The Helena TITAN GEL High Resolution Protein Method is intended for the separation of protein fractions by agarose gel electrophoresis.

**SUMMARY**

High resolution electrophoresis achieves better resolution of the proteins beyond the classical five band patterns thereby increasing the diagnostic usefulness of protein patterns.

Approximately fifteen serum proteins have been studied extensively because they may be measured easily.

In this context, high resolution electrophoresis refers to systems which separate 95% of the total protein mass into 15-25 discrete fractions.

**PRINCIPLE**

Proteins are large molecules composed of covalently linked amino acids. Proteins can be either polar or non-polar at a given pH depending on electron distributions resulting from cationic or anionic bonding of structural subgroups in the hearth procedure, proteins are separated according to their respective electrical charges on agarose gel using both the electrophoretic and electroendosmotic forces present in the system. The separations are stained with a protein sensitive stain.

**REAGENT**

1. TITAN GEL High Resolution Protein Gel

**Ingredients:** Each gel contains agarose in a barbital buffer with thimerosal added as preservatives.

**WARNING:** FOR IN-VITRO DIAGNOSTIC USE.

**Preparation for Use:** The gels are ready for use as packaged.

**Storage and Stability:** The gels should be stored at room temperature (15 to 30°C) and are stable until the expiration date indicated on the vial.

**For Sales, Technical and Order Information and Service Assistance, call 800-231-5683 toll free.**

Helena Laboratories warrants its products to meet our published specifications and to be free from defects in material and workmanship. Helena Laboratories liability under this warranty shall be limited to replacement or refund of any amount not exceed the purchase price attributable to the goods to which such claim is made. These alternative shall be buyer’s exclusive remedy. In no case will Helena Laboratories be liable for consequential damages even if Helena has been advised of the possibility of such damages. These alternatives are in lieu of all warranties expressed or implied including, but not limited to, the warranties of merchantability and fitness for a particular purpose.

**BIBLIOGRAPHY**


14. Houff S. 1983. Oligoclonal IgG bands in cerebrospinal fluid in various neurological dis-


28. Houff S. 1983. Oligoclonal IgG bands in cerebrospinal fluid in various neurological dis-

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38. Houff S. 1983. Oligoclonal IgG bands in cerebrospinal fluid in various neurological dis-


Materials needed but not provided:
0.85% Saline
MeOH
Glacial Acetic Acid
Fixative-Destaining Solution: Mix 500 ml methanol with 500 ml Deionized water. Add 100 ml of glacial acetic acid. Store at 15 to 30°C.

SUMMARY OF CONDITIONS

Gels.........................TITAN GEL High Resolution Protein Gel Buffer Dilution ..................Dissolve in 1500 ml water Sample Volume blotter ...2.0 µL Sample Absorption Time..................5 minutes Electrophoresis Time........20 minutes Voltage.........................200V Staining Time..................15 minutes Drying Time (after staining)........10 minutes at 60-70°C Drying Time ..................5 minutes at 60-70°C

STEP-BY-STEP METHOD

A. Preparation of the TITAN GEL CHAMBER

1. Dissolve one package TITAN GEL High Resolution Buffer in 1500 ml deionized water. Buffer requires approximately 20 minutes for dissolving. Do not immerse the chamber/Antipyrin in the buffer while the other edge makes contact with the edge of the agarose. Gently rub one finger across the gel at the wick contact area to insure good contact.

2. Place the TITAN GEL Chamber Cooling Device in the refrigerator at least 1 hour prior to placing it in the TITAN GEL Chamber. Do not immerse the TITAN GEL Chamber/Antipyrin in the buffer while the other edge makes contact with the edge of the agarose. Gently rub one finger across the gel at the wick contact area to insure good contact.

3. Place the cover on the chamber and allow the gel to remain in the chamber for 30-60 seconds before turning on the power. This will allow the gel to equilibrate in the buffer.

4. Electrophoresis the gel at 250 volts for 20 minutes.

B. Visualization of the Protein Bands

A Fixative-Destaining Solution is required for each of the staining methods. Mix 500 ml methanol with 500 ml Deionized water. Add 100 ml Glacial acetic acid. The solution may be stored at 15 to 30°C.

1. Recommended Staining Procedure

TITAN GEL High Resolution Stain - TO BE USED FOR SERUM, PLASMA, CSF OR URINE SAMPLES

a. Using TITAN GEL-Blotter A, gently blot the gel at the area of application using slight fingertip pressure on the blotter.

b. Carefully place the TITAN GEL HR Template on the gel aligning the application slits with the minus signs (−) on the sides of the gel and try to avoid trapping any air bubbles under the template. Place a Blotter A over the template and remove any bubbles in the slit area with slight fingertip pressure. Retain the blotter for use in Step 8.

c. Place 2.0 µL of each sample (prepared as outlined in instructions) on the template slits, spreading the sample over the entire slit. Apply the samples as quickly as possible. A 4.0 µL sample may be applied, if darker bands are desired.

2. Wait 5 minutes after the last sample has been applied to allow the samples to diffuse into the agarose.

3. Just prior to placing the gel in the electrophoresis chamber, remove the cooling device from the refrigerator and place in the center of the chamber. Wet the entire surface of the cooling device with a few drops of buffer. Cover the chamber.

4. Place the TITAN GEL Chamber Cooling Device in the refrigerator for at least 1 hour prior to placing it in the TITAN GEL Chamber. Do not immerse the TITAN GEL Chamber/Antipyrin in the buffer while the other edge makes contact with the edge of the agarose. Gently rub one finger across the gel at the wick contact area to insure good contact.

5. Place the cover on the chamber and allow the gel to remain in the chamber for 30-60 seconds before turning on the power. This will allow the gel to equilibrate in the buffer.

6. Electrophoresis the gel at 250 volts for 20 minutes.

7. Remove the TITAN GEL High Resolution Protein Gel from the protective packaging. One edge of the agarose gel has been numbered for easy sample placement and identification.

8. Using TITAN GEL-Blotter A, gently blot the gel at the area of application using slight fingertip pressure on the blotter.

9. Place the TITAN GEL Chamber Cooling Device in the refrigerator at least 1 hour prior to placing it in the TITAN GEL Chamber. Do not immerse the TITAN GEL Chamber/Antipyrin in the buffer while the other edge makes contact with the edge of the agarose. Gently rub one finger across the gel at the wick contact area to insure good contact.

10. Place the cover on the chamber and allow the gel to remain in the chamber for 30-60 seconds before turning on the power. This will allow the gel to equilibrate in the buffer.

11. Electrophoresis the gel at 250 volts for 20 minutes.

Optional:
If the gel is still not clear, place it in the Destain solution until clear. Quickly dip the gel into a water wash and dry it again at 60-70°C for five minutes.

12. Visually inspect the gel for the presence of the protein bands.

2. Alternate Staining Procedures

Two staining protocols are presented in this section. The method of choice depends on the type of staining results desired by the individual user.

The composite stains have more sensitivity. The amido black stain is less sensitive, but provides better staining uniformity for qualitative comparison of band intensities due to differences in protein concentrations. A clearer background may be obtained with the Amido Black Stain.

The double staining procedure using both a coomassie stain and amido black may provide clearer visualization of the urine protein bands in a more sensitive fashion.

a. Amido Black Stain - TO BE USED FOR UNDIEUTED SERUM/PLASMA

1. At the end of the electrophoresis period, remove the gel from the chamber and place it in the stain, agaroose side up, for 10 minutes.

2. Wash off the excess stain by dipping the gel into the Fixative-Destaining Solution two or three times. Allow the gel to remain in each wash for 30 seconds.

3. A final water wash may be used if trace amounts of background stain remain in the gel. To remove the stain from the back of the gel, wipe the back with a laboratory tissue dampened in methanol.

b. Double Staining Technique using the combination of Amido Black Stain and TITAN GEL High Resolution Stain. TO BE USED FOR URINE AND CEREBROSPINAL FLUID SAMPLES ONLY

1. Stain the gel with Amido Black Stain as outlined in the above procedure.

2. After completion of Step a, the amido black procedure, stain the gel with TITAN GEL High Resolution Stain using the exact procedure outlined for amido black, but substituting the coomassie stain for amido black.

Stability of End Product

The completed dried TITAN GEL High Resolution Protein Gel is stable for an indefinite period of time.

Quality Control

The TITAN GEL High Resolution Protein Marker (Cat. No. 5141) may be used to verify appropriate protein band separation and stain sensitivity. Refer to the package insert for more information.

RESULTS

Plasma Proteins

Figure 1 illustrates the migration patterns of 15 plasma proteins which may be identified using the TITAN GEL High Resolution Protein Procedure.

Figure 1: Illustration of relative band positions.

Urine Proteins

An electrophoretic pattern of normal urine will show a trace of albumin and sometimes a faint transferin band.

The urine pattern in glomerular proteinuria usually consists of strong bands of albumin, both α1-acid glycoprotein and a urinary protein of similar size and charge, and transferrin (†), region. The serum pattern shows marked decreases in these proteins with increases in the large proteins which are retained by the glomerulus.

The urine pattern in tubular proteinuria usually consists of a faint albumin band, a double band in the α1 region due to α1-microglobulin, a small band in the mid-beta region due to β2-microglobulin and some-times diffuse background staining in the gamma range due to free light chains.

Chronic renal disease or renal failure can lead to damage of both glomerular and tubular proteins. This results in a combined pattern with both “glomerular type” and “tubular type” proteins appearing in the urine.

Cerebrospinal Fluid Proteins

When CSF is concentrated 60 to 100 fold, the pattern from a normal adult shows a prominent pre-albumin fraction that migrates slightly faster than plasma prealbumin. Albumin is the major band on electrophoresis, comprising from 55 to 75% of the normal CSF. The α1 protein consists primarily of α1-antitrypsin, the α2-protein fraction being greatly decreased. The ω1 region is not a dominant fraction, as with plasma, owing to relative decreases in large proteins such as α1-macroglobulin and the polymeric α2-globulin phenotypes. Transferrin is detected in the j, region and the major j, region, is a carbohydrate-deficient “CSF-specific” transferrin. The gamma region, not containing almost exclusively of immunoglobulin G can show some very faint banding in normal samples. The cortical end of this zone often contains a low-M, non-immunoglobulin protein, referred to as gamma trace, which is perhaps synthesized within the central nervous system, but has not yet been clearly characterized.

LIMITATIONS

High resolution protein electrophoresis is less sensitive than isoelec- tric focusing with IEF immuno-blotting for detection of oligo- globulin bands. Helena Laboratories STRFE IFE Isoelectric Focusing (Cat. No. 3385 or 3389) is recommended for screening and diagnosis of multiple sclerosis.

Aging of serum samples will cause the Cβ band to migrate in the transferrin region. Fresh specimens only should be tested. Samples should be at room temperature before use to prevent cryoprecipitation at the application point. Use of prechilled serum is not recommended.

INTERPRETATION OF RESULTS

Plasma Protein

High resolution protein electrophoresis patterns are primarily interpreted by comparing the relative intensities of the bands obtained from specimens with those obtained on known normal individuals. One of the most common abnormal serum protein patterns is that observed in the non-specific inflammatory response which is characterized by an increase in
Materials needed but not provided: 0.85% Saline

Methanol

Glacial Acetic Acid

Fixative-Destaining Solution: Mix 500 mL methanol with 500 mL deionized water. Acidify with 100 mL of glacial acetic acid. Store at 15 to 30°C.

SUMMARY OF CONDITIONS

Gels: TITAN GEL High Resolution Protein Gel Buffer Dilution: Dissolve in 1500 mL water Sample Volume bolster: 2.0 mL Sample Absorption Time: 5 minutes Electrolyte Time: 20 minutes Voltage: 200V Staining Time: 15 minutes Drying Time (after staining): 10 minutes at 60-70°C Drying Time (prior to staining): 2 washes, 15-30 seconds Drying Time (prior to staining): 5 minutes at 60-70°C

STEP-BY-STEP METHOD

A. Preparation of the TITAN GEL CHAMBER

1. Dissolve one package TITAN GEL High Resolution Buffer in 1500 mL deionized water. Buffer requires approximately 20 minutes for dissolving. Do not place the gel in the chamber until immediately before placing the gel in the chamber. DO NOT FREEZE the Cooling Device. NOTE: If the EWC is used as a power supply for electrophoresis, the TITAN GEL Chamber/Adaptor (Cat. No. 1559) must be used to plug into the EWC.

2. Place the TITAN GEL Chamber Cooling Device in the refrigerator at least 1 hour prior to placing it in the TITAN GEL Chamber. DO NOT FREEZE the Cooling Device. If the TITAN GEL Chamber is used as a power supply for electrophoresis, the TITAN GEL Chamber/Adaptor (Cat. No. 1559) must be used to plug into the EWC. Store at 15 to 30°C.

3. Pour approximately 150 mL of buffer into the chamber. Position the gel so that the application point is on the cathodic (-) side. Take care to avoid trapping air bubbles between the agarose gel and the surface of the cooling device. Run only one gel per chamber.

4. Prepare a wick for each side of the gel by placing three (3) TITAN GEL wicks together in two sets, making two consecutive wicks. Evenly align the edges of each set of wicks while they are dry. Dip the wicks in the agarose gel and remove excess buffer by squeezing them between two fingers. Then attach the wicks to the edge of the gel. Place the gel into the chamber. One edge of the wicks must be immersed in the buffer while the other edge makes contact with the edge of the agarose. Gently cross-finger the gel across the gel contact area to rinse out any contact.

5. Place the cover on the chamber and allow the gel to remain in the buffer for 30-60 seconds before turning on the power. This will allow the gel to equilibrate in the buffer.

6. Electrolyse the gel at 250 volts for 20 minutes.

D. Visualization of the Protein Bands

A Fixative-Destaining Solution is required for each of the staining methods. Mix 500 mL methanol with 500 mL deionized water. Acidify with 100 mL glacial acetic acid. The solution may be stored at 15 to 30°C. Use a 500 mL glass bottle to allow air to circulate around the gel.

1. Recommended Staining Procedure

a. Amido Black Stain - TO BE USED FOR UNDILUTED SERUM/PLASMA

(1) At the end of the electrophoresis period, remove the gel from the chamber and place it in the stain, agarose side up, for 10 minutes.

(2) Wash off the excess stain by dipping the gel into the Fixative-Destaining Solution. Agitate to rinse off the stain completely. The gel may be dried at a lower temperature but additional time will be required. When completely dry, the gel will be flat and the gel with the agarose will be retained.

(3) Destain the gel by placing it, agarose side up, in two (2) consecutive washes of Fixative-Destaining Solution. Allow the gel to remain in each wash for 30 seconds.

A final water wash may be used if trace amounts of background stain remain in the gel. To remove the stain from the back of the gel, wipe the back with a laboratory tissue dampened in methanol.

(4) Dry the gel in an oven or I.O.D. at 60-70°C for five (5) minutes or until dry.

(5) Visually inspect the gel for the presence of the protein bands.

b. Double Staining Technique using the combination of Amido Black Stain and TITAN GEL High Resolution Stain. The double staining procedure using both a coomassie stain and amido black may provide clearer visualization of the urine protein banding pattern and cerebrospinal fluid.

(1) Stain the gel with Amido Black Stain as outlined in the above procedure.

(2) After completion of Step a (5) of the amido black procedure, stain the gel with TITAN GEL High Resolution Stain using the exact procedure outlined for amido black, but substituting the coomassie stain for amido black.

Stability of End Product

The completed dried TITAN GEL High Resolution Gel Protein Gel is stable for an indefinite period of time.

Quality Control

The TITAN GEL High Resolution Protein Marker (Cat. No. 5141) may be used to verify appropriate protein band separation and stain sensitivity. Refer to the package insert for more information.

RESULTS

Protein Samples

Figure 1 illustrates the migration patterns of 15 plasma proteins which may be identified using the TITAN GEL High Resolution Protein Procedure.

Optional:

If the gel is not still clear, place it in the Destain solution until clear. Quickly dip the gel into a water wash and dry it again at 60-70°C for five minutes.

If you visually inspect the gel for the presence of the protein bands.

2. Alternate Staining Procedures

Two staining protocols are presented in this section. The method of choice depends on the type of staining results desired by the individual user.

The coomassie stains have more sensitivity. The amido black stain is less sensitive, but provides better staining uniformity for qualitative comparison of band intensities due to differences in protein concentrations. A clearer background may be obtained with the Amido Black Stain. The double staining procedure using both a coomassie stain and amido black may provide clearer visualization of the urine protein banding pattern and cerebrospinal fluid.

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(1) At the end of the electrophoresis period, remove the gel from the chamber and place it in the stain, agarose side up, for 10 minutes.

(2) Wash off the excess stain by dipping the gel into the Fixative-Destaining Solution. Agitate to rinse off the stain completely. The gel may be dried at a lower temperature but additional time will be required. When completely dry, the gel will be flat and the gel with the agarose will be retained.

(3) Destain the gel by placing it, agarose side up, in two (2) consecutive washes of Fixative-Destaining Solution. Allow the gel to remain in each wash for 30 seconds.

A final water wash may be used if trace amounts of background stain remain in the gel. To remove the stain from the back of the gel, wipe the back with a laboratory tissue dampened in methanol.

(4) Dry the gel in an oven or I.O.D. at 60-70°C for five (5) minutes or until dry.

(5) Visually inspect the gel for the presence of the protein bands.

b. Double Staining Technique using the combination of Amido Black Stain and TITAN GEL High Resolution Stain. The double staining procedure using both a coomassie stain and amido black may provide clearer visualization of the urine protein banding pattern and cerebrospinal fluid.

A clearer background may be obtained with the Amido Black Stain. The double staining procedure using both a coomassie stain and amido black may provide clearer visualization of the urine protein banding pattern and cerebrospinal fluid.

Stability of End Product

The completed dried TITAN GEL High Resolution Protein Gel is stable for an indefinite period of time.

Quality Control

The TITAN GEL High Resolution Protein Marker (Cat. No. 5141) may be used to verify appropriate protein band separation and stain sensitivity. Refer to the package insert for more information.

RESULTS

Protein Samples

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If the gel is not still clear, place it in the Destain solution until clear. Quickly dip the gel into a water wash and dry it again at 60-70°C for five minutes.

If you visually inspect the gel for the presence of the protein bands.

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The coomassie stains have more sensitivity. The amido black stain is less sensitive, but provides better staining uniformity for qualitative comparison of band intensities due to differences in protein concentrations. A clearer background may be obtained with the Amido Black Stain. The double staining procedure using both a coomassie stain and amido black may provide clearer visualization of the urine protein banding pattern and cerebrospinal fluid.

a. Amido Black Stain - TO BE USED FOR UNDILUTED SERUM/PLASMA

(1) At the end of the electrophoresis period, remove the gel from the chamber and place it in the stain, agarose side up, for 10 minutes.

(2) Wash off the excess stain by dipping the gel into the Fixative-Destaining Solution. Agitate to rinse off the stain completely. The gel may be dried at a lower temperature but additional time will be required. When completely dry, the gel will be flat and the gel with the agarose will be retained.

(3) Destain the gel by placing it, agarose side up, in two (2) consecutive washes of Fixative-Destaining Solution. Allow the gel to remain in each wash for 30 seconds.

A final water wash may be used if trace amounts of background stain remain in the gel. To remove the stain from the back of the gel, wipe the back with a laboratory tissue dampened in methanol.

(4) Dry the gel in an oven or I.O.D. at 60-70°C for five (5) minutes or until dry.

(5) Visually inspect the gel for the presence of the protein bands.

b. Double Staining Technique using the combination of Amido Black Stain and TITAN GEL High Resolution Stain. The double staining procedure using both a coomassie stain and amido black may provide clearer visualization of the urine protein banding pattern and cerebrospinal fluid.

A clearer background may be obtained with the Amido Black Stain. The double staining procedure using both a coomassie stain and amido black may provide clearer visualization of the urine protein banding pattern and cerebrospinal fluid.

Stability of End Product

The completed dried TITAN GEL High Resolution Protein Gel is stable for an indefinite period of time.

Quality Control

The TITAN GEL High Resolution Protein Marker (Cat. No. 5141) may be used to verify appropriate protein band separation and stain sensitivity. Refer to the package insert for more information.

RESULTS

Protein Samples

Figure 1 illustrates the migration patterns of 15 plasma proteins which may be identified using the TITAN GEL High Resolution Protein Procedure.
• low haptoglobin suggesting elevated RBC turnover or in-vitro hemolysis
• presence of monoclonal proteins suggesting abnormalities of the immune system
• elevation of the transferrin band suggesting a low level of iron cally important variations are:

For Sales, Technical and Order Information and Service Assistance, call 800-231-5683 toll free.

Preparation for Use: For IN-VITRO DIAGNOSTIC USE ONLY. DO NOT INGEST.

Storage and Stability: The gel should be stored at room temperature (15 to 30°C) and are stable until the expiration date indicated on the vial.

BIBLIOGRAPHY


The stain contains Coomassie Brilliant Blue.

Ingredients:

2. TITAN GEL High Resolution Protein Buffer
3. TITAN GEL Wicks (75)
4. TITAN GEL Blotter A (20)
5. TITAN GEL High Resolution Protein Stain (1 vial)
6. TITAN GEL Multi-Staining Set 1558
7. TITAN GEL High Resolution Protein Gels (10)
8. TITAN GEL High Resolution Protein Buffer
9. TITAN GEL High Resolution Protein System
10. TITAN GEL High Resolution Protein Stain

The TITAN GEL High Resolution Protein Kit (Cat. No. 3040).

Individual items are not available.  
TITAN GEL High Resolution Protein Gels (10)  
TITAN GEL High Resolution Protein Buffer (2 pkg)  
TITAN GEL High Resolution Protein Stain (1 vial)  
TITAN GEL Blotter A (20)  
TITAN GEL Wicks (75)  
TITAN GEL HR Templates (10)

Materials provided by Helena Laboratories but not contained in the kit:

Rheumatoid factor (RF), C-reactive protein (CRP), C3 and C4, and the acute phase reactant, ferritin.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: The gels are ready for use as packaged.

Storage and Stability: The gel should be stored at room temperature (15 to 30°C) and are stable until the expiration date indicated on the vial.

In case no wash Helena Laboratories is liable for consequential damages even if Helena has been advised of the possibility of such damage.

The following materials are included in all reagents expressed as a working stock. For the above reagents, concentrate from 80-100X to a working stock.

The following materials required for the procedure are contained in the TITAN GEL High Resolution Protein Kit (Cat. No. 3040).

Materials provided by Helena Laboratories but not contained in the kit:

Item
Cat. No.
Amido Black Protein Stain
3038
TITAN GEL Chamber Conical
3059
Diamicro Immunoperoxidase and TITAN GEL Chamber
3062
I.O.D. (Incubator, Oven, Dryer)
3116
TITAN GEL Chamber
1054
EWG Digital Power Supply
1520
TITAN GEL Multi-Staining Set
1558
I.S. Protein Marker
1541
EWC (Electrophoresis Work Center)
1551
(incorporates electrophoresis chamber, incubator and vacuum chamber)
TITAN GEL Chamber Adapter for EWC
1559

Preparation for Use: Dissolve the dry stain in 500 mL of methanol. Add 500 mL of purified water and acidify with 100 mL glacial acetic acid. Filter before use if necessary. Total volume: 1100 mL.

Storage and Stability: The dry stain should be stored at 15 to 30°C and is stable until the expiration date indicated on the package. The diluted stain is stable for two months when stored at 15 to 30°C. Used stain may be returned to the bottle and re-used approximately two months later.

For IN-VITRO DIAGNOSTIC USE ONLY.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: Distillate one package of buffer in 1500 mL deionized water. The buffer is ready for use when all material is completely dissolved.

Storage and Stability: The packaged buffer should be stored at 15 to 30°C and is stable until the expiration date indicated on the package. The buffer solution is stable six months stored at 15 to 30°C.

Signs of Deterioration: Discard packaged buffer if the material shows signs of darkening or discoloration. Discard distilled buffer if it becomes turbid.

3. TITAN GEL High Resolution Protein System

The stain contains Amido Black.

WARNING: FOR IN-VITRO DIAGNOSTIC USE.

For IN-VITRO DIAGNOSTIC USE ONLY. DO NOT INGEST.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: For IN-VITRO DIAGNOSTIC USE ONLY. DO NOT INGEST.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: Dissolve 10 g of stain in 200 mL deionized water. Add 100 mL glacial acetic acid and 100 mL purified water. Filter before use if necessary. Total volume: 400 mL.

Storage and Stability: The dry stain should be stored at 15 to 30°C and is stable until the expiration date indicated on the package. The diluted stain is stable for two months when stored at 15 to 30°C. Used stain may be returned to the bottle and re-used approximately two months later.

Signs of Deterioration: The diluted stain should be a homogeneous mixture free of precipitate.

Amido Black Protein Stain (Cat. No. 3048, Optional stain)

The stain contains Amido Black.

WARNING: FOR IN-VITRO DIAGNOSTIC USE.

For IN-VITRO DIAGNOSTIC USE.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: For IN-VITRO DIAGNOSTIC USE.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: Dissolve one package of buffer in 1500 mL deionized water. The buffer is ready for use when all material is completely dissolved.

Storage and Stability: The packaged buffer should be stored at 15 to 30°C and is stable until the expiration date indicated on the package. The buffer solution is stable six months stored at 15 to 30°C.

Signs of Deterioration: Discard packaged buffer if the material shows signs of darkening or discoloration. Discard distilled buffer if it becomes turbid.

3. TITAN GEL High Resolution Protein System

The stain contains Amido Black.

WARNING: FOR IN-VITRO DIAGNOSTIC USE ONLY. DO NOT INGEST.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: For IN-VITRO DIAGNOSTIC USE.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: Dissolve one package of buffer in 1500 mL deionized water. The buffer is ready for use when all material is completely dissolved.

Storage and Stability: The packaged buffer should be stored at 15 to 30°C and is stable until the expiration date indicated on the package. The buffer solution is stable six months stored at 15 to 30°C.

Signs of Deterioration: Discard packaged buffer if the material shows signs of darkening or discoloration. Discard distilled buffer if it becomes turbid.

3. TITAN GEL High Resolution Protein System

The stain contains Amido Black.

WARNING: FOR IN-VITRO DIAGNOSTIC USE ONLY. DO NOT INGEST.

CAUTION: The buffer contains barbityl which, in sufficient quantity, can be toxic.

Preparation for Use: For IN-VITRO DIAGNOSTIC USE.