.

**BSA standard set** — 2 x 2 ml vials of standard at each concentration. Set contains seven concentrations of BSA (2, 1.5, 1, 0.75, 0.5, 0.25, and 0.125 mg/ml).

**Bovine  $\gamma$ -globulin standard set** — 2 x 2 ml vials of standard at each concentration. Set contains seven concentrations of  $\gamma$ -globulin (2, 1.5, 1, 0.75, 0.5, 0.25, and 0.125 mg/ml).

All standards are provided in a solution of 0.9% NaCl and 0.05%  $\text{NaN}_3$ .

#### Reference

Bradford MM, A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding, *Anal Biochem* 72, 248–254 (1976)

#### Ordering Information

Catalog#	Description
500-0201	Quick Start Bradford Protein Assay Kit 1, includes 1 L 1x dye reagent, BSA standard (5 x 2 mg/ml)
500-0202	Quick Start Bradford Protein Assay Kit 2, includes 1 L 1x dye reagent, BSA standard set (14 x 2 ml of 0.125–2.0 mg/ml)
500-0203	Quick Start Bradford Protein Assay Kit 3, includes 1 L 1x dye reagent, bovine $\gamma$ -globulin standard (5 x 2 mg/ml)
500-0204	Quick Start Bradford Protein Assay Kit 4, includes 1 L 1x dye reagent, bovine $\gamma$ -globulin standard set (14 x 2 ml of 0.125–2.0 mg/ml)
500-0205	Quick Start 1x Dye Reagent, 1 L
500-0206	Quick Start Bovine Serum Albumin Standard, 5 x 2 ml vials of 2 mg/ml
500-0207	Quick Start Bovine Serum Albumin Standard Set, 2 sets of 7 concentrations (2, 1.5, 1, 0.75, 0.5, 0.25, 0.125 mg/ml) in 2 ml vials
500-0208	Quick Start Bovine $\gamma$ -Globulin Standard, 5 x 2 ml vials of 2 mg/ml
500-0209	Quick Start Bovine $\gamma$ -Globulin Standard Set, 2 sets of 7 concentrations (2, 1.5, 1, 0.75, 0.5, 0.25, 0.125 mg/ml) in 2 ml vials
223-9950	Standard Disposable Polystyrene Cuvettes, 3.5 ml, 100
223-9955	Semimicro Disposable Polystyrene Cuvettes, 1.5 ml, 100

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