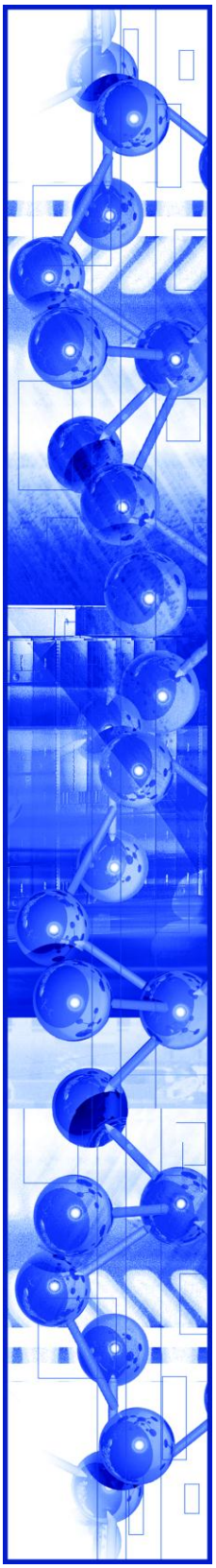
Product Information



EZ-Vision™

A Fluorescent Dye for the Instant Visualization of DNA Bands in Agarose Gels

Supplied in 6X Loading Buffer

Code	Description	Size
N313-KIT	EZ-Vision™ Three, DNA Dye as Loading Buffer, 6X Supplied in Loading Buffer, 6X containing 15% Ficoll Includes 3 tracking dyes migrating at 10, 400 and 4000 bp	5 x 1.0 ml
N313-Q-SAMPLE	EZ-Vision™ Three, DNA Dye as Loading Buffer, 6X Supplied in Loading Buffer, 6X containing 15% Ficoll Includes 3 tracking dyes migrating at 10, 400 and 4000 bp	0.3 ml
N472-KIT	EZ-Vision™ One, DNA Dye as Loading Buffer, 6X Supplied in Loading Buffer, 6X containing 15% Ficoll Includes a single tracking dye migrating at 10 bp	5 x 1.0 ml
N472-Q-0.5ML	EZ-Vision™ One, DNA Dye as Loading Buffer, 6X Supplied in Loading Buffer, 6X containing 15% Ficoll Includes a single tracking dye migrating at 10 bp	0.5 ml
N473-2PK	EZ-Vision™ Sample Kit Includes: EZ-Vision™ Three, DNA Dye as Loading Buffer, 6X EZ-Vision™ One, DNA Dye as Loading Buffer, 6X	1 Kit 1.0 ml 1.0 ml
N473-3PK	EZ-Vision™ Sample Kit Includes: EZ-Vision™ One, DNA Dye as Loading Buffer, 6X EZ-Vision™ two, DNA Dye as Loading Buffer, 6X EZ-Vision™ Three, DNA Dye as Loading Buffer, 6X	1 Kit 1.0 ml 1.0 ml 1.0 ml
N650-KIT	EZ-Vision™ Two, DNA Dye as Loading Buffer, 6X Includes 2 tracking dyes migrating at 400 and 4000 bp	5 x 1.0 ml
N650-Q-SAMPLE	EZ-Vision™ Two, DNA Dye as Loading Buffer, 6X Includes 2 tracking dyes migrating at 400 and 4000 bp	0.3 ml

General Information:

EZ-Vision™ is a non-mutagenic fluorescent reagent that produces instant visualization of DNA bands upon UV illumination of agarose gels. EZ-Vision™ is non-mutagenic and non-toxic with no hazardous shipping, handling or disposal costs. Supplied in AMRESCO's 6X DNA Loading Buffer, EZ-Vision™ forms a tight complex with the sample DNA and co-migrates with it during electrophoresis. Post-run staining and destaining is completely eliminated and results can be visualized immediately after the run by placing the gel on a standard UV transilluminator. It is ideal for applications needing rapid DNA band visualization and for environments requiring a safe, non-hazardous alternative to Ethidium Bromide.

EZ-Vision™ is available in 3 versions that differ only by the tracking dyes included in the loading buffer. EZ-Vision™ Three contains 3 tracking dyes that migrate at 4,000 bp, 400 bp, and 10 bp. EZ-Vision™ Two contains 2 tracking dyes that migrate at 4,000 bp and 400 bp. EZ-Vision™ One contains only a single fast-running tracking dye that migrates at approximately 10 bp in a 1% agarose gel.

The mutagenicity of EZ-Vision™ was determined by Ames testing of S. typhimurium with and without metabolic activation with an S-9 activation system. No increase in His+ revertants was obtained compared to controls. Test results can be obtained at http://www.amresco-inc.com/media.acux/eef4bdfc-0b74-4f46-8e9c-fb48bebdc6d3

EZ-Vision™ environmental hazard testing was determined by the CCR Title 22 Fathead Minnow Hazardous Waste Screen Bioassay. Both EZ-Vision™ Two and EZ-Vision™ Three were determined non-hazardous with LC50 > 750 mg/l. Test results can be obtained at **http://www.amresco-inc.com/media.acux/ce9145ff-db76-4e75-ad87-2224fe42e6fe.**

DNA fragments stained with EZ-Vision™ are not impeded and migrate at a rate similar to dsDNA that is stained post electrophoresis during agarose gel electrophoresis. Migration data is available at **http://www.amresco-inc.com/home/products/new-products/EZ-Vision.cmsx.**

Toll free: 1-800-448-4442

The fluorescent signal intensity of EZ-Vision™ is retained for longer times than that of leading competitors. Signal degradation data is available at **http://www.amresco-inc.com/home/products/new-products/EZ-Vision.cmsx.**

EZ-Vision™ Storage/Stability:

EZ-Vision™ is stable for at least 1 year at 2 - 8°C. EZ-Vision™ is light sensitive and should be stored protected from light. Normal usage can be carried out under ambient light.

Application Disclaimer

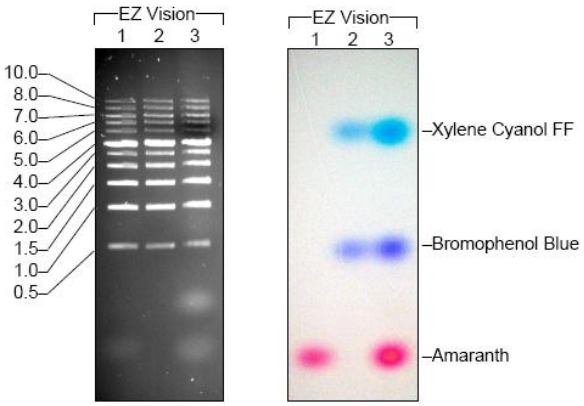
For Research Use Only. Not for Therapeutic or Diagnostic Use.

Spectral Information:

Excitation = 364 nm
Emission = 454 nm

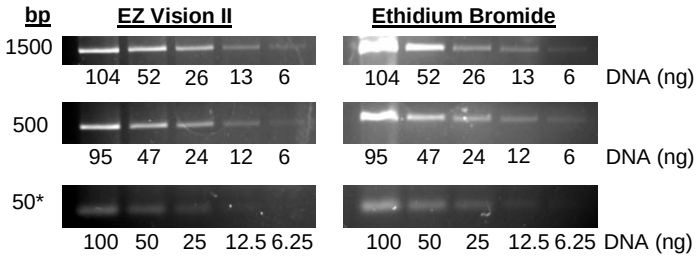
EZ-Vision™ tracking dyes:

EZ-Vision™ Type	Color	Mobility (1% Agarose)
EZ-Vision™Three	Light blue	4000 bp
	Dark blue	~400 bp
	Magenta	~ 10 bp
EZ-Vision™Two	Light blue	4000 bp
	Dark blue	~400 bp
EZ-Vision™One	Magenta	~ 10 bp



EZ-Vision™ Sensitivity

EZ-Vision™ is sensitive to approximately 6 ng DNA for a 400 bp fragment.



*Visualization of DNA fragments 200bp or less may require loads of 100ng or greater.

Toll free: 1-800-448-4442

Protocol:

⚠ No mutagenic or genotoxic effects are observed in AMES testing or sister-chromatid exchange assays of EZ-Vision™. In addition, EZ-Vision™ passes the CCR Title 22 Fathead Minnow Hazardous Waste Screen Bioassay. EZ-Vision™ is not toxic at the concentrations used but standard handling precautions are advised for all nucleic acid binding reagents. All local regulations should be followed when using and disposing of this reagent.

1. Vortex EZ-Vision™ for 30 seconds prior to use.
2. Dilute 1 part EZ-Vision™ with 5 parts DNA sample and mix.
   ➥Note: EZ-Vision™ must be added to DNA markers in order to visualize the ladder bands simultaneously with the sample after electrophoresis.
3. Load sample and run according to standard procedure.
4. After the run, remove gel and place on UV transilluminator to immediately visualize bands. DNA bands will emit a whitish-blue fluorescence against a dark background. Fluorescence should be visible on a transilluminator for at least 24 hours after electrophoresis if the gel fluorescence has not been bleached.
5. Gels can be post stained with Ethidium Bromide if desired.

Gel Documentation

- **Black and White Polaroid Photography**: EZ-Vision™ stained gels can be photographed with a standard UV transilluminator, Polaroid #667 film and filters used to photograph green dyes such as SyBR™ Green. Longer exposure times are required for EZ-Vision™ stained gels since Polaroid #667 film is not optimized for sensitivity in the blue emission range. Filters typically used to photograph Ethidium Bromide (EtBr) stained gels can be used, but exposure times should be doubled or tripled to obtain sufficient contrast to represent the image that is visually perceived.
- **Gel Imaging Systems**: EZ-Vision™ stained gels are compatible with digital imaging systems. Please contact your system manufacturer with the excitation and emission information listed below to obtain information on appropriate filters.

Excitation = 364 nm

Emission = 454 nm

Downstream Applications

DNA stained with EZ-Vision™ is compatible with a variety of downstream applications including ligation reactions, transformation procedures and PCR amplification.

Results Summary

Ligation, transformation and PCR amplification procedures were tested on parallel samples of plasmid DNA fragments stained with either EZ-Vision™ or EtBr.

- **Recovery from gel slices**: The EZ-Vision™ reagent does not interfere with recovery of DNA fragments from agarose gels. Comparison studies from 1% agarose gels were performed to determine the recovery of EZ-Vision™ stained DNA fragments versus EtBr stained fragments. In these tests, a DNA aliquot was combined with EZ-Vision™ and applied to a 1% TAE agarose gel. A second aliquot was loaded on a 1% TAE agarose gel containing 50 µg/ml EtBr. Gels were run according to standard procedures. An 850 bp DNA band was excised from each gel and purified on QIAquick® Gel Extraction Kits (Qiagen Group, Hilden, Germany). Equal aliquots were applied to 1% TAE agarose gels. DNA recoveries were determined by band intensity after electrophoresis. There was no significant difference in the amount of DNA recovered from each gel.
- **Ligation and Transformation Efficiency***:* Ligation and transformation efficiency of the EZ-Vision™ stained 850 bp fragment is similar to the EtBr stained fragment. In parallel reactions, the purified 850 bp fragments were ligated into an Ampicillin resistant vector and transformed into E.coli. The transformed cultures were plated onto LB-Ampicillin media. The total number of colonies for each sample was determined after overnight incubation. The number of Ampicillin resistant colonies was similar for each sample.
- **PCR Amplification:** Amplification of an EZ-Vision™ stained DNA fragment was equivalent to the EtBr stained fragment. A 1.3 kb DNA fragment stained with either EZ-Vision™ or EtBr was amplified by PCR using Pfu polymerase. The products were applied to a 1% TAE agarose gel. The 1.3 kb band was excised and purified as described above (see Recovery from gel slices). The recovered DNA samples were quantitated by a NanoDrop® Spectrophotometer (NanoDrop® Technologies, Wilmington, DE). The amount of DNA recovered from each sample was equivalent indicating that EZ-Vision™ stained DNA was a suitable template for PCR reactions.
- **Sequencing**: EZ-Vision™ stained DNA may be used for sequencing after extraction from agarose gels following conventional procedures. In some cases, read lengths may be shorter than typically obtained with Ethidium Bromide staining.

EZ-Vision DNA Dye FAQ

Can EZ-Vision DNA Dye be used on polyacrylamide gels?	Yes, EZ-vision staining can be observed in 29:1 TAE/PAGE gels although agarose is recommended as the primary gel matrix.	
Which filter is recommended for visualizing DNA stained with EZ-Vision DNA Dye?	ASYBR Green filter is optimal, although an Ethidium Bromide filter may also be used.	
Which downstream applications are compatible with usage of EZ-Vision?	Restriction digests, PCR, ligation and sequencing*.	*In some cases, run lengths may be shorter with EZ-Vision stained DNA compared to Ethidium Bromide stained DNA.
How sensitive is EZ-Vision DNA Dye?	EZ-Vision ENA Dye can detect 6 ng DNA** above 500 bp and 12 ng DNA at 50bp**.	EZ-Vision sensitivity was determined with AMRESCO's PCR DNA Markers (Code: E854).
Is migration of DNA affected when stained with EZ-Vision?	No, EZ-Vision stained DNA migrates at the same rate as unstained DNA.	
What is the duration of fluorescence emission upon UV exposure?	EZ-Vision stained DNA retains 50% of the original fluorescent intensity after 45 minutes of continuous UV exposure.	
How long will a tube of EZ-Vision DNA Dye last?	EZ-Vision DNA Dye is stable for at least a year at 2-8 C when stored protected from light.	
Does loading buffer need to be added to a DNA sample containing EZ-Vision DNA Dye?	No, EZ-Vision is a loading buffer as well as a DNA dye.	

EZ-Vision DNA Dye Troubleshooting

Why can't I see my DNA?	Ez-Vision was not added.	Add 1µl EZ-Vision DNA to 5µl of DNA sample.
	Wrong filter was used.	A SYBR Green filter is recommended. An Ethidium Bromed filter may be used but will require longer exposures.
	A Darkreader was used to visualize EZ-Vision stained DNA.	EZ-Vision is incompatible with visualization by a Darkreader.
	Not enough DNA was loaded on the gel.	Load at least 100ng of DNA per lane. You may need to optimize loading amounts for each sample. EZ-Vision is less sensitive than Ethidium Bromide.
	Gel running conditions were not optimized.	EZ-Vision DNA Dye may dissociate from DNA samples with long run times. Gel running at 8V/cm for 20 minutes is recommended.

Toll free: 1-800-448-4442

Related Products

Code	Product
Agarose	
0710-500G	Agarose I™, 500 g General Use (also available as tablets, K857-100TABS)
J234-250G	Agarose SFR™ Super Fine Resolution for superior resolution of nucleic acid fragments between 200 and 1,000 base pairs.
E776-100G	Agarose 3:1 HRB™ High Resolution Blend for resolution of nucleic acid fragments below 1,000 base pairs.
Buffers	
0658-4L	TBE Buffer, 10X Liquid Concentrate
0478-2PK	TBE Buffer, 10X Ready-Pack™
0796-1.6L	TAE Buffer, 25X Liquid Concentrate
Markers	
K180-250UL	100 bp Ladder 13 bands ranging from 100-3000 base pairs
E854-50RXN	PCR DNA Marker™ 8 bands ranging from 50 to 2000 base pairs
K181-500UL	1 kb Ladder 11 bands ranging from 500 to10,000 base pairs

Visit the AMRESCO website to view additional related products

www.amresco-inc.com

References:

1. Andrews, A.T. Electrophoresis: Theory, Techniques, and Biochemical and Clinical Applications 2nd ed., New York , (1988), 21-24.
2. Ogden, R.C. and Adams, D.A. Electrophoresis in agarose and acrylamide gel. Methods Enzymol., 152, 61-87 (1987)

Toll free: 1-800-448-4442

Corporate Headquarters
AMRESCO LLC.
6681 Cochran Road
Solon, OH 44139 USA
Tel: (440) 349-1199
Toll free: 1-800-448-4442 (US & Canada)
Fax: (440) 349-2441
e-mail: info@amresco-inc.com

To Order (USA & Canada)
www.amresco-inc.com
Toll free: 1-800-448-4442
Toll free fax: 1-800-326-3733
Fax: (440) 349-3255
e-mail: dom-sales@amresco-inc.com

International Orders:
Tel: (440) 349-1199
Fax: (440) 349-2441
e-mail: int-sales@amresco-inc.com

Technical Support
Toll free: 1-800-610-2789 (USA & Canada)
Fax: (440) 349-0235
e-mail: techinquiry@amresco-inc.com
www.amresco-inc.com