MEMBRANEBLUE- trypan blue injection, solution
Dutch Ophthalmic Research Center (International) B.V.

HIGHLIGHTS OF PRESCRIBING INFORMATION

MembraneBlue™ 0.15% (trypan blue ophthalmic solution). These highlights do not include all the information needed to use MembraneBlue™ 0.15% safely and effectively. See full prescribing information for MembraneBlue™ 0.15%. MembraneBlue™ 0.15% (trypan blue ophthalmic solution) Initial U.S. Approval: 2004

INDICATIONS AND USAGE

These highlights do not include all the information needed to use MEMBRANEBLUE™ safely and effectively. See full prescribing information for MEMBRANEBLUE.

MEMBRANEBLUE (trypan blue ophthalmic solution) 0.15%, for intraocular ophthalmic use Initial U.S. Approval: 2004 (1)

(1)

MembraneBlue is a diagnostic dye indicated for use as an aid in ophthalmic posterior surgery by staining the epiretinal membranes during ophthalmic surgical vitrectomy procedures, facilitating removal of epiretinal tissue in adults and pediatric patients (1)

DOSAGE AND ADMINISTRATION

- Prior to injection of MembraneBlue, perform a “fluid-air exchange” (i.e., fill the entire vitreous cavity with air). Carefully apply MembraneBlue to epiretinal membranes using a blunt cannula and remove all excess dye.
  OR
- Inject MembraneBlue directly in a BSS filled-vitreous cavity. Wait 30 seconds and remove all excess dye. (2)

DOSAGE FORMS AND STRENGTHS

Ophthalmic solution: 0.15% trypan blue in a single-patient-use syringe. (3)

CONTRAINDICATIONS

Insertion of a non-hydrated (dry state), hydrophilic acrylic intraocular lens (IOL). MembraneBlue may be absorbed by the IOL and stain it. (4)

WARNINGS AND PRECAUTIONS

- Excessive Staining: Excess MembraneBlue 0.15% should be immediately removed from the eye after staining.
- Priming of the Syringe: To make sure the plunger moves smoothly before use, first retract the plunger or twist the plunger in a clockwise motion before injecting the fluid.

ADVERSE REACTIONS

Most common adverse reactions include discoloration of high water content hydrogen intraocular lenses and inadvertent staining of the posterior lens capsule and vitreous face. (6)

To report SUSPECTED ADVERSE REACTIONS contact Dutch Ophthalmic, USA at 1-800-75-DUTCH or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch. (6)

USE IN SPECIFIC POPULATIONS

MembraneBlue should not be given to pregnant women (7)

Revised: 11/2025

FULL PRESCRIBING INFORMATION: CONTENTS*

* Sections or subsections omitted from the full prescribing information are not listed.

FULL PRESCRIBING INFORMATION

MembraneBlue 0.15% - Indications & Usage Section

MembraneBlue™ 0.15% is indicated for use as an aid in ophthalmic surgery by staining the epiretinal membranes during ophthalmic surgical vitrectomy procedures, facilitating removal of the tissue in adults and pediatric patients.

MembraneBlue 0.15% - Dosage & administration section

MembraneBlue 0.15% is packaged in a single-patient-use syringe filled to a volume of 0.5 mL. Make sure the plunger moves smoothly before use. Prime the syringe prior to use by retracting the plunger before injecting the fluid. Alternatively, twist the plunger into the stopper in a clockwise motion until tight. Once tight, continue turning the plunger in a clockwise motion until the stopper rotates freely within the syringe, two or three rotations. The syringe is now primed and suitable for injection.

Before injection of MembraneBlue perform a “fluid-air exchange” (i.e., filling the entire vitreous cavity with air, to prevent aqueous dilution of MembraneBlue). MembraneBlue is carefully applied to the retinal membrane using a blunt cannula attached to the MembraneBlue syringe, without allowing the cannula to contact or damage the retina. Sufficient staining is expected on contact with the membrane. All excess dye should be removed from the vitreous cavity before performing an air-fluid exchange, to prevent unnecessary spreading of the dye.

MembraneBlue can also be injected directly in a BSS filled vitreous cavity (instead of injecting under air). Clinical use demonstrated that, after complete vitreous and posterior hyaloid removal, sufficient staining is achieved after 30 seconds of application under BSS.

MembraneBlue is intended to be applied directly on the areas where membranes could be present, staining any portion of the membrane which comes in contact with the dye. The dye does not penetrate the membrane.

MembraneBlue 0.15% - Dosage forms & strengths section.

MembraneBlue (trypan blue ophthalmic solution) 0.15% is a clear, dark blue ophthalmic solution supplied in a 2.25 mL single-patient-use syringe filled to a volume of 0.5 mL.

MembraneBlue 0.15% - Contraindications section.

MembraneBlue 0.15% is contraindicated when a non-hydrated (dry state), hydrophilic acrylic intraocular lens (IOL) is planned to be inserted into the eye. The dye may be absorbed by the IOL and stain it.

MembraneBlue 0.15% - Warnings and precautions section

Excessive Staining

Excess MembraneBlue 0.15% should be immediately removed from the eye after staining.

Priming of the Syringe

To make sure the plunger moves smoothly before use, first retract the plunger or twist the plunger in a clockwise motion before injecting the fluid.

MembraneBlue 0.15% - Adverse reactions section

Adverse reactions reported following use of MembraneBlue 0.15% include discoloration of high water content hydrogen intraocular lenses [see Contraindications] and inadvertent staining of the posterior lens capsule and vitreous face. Staining of the posterior lens capsule or staining of the vitreous face is generally self limited, lasting up to one week.

MembraneBlue - Use in specific populations section

MembraneBlue - Pregnancy section

Risk Summary

There are no available data on the use of MembraneBlue 0.15% in pregnant women to inform a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. Systemic absorption of MembraneBlue 0.15% in humans is expected to be negligible following injection and subsequent removal of the drug at the completion of surgical procedures. Adequate animal reproduction studies were not conducted with MembraneBlue 0.15%, however, trypan blue has been shown to be teratogenic in various animal models at doses 323-fold and greater than the maximum recommended human dose, based on body surface area (BSA).

Due to the negligible human systemic exposure when used as recommended, it is not expected that maternal use of MembraneBlue will result in fetal exposure to the drug and risk of teratogenic effects.

Data

Animal Data

Trypan blue is teratogenic in rats, mice, rabbits, hamsters, dogs, guinea pigs, pigs, and chickens. The majority of teratogenicity studies performed involve intravenous, intraperitoneal, or subcutaneous administration in the rat. The teratogenic dose is 50 mg/kg as a single dose or 25 mg/kg/day during embryogenesis in the rat. Normalized to BSA, these doses are approximately 645- and 323-fold the maximum recommended human dose of 0.75 mg per injection (based on a 60 kg person), assuming complete systemic absorption of trypan blue. Characteristic anomalies included neural tube, cardiovascular, vertebral, tail, and eye defects. Trypan blue also caused an increase in post-implantation mortality and decreased fetal weight. In the monkey, trypan blue caused abortions with single or two daily doses of 50 mg/kg between 20th to 25th days of pregnancy, but no apparent increase in birth defects (approximately 1,300-fold the maximum recommended human dose based on BSA, assuming complete systemic absorption).

MembraneBlue - Lactation section

Risk Summary

The presence of trypan blue in human milk following intraocular administration of trypan blue has not been evaluated. There are no data available regarding the effects of trypan blue on milk production. Breastfeeding is not expected to result in exposure of the child to trypan blue due to
the negligible systemic exposure of trypan blue in humans following injection and subsequent removal of the drug at the completion of surgical procedures.

MembraneBlue - Pediatric use section

The safety and effectiveness of trypan blue have been established in pediatric patients. Use of trypan blue is supported by evidence from an adequate and well-controlled study in pediatric patients.

MembraneBlue - Geriatric use

No overall differences in safety and effectiveness were observed between elderly and younger patients.

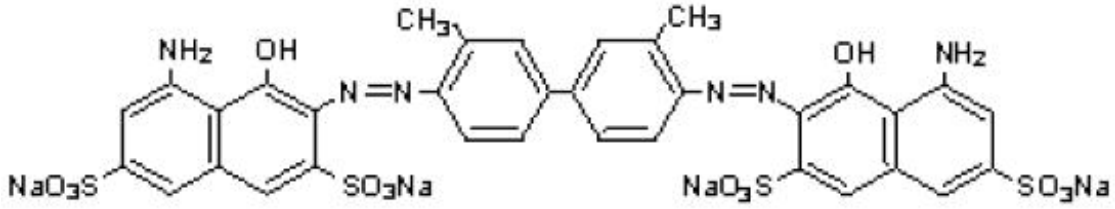
MembraneBlue - Description.

MembraneBlue™ (trypan blue ophthalmic solution) 0.15% is a sterile solution of trypan blue (an acid di-azo group dye) for intraocular ophthalmic use. MembraneBlue selectively stains epiretinal membranes during ophthalmic surgical vitrectomy procedures.

Each mL of MembraneBlue 0.15% contains: 1.5 mg trypan blue; 1.9 mg sodium mono-hydrogen orthophosphate ($Na_2HPO_4 \cdot 2H_2O$); 0.3 mg sodium di-hydrogen orthophosphate ($NaH_2PO_4 \cdot 2H_2O$); 8.2 mg sodium chloride (NaCl); and water for injection. The pH is 7.3 - 7.6. The osmolality is 257 - 314 mOsm/kg.

The drug substance trypan blue has the chemical name 3,3'-[(3,3'-dimethyl-4,4'-biphenylylene) bis (azo)] bis (5-amino-4-hydroxy-2,7-naphthalenedisulfonic acid) tetra sodium salt, a molecular weight of 960.8, a molecular formula of $C_{34}H_{24}N_6Na_4O_{14}S_4$,

and has the following chemical structure:



MembraneBlue - Clinical Pharmacology Section

MembraneBlue 0.15% - Mechanism of action section.

MembraneBlue 0.15% selectively stains membranes in the human eye during posterior surgery, such as epiretinal membranes (ERM) and Internal Limiting Membranes (ILM).

MembraneBlue - Nonclinical toxicology section

Carinogenesis, Mutagenesis, Impairment of Fertility

Carcinogenesis

Trypan blue is carcinogenic in rats. Wister/Lewis rats developed lymphomas after receiving subcutaneous injections of 1% trypan blue dosed at 50 mg/kg every other week for 52 weeks (approximately 645-fold the maximum recommended human dose of 0.75 mg per injection in a 60 kg person based on BSA, assuming complete systemic absorption).

Mutagenesis
Trypan blue was mutagenic in the Ames test and caused DNA strand breaks in vitro.

MembraneBlue - How supplied section

MembraneBlue (trypan blue ophthalmic solution) 0.15% is a clear, dark blue ophthalmic solution supplied as follows:

0.5 mL of MembraneBlue 0.15% in a sterile single-patient-use Luer Lock, 2.25 mL glass syringe, grey rubber plunger stopper and tip cap with polypropylene plunger rod in a peel pouch. Five pouched products are packed in one distribution box.

NDC 68803-672-01 (One 0.5 mL syringe)
NDC 68803-672-05 (Carton of five 0.5 mL syringes)

MembraneBlue - Storage and handling section

Storage: Store between 15ºC to 25ºC (59ºF to 77ºF). Protect from direct sunlight. Single-patient-use. Discard unused portion.

Made in Germany

Distributed in the United States by

Dutch Ophthalmic, USA

10, Continental Drive, Bldg 1

Exeter, NH 03833, USA

Phone: 800-75-DUTCH or 603-778-6929

MembraneBlue 0.15% - Package label.Principal display panel

MEMBRANEBLUE

trypan blue injection, solution

Product Information			
Product Type	HUMAN PRESCRIPTION DRUG	**Item Code (Source)**	NDC:68803-672
Route of Administration	OPHTHALMIC, INTRAOCULAR		

Active Ingredient/Active Moiety

Ingredient Name	Basis of Strength	Strength
TRYPAN BLUE (UNII: I2ZWO3LS3M) (TRYPAN BLUE FREE ACID - UNII:768N7QO4KH)	TRYPAN BLUE	0.75 mg in 0.5 mL

Inactive Ingredients

Ingredient Name	Strength
SODIUM PHOSPHATE, MONOBASIC, DIHYDRATE (UNII: 5QWK665956)	0.15 mg in 0.5 mL
WATER (UNII: 059QF0KO0R)	0.5 mL in 0.5 mL
SODIUM PHOSPHATE, DIBASIC, DIHYDRATE (UNII: 94255I6E2T)	0.95 mg in 0.5 mL
SODIUM CHLORIDE (UNII: 451W47IQ8X)	4.1 mg in 0.5 mL

Packaging

#	Item Code	Package Description	Marketing Start Date	Marketing End Date
1	NDC:68803-672-05	5 in 1 CARTON	02/20/2009	
1		1 in 1 POUCH		
1		0.5 mL in 1 SYRINGE, GLASS; Type 2: Prefilled Drug Delivery Device/System (syringe, patch, etc.)		

Marketing Information

Marketing Category	Application Number or Monograph Citation	Marketing Start Date	Marketing End Date
NDA	NDA022278	02/20/2009	

Labeler - Dutch Ophthalmic Research Center (International) B.V. (407522184)

Registrant - Dutch Ophthalmic Research Center (International) B.V. (407522184)

Establishment

Name	Address	ID/FEI	Business Operations
Pharmpur GmbH		340805167	manufacture(68803-672)

Revised: 11/2025 Dutch Ophthalmic Research Center (International) B.V.