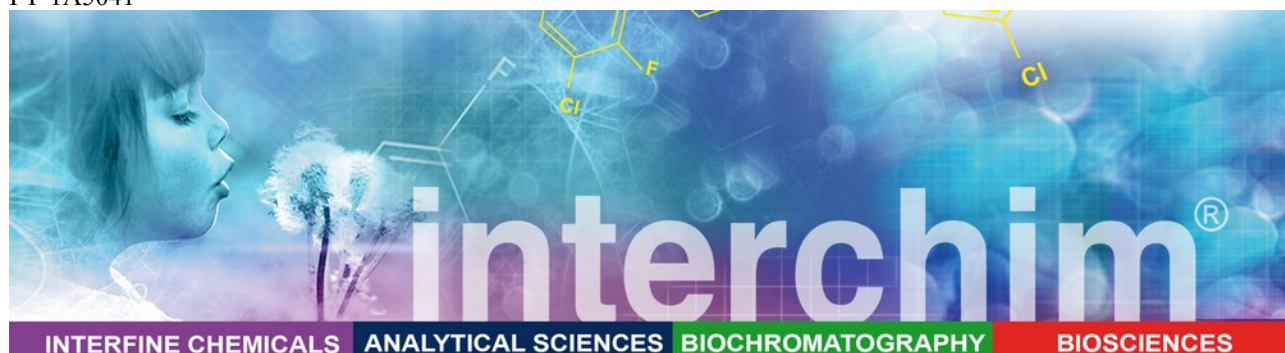


FT-1A5041



## Crosslinkers for gel electrophoresis

Crosslinking agent for the preparation of gel electrophoresis (polymerization of acrylamide).

### Product Description

#### Crosslinkers Selection Guide

Name	Cat.#	Chemical Structure	Benefits
Bis-Acrylamide	05379L		General crosslinker in PAGElectrophoresis
PDA	1A5041		Reduce silver stain background in SDS-PAGE and 2-D gels, increases resolution, et gives higher gel strength
DATD	118221		Increase pore size of IEF gels, where molecular sieving is a problem. Used in scintillation counting: 1,2-dio structure is soluble in periodic acid

**Name:** **Bis-Acrylamide (bis)**  
N,N'-methylene-bis-acrylamide  
EC [203-750-9]; CAS: [110-26-9]; MW: 154.17.

**Catalog #:** 05379L, 100g powder  
UP864965, solution 2%

**Storage:** +4°C (or -20°C for long term) (K)

Standard crosslinking agent for the preparation of polyacrylamide gel electrophoresis

**Name:** **N-N' diallyltartardiamide (DATD)**  
N-N' diallyl-tartardiamide  
EC : 261-277-3; CAS: 28843-34-7; MW: 228.25

**Catalog #:** 118221, 1g

**Storage:** +4°C (or -20°C for long term) (K)

A usefull crosslinking agent for the preparation of polyacrylamide gel electrophoresis

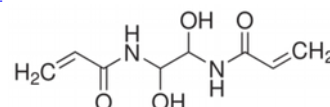
**Name:** **Piperazine diacrylamide (PDA)**  
1,4-Bis(acryloyl)piperazine  
EC : 261-277-3; CAS: 58477-85-3; MW: 194.23  
Light yellow powder  
Fully miscible in water.

**Catalog #:** 1A5041, 1g

**Storage:** +4°C (or -20°C for long term) (K)

A usefull crosslinking agent for the preparation of polyacrylamide gel electrophoresis  
Kelkar RS, Mahen AA, Saoji AM, Kelkar SS. N-N' diallyltartardiamide (DATD) as a cross-linking agent for polyacrylamide gel disc electrophoresis of human serum proteins. J Postgrad Med [serial online] 1986 [cited 2013 Feb 14];32:27-31. [Article](#)

Also available: N,N'-(1,2-Dihydroxyethylene)bisacrylamide #BK043  
CAS:868-63-3; EC:212-280-1



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## PDA information

### Introduction <sup>[1]</sup>

The PDA crosslinking agent can replace methylene-bis-acrylamide (bis), the standard crosslinker used to prepare polyacrylamide gels for PAGE, IEF, and protein sequencing. Benefits include:

- particularly reduced background for silver staining,
- increased gel strength, and
- higher resolution gels.

Standard polymerization protocols used for bis work for PDA.

PDA was designed to reduce the background; in consideration that basic and sulfur-containing amino acids are essential in the detection of peptides by the silver stain reaction, the piperazine ring of PDA eliminates the hydrogen atoms of the amide groups. Correlately, PDA improves the signal to noise and thus silver staining sensitivity. It also gives benefits in polyacrylamide electrophoresis gels:

### Application

### Advantages of substituting bi by PDA

#### SDS-PAGE

- Increased gel strength with low %T gels
- Reduced background in silver staining

#### 2-D gels

- Increased gel strength facilitates tube gel handling
- Tube gels are more stable (can be stored for 1 month at 4 °C without precipitation of urea).
- Reduced background in silver staining
- Increased resolution of protein spots

#### Protein sequencing gels

- Decreased N-terminal blockage increases sensitivity of micro sequencing from 2-D blots

To start using PDA, simply substitute PDA gram for gram for bis in your usual procedure, keeping current polymerization conditions and catalyst concentrations used for bis-acrylamide (see [FT-86489B](#)).

### Usage

Usually the pore size of the polyacrylamide gel is changed by adjusting the total monomer concentration (%T) <sup>[note]</sup>: the monomer / polymer solution is prepared with constant monomer relative concentration %C, and its volume is adjusted depending on desired pore size.

$$\%T = [(g \text{ Acrylamide} + g \text{ PDA}) / \text{Total Volume}] \times 100$$

$$\%C = [g \text{ PDA} / (g \text{ Acrylamide} + g \text{ PDA})] \times 100$$

With PDA concentration increasing from 2 to 5%, the pore size of the gel decreases and the protein mobility decreases (higher concentrations is not recommended, because it turns the gel opaque and increases the mobility of proteins).

### Standard formulation of separating gel and stacking gel solutions:

#### • Acrylamide/PDA stock solution (30% T, 2.67% C):

dissolve 4.0 g of PDA and 146.0 g of acrylamide to 500 ml with distilled water. Filter and store in the dark at 4 °C.

#### • Separating gels (0.375M Tris, pH 8.8, with 7.5% PDA):

add 25ml of Acrylamide/PDA solution (30% T, 2.67% C) and complete to 73.5ml with distilled water. Add 25ml of 1.5M Tris HCl pH8.8, 1ml of SDS 10%(w/v), 500µL of APS 10% (fresh) and 50µL of TEMED.

*Note:* The volume of Acrylamide/PDA stock required for a desired total monomer concentration (X) can be calculated as follows:

$$\text{volume (30\% T, 2.67\% C stock soln)} = (X \%T) \times (3.33)$$

Then complete with water:

$$\text{volume of water to add} = 73.5\text{ml} - (\text{volume used of 30\% T, 2.67\% C stock})$$

*Note:* For optimal results, leave the acrylamide/PDA mix solution under vacuum for at least 15 minutes before adding the two catalysts, just prior to casting the gels.

#### • Stacking gel (0.125M Tris pH 6.8 4% PDA):

add 1.3ml of PDA solution (2.67% C) and complete to 7.35ml with distilled water. Add 100µl of Tris 0.5M Tris HCl pH6.8, 50µl of SDS 10%(w/v), 50µl of APS 10% (fresh) and 10µL of TEMED.

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*Note:* a higher TEMED concentration and faster polymerization are required for the stacking gel because of the inhibitory effect of atmospheric oxygen associated with the comb.

## • Gel storage

*Remark:* PDA crosslinked gels shrink more than bis crosslinked gels when they are dried after equilibration in solutions containing only alcohol and acetic acid. Addition of 3-5% glycerol to the equilibration solution should overcome any shrinking problems.

## Legals:

- For Research Use Only

- **Safety** (Regulation (EC) No 1272/2008)                      Symbol: GHS07

Skin Irrit. 2            H315 Causes skin irritation.

Eye Irrit. 2            H319 Causes serious eye irritation.

STOT SE 3            H335 May cause respiratory irritation.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P321 Specific treatment (see on this label).

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations

- **Safety**(Classification according to Directive 67/548/EEC or Directive 1999/45/EC)

Xi; Irritant

R36/37/38: Irritating to eyes, respiratory system and skin.

## Related / associated products and documents

Ammonium Persulfate (APS) [UP306098](#)

TEMED [UP15413D](#)

Urea [UP031903](#)

Acrylamide 40% solutions [FT-86489B](#)

Other electrophoresis reagents

see [Product highlights](#), [BioSciences Innovations catalogue](#) and [e-search tool](#).

## Ordering information

Catalog size quantities and prices may be found at <http://www.interchim.com>.

Please inquire for higher quantities (availability, shipment conditions).

Please contact InterBioTech – Interchim for any other information

Hotline : +33(0)4 70 03 73 06 – [Interbiotech@interchim.com](mailto:Interbiotech@interchim.com)

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