Innovative Biomaterials for Retinal Surgery

Ultrapure fluids and gases made in Germany
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Solutions for ophthalmic surgery

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Precise and intense staining of the ILM due to fast sinking dye

Safe application under air and BSS

Quick and easy application (Ready-to-use)

Physiological osmolarity

Biocompatible

Composition and properties

1 ml of Brilliant Peel® contains:
- 0.25 mg Brilliant Blue G
- Disodium phosphate [(Na₂HPO₄ × 2 H₂O)]
- Monosodium phosphate [(NaH₂PO₄ × 2 H₂O)]
- Sodium chloride (NaCl)
- Deuterium oxide [D₂O]
- Water for injection

Density: 1.02 g/cm³

Packaging units

G-81010 Brilliant Peel® Syringe
0.5 ml Syringe, 5 pcs. per box, sterile

G-81005 Brilliant Peel® Vial
0.5 ml Vial, 5 pcs. per box, sterile

Brilliant Peel®
Heavy dye for selective staining of the ILM
### Fields of application

Brilliant Peel® was developed for specific staining of the inner limiting membrane (ILM). Specific staining of the ILM allows it to be clearly differentiated from the underlying retinal tissue and the epiretinal membranes. Due to the density of 1.02 g/cm³ Brilliant Peel® quickly sinks to the fundus of the eye without diffuse dispersion in the whole bulbus. The surgically demanding removal of the ILM thus becomes easier and safer.

### Comparison of Brilliant Blue G (BBG), Indocyanine Green (ICG) and Trypan Blue (TB) for chromovitrectomy

<table>
<thead>
<tr>
<th></th>
<th>BBG</th>
<th>ICG</th>
<th>TB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical classification</td>
<td>Triphenylmethane</td>
<td>Cyanine</td>
<td>Diazo</td>
</tr>
<tr>
<td>Color</td>
<td>blue</td>
<td>dark green</td>
<td>dark blue</td>
</tr>
<tr>
<td>Ready-to-use</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Toxicity [12, 16, 17, 20, 21, 23]</td>
<td>no</td>
<td>yes</td>
<td>moderate</td>
</tr>
<tr>
<td>Significant cytotoxic effect [23, 30] (according to DIN EN ISO 10993)</td>
<td>&gt; 0.3 g/l reduces cell growth</td>
<td>&gt; 0.24 g/l causes apoptosis</td>
<td>&gt; 0.13 g/l</td>
</tr>
<tr>
<td>Approval</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Affinity for ILM [18, 19, 22]</td>
<td>high</td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>Affinity for ERM [12]</td>
<td>low</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Selective staining of ILM [12, 18, 19]</td>
<td>high</td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>Exposure time</td>
<td>short</td>
<td>short</td>
<td>long</td>
</tr>
<tr>
<td>Liquid / Gas exchange necessary</td>
<td>no</td>
<td>partially</td>
<td>yes</td>
</tr>
</tbody>
</table>
"Our data underline the good biocompatibility of BBG and its applicability and safety for the use in humans. BBG provides a sufficient and selective staining of the ILM. No retinal toxicity related to BBG was observed in our animal study and our shortterm clinical investigation in humans."


"Heavy brilliant blue G (BBG-D$_2$O) provides a significantly improved staining effect of the ILM and by this makes ILM peeling more efficient, easier, faster and less traumatic."


"Brilliant blue G-D$_2$O dye comportment is convenient, as the dye sinks readily onto the retinal surface and dye dispersion to the remaining vitreous is reduced. Indications for dye-related toxicity or complications were not seen."


"Although the MH closure rate was the same using BBG or ICG for ILM peeling, visual acuity improvement was better in eyes peeled with BBG compared to eyes peeled with ICG."

References

Intense and selective staining of ILM, ERM and vitreous remnants

Fast sinking – maximized contact surface with tissue due to higher density

Safe application under air and BSS

Quick and easy application (Ready to use)

Physiological osmolarity

Biocompatible

Composition and properties

1 ml of Brilliant Peel® Dual Dye contains:
- 0.25 mg Brilliant Blue G
- 1.3 mg Bromphenol Blue
- Disodium phosphate (Na₂HPO₄ × 2 H₂O)
- Monosodium phosphate (NaH₂PO₄ × 2 H₂O)
- Sodium chloride (NaCl)
- Deuterium oxide (D₂O)
- Water for injection

Density: 1.03 g/cm³

Packaging units

G-81015 Brilliant Peel® Dual Dye Syringe
0.5 ml syringe, 5 pcs. per box, sterile

G-81025 Brilliant Peel® Dual Dye Vial
0.5 ml vial, 5 pcs. per box, sterile

Video

Scan QR-Code for further information on Brilliant Peel Dual Dye
**Fields of application**

Brilliant Peel® Dual Dye was developed for specific staining of the inner limiting membrane (ILM) and epiretinal membrane (ERM). Specific staining of the ILM and ERM allows them to be clearly distinguished from the underlying retinal tissue, thus making the challenging surgical removal of the ILM and ERM easier and safer. Due to the density of 1.03 g/cm³ Brilliant Peel® Dual Dye quickly sinks to the fundus of the eye without diffuse dispersion in the whole bulbus. Brilliant Peel® Dual Dye can, to some extent, also be used for staining vitreous remnants.

### Comparison of Brilliant Blue G (BBG), Bromphenol Blue (BPB), Indocyanine Green (ICG), Trypan Blue (TB) and Lutein for chromovitrectomy

<table>
<thead>
<tr>
<th>Brilliant Peel® Dual Dye</th>
<th>BBG &amp; BPB</th>
<th>ICG</th>
<th>TB</th>
<th>Lutein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical classification</td>
<td>Triphenylmethane</td>
<td>Cyanine</td>
<td>Diazo</td>
<td>Carotinoid</td>
</tr>
<tr>
<td>Color</td>
<td>violet-blue</td>
<td>green</td>
<td>blue</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Dyes 42</td>
<td>Brilliant Blue G &amp; Bromphenol Blue</td>
<td>Indocyanine Green</td>
<td>Trypan Blue</td>
<td>Lutein</td>
</tr>
<tr>
<td>Toxicity 31, 32, 33, 36, 37, 39, 40, 42, 45</td>
<td>no</td>
<td>yes</td>
<td>moderate</td>
<td>no</td>
</tr>
<tr>
<td>Approval</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Affinity for ILM 34, 35, 38, 42, 43, 44, 45</td>
<td>high</td>
<td>high</td>
<td>low</td>
<td>no</td>
</tr>
<tr>
<td>Affinity for ERM 32, 43, 45</td>
<td>high</td>
<td>low</td>
<td>high</td>
<td>n.a.</td>
</tr>
<tr>
<td>Affinity for vitreous remnants 41, 43, 44, 45</td>
<td>moderate</td>
<td>low</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Exposure time</td>
<td>short</td>
<td>short</td>
<td>long</td>
<td>short</td>
</tr>
<tr>
<td>Liquid / Gas exchange</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>
"Excellent staining of pre-retinal membranes and vitreous remnants."
Senior Consultant Dr. Jürgen Steinhauer, Eye Clinic of Helios University Hospital Wuppertal – University Witten/Herdecke, Germany

"Outstanding staining properties and an impressive sinking behavior makes Brilliant Peel Dual Dye the perfect tool for a save peeling in epiretinal macular procedures. Flawless for a fast and reliable multiple staining of different membrane parts."
Prof. Dr. Lars-Olof Hattenbach, Director of Eye Clinic Ludwigshafen, Germany

"Even under yellow UV-IOL the shape of the retinal nerve fiber layer (RNFL) on the ILM was perfectly visible. A highly promising dye with excellent sinking properties."
Senior Physician Dr. A. Viestenz, University Clinic of Saarland, Homburg, Germany
Vioron®

The versatile trypan blue dye for the anterior segment

Brilliant visualization of the anterior lens capsule

Excellent distinction of the capsulorhexis margin

Quick and easy application (Ready-to-use)

Approved for DMEK

Composition and properties

1 ml of Vioron® contains:

- 0.6 mg Trypan Blue
- Disodium phosphate ($\text{Na}_2\text{HPO}_4 \times 2 \text{H}_2\text{O}$)
- Monosodium phosphate ($\text{NaH}_2\text{PO}_4 \times 2 \text{H}_2\text{O}$)
- Sodium chloride (NaCl)
- Water for injection

Density: 1.00 g/cm³

Packaging units

- **G-81002 Vioron® Syringe**
  0.5 ml syringe, 5 pcs. per box, sterile

- **G-81001 Vioron® Vial**
  0.5 ml vial, 5 pcs. per box, sterile
Fields of application

Vioron® was developed for ophthalmic surgical procedures in the anterior segment of the eye such as cataract operations or keratoplasties. Staining the anterior lens capsule makes it more visible, thus facilitating capsulorhexis and minimizing the risk of tearing. Furthermore, Vioron® facilitates the preparation and transfer of the donor cornea in the case of lamellar corneal transplantations and the removal of the diseased Descemet’s membrane in case of DMEK and DS(A)EK.

References

Keratoplasty


Capsulorhexis

F-Octane F-Decalin

Ultrapure perfluorocarbons for intraoperative tamponades

Gentle retinal unfolding and stabilization
Drainage of subretinal fluids
Refloating luxated lenses
Short-term tamponade
Outstanding stability and biocompatibility
Ready-to-use syringes

<table>
<thead>
<tr>
<th>Packaging units</th>
<th>F-Octane</th>
<th>F-Decalin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syringe 5 ml</td>
<td>G-80315</td>
<td>G-80115</td>
</tr>
<tr>
<td>Syringe 7 ml</td>
<td>G-80317</td>
<td>G-80117</td>
</tr>
<tr>
<td>Vial 5 ml</td>
<td>G-80305</td>
<td>G-80105</td>
</tr>
<tr>
<td>Vial 7 ml</td>
<td>G-80307</td>
<td>G-80107</td>
</tr>
</tbody>
</table>
**Field of application**

F-Octane and F-Decalin are used as medical adjuvants for gentle retinal unfoldings, giant tears, traumata, laser coagulation as well as cryotherapy. Furthermore, they are used for refloating luxated lenses and as short-term tamponades.

**Composition and properties**

F-Octane and F-Decalin are sterile fluorocarbon compounds with high density (1.76 g/cm³ and 1.93 g/cm³). They only consist of C-C and C-F bonds and do not contain any relevant amounts of biologically active components, thanks to the complex purification process at Fluoron. Due to the exceptional strength of the C-F bonds, F-Octane and F-Decalin are chemically and physiologically inert and absolutely non-toxic.

<table>
<thead>
<tr>
<th>Property</th>
<th>F-Octane</th>
<th>F-Decalin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density [g/cm³]</td>
<td>1.76</td>
<td>1.93</td>
</tr>
<tr>
<td>Vapor pressure [mbar] at 25° C</td>
<td>18.5</td>
<td>8.0</td>
</tr>
<tr>
<td>Refractive Index at 20° C</td>
<td>1.2700</td>
<td>1.3110</td>
</tr>
<tr>
<td>Surface tension [mN/m] at 25° C</td>
<td>14.0</td>
<td>19.0</td>
</tr>
<tr>
<td>Interface tension [mN/m] at 25° C</td>
<td>55.0</td>
<td>57.8</td>
</tr>
<tr>
<td>Composition</td>
<td>100 % Perfluorooctan (PFO)</td>
<td>100 % Perfluorodecalin (PFD)</td>
</tr>
</tbody>
</table>

**References**

EasyGas®
The first ready-to-use gas tamponade

Quick and easy application through sterile, pre-filled system

Safe usage because of precise, non-expanding mixture ratio in each syringe

No mix-up of gases due to colour coding

Three gases for different tamponade durations

Reduced risk for hypertension or ischemia, because manual mixing is not required

No subsequent surgery for tamponade removal necessary

Contains patient information card and patient wristband

Packaging units

- G-80950 EasyGas® SF₆ Syringe 40 ml, sterile
- G-80960 EasyGas® C₂F₆ Syringe 40 ml, sterile
- G-80970 EasyGas® C₃F₈ Syringe 40 ml, sterile
Fields of application

EasyGas® SF₆, EasyGas® C₂F₆ and EasyGas® C₃F₈ are the first ready-to-use gas tamponades. The sterile, pre-filled, ready-to-use system offers a quick and easy application of the tamponades. EasyGas® is used as long-term tamponade after operative treatment of severe retinal detachment.

<table>
<thead>
<tr>
<th>Field of application</th>
<th>EasyGas® SF₆</th>
<th>EasyGas® C₂F₆</th>
<th>EasyGas® C₃F₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective tamponade time [days]</td>
<td>6</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Retention time / Longevity* [weeks]</td>
<td>1 – 2</td>
<td>4 – 5</td>
<td>6 – 8</td>
</tr>
<tr>
<td>Non-expansive gas concentration* [%]</td>
<td>20</td>
<td>16</td>
<td>12</td>
</tr>
</tbody>
</table>

Indication

<table>
<thead>
<tr>
<th>Indication</th>
<th>EasyGas® SF₆</th>
<th>EasyGas® C₂F₆</th>
<th>EasyGas® C₃F₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retinal detachment with giant tears</td>
<td>✔</td>
<td>✔</td>
<td>–</td>
</tr>
<tr>
<td>Retinal detachment without proliferation</td>
<td>✔</td>
<td>✔</td>
<td>–</td>
</tr>
<tr>
<td>Retinal detachment in cases of proliferative diabetic retinopathy (PDR)</td>
<td>✔</td>
<td>✔</td>
<td>–</td>
</tr>
<tr>
<td>Proliferative vitreoretinopathy (PVR)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Traumatic retinal detachment</td>
<td>✔</td>
<td>✔</td>
<td>–</td>
</tr>
</tbody>
</table>

Composition and properties

<table>
<thead>
<tr>
<th>Property</th>
<th>EasyGas® SF₆</th>
<th>EasyGas® C₂F₆</th>
<th>EasyGas® C₃F₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density of pure gas</td>
<td>6.17 kg/m³</td>
<td>5.73 kg/m³</td>
<td>8.17 kg/m³</td>
</tr>
<tr>
<td>Density of ready-to-use mixture</td>
<td>2.34 kg/m³</td>
<td>1.95 kg/m³</td>
<td>2.01 kg/m³</td>
</tr>
<tr>
<td>Composition</td>
<td>20 % SF₆ 5.0</td>
<td>16 % C₂F₆ 5.0</td>
<td>12 % C₃F₈ 4.0</td>
</tr>
<tr>
<td></td>
<td>80 % synthetic air 6.0</td>
<td>84 % synthetic air 6.0</td>
<td>88 % synthetic air 6.0</td>
</tr>
</tbody>
</table>

Siluron®

A new generation of silicone oils with an innovative molecular design

High resistance to emulsification
Short injection time
Good long-term tolerability
Excellent chemical purity

Siluron® 2000
Premium silicone oil with customized extensional viscosity

Siluron® XTRA
Premium silicone oil with an Xtra portion of elasticity

The new generation of Siluron® silicone oils is characterized by its special property of a significantly higher emulsification resistance. This is based on an intelligent mixture of different chain lengths of molecules and the resulting dynamic viscosity. Good injectability in cases of small incisions is a further advantage of these innovative silicone oils.

Packaging units

- G-80740 Siluron® 2000 Syringe
  10 ml, sterile

- G-80750 Siluron® Xtra Syringe
  10 ml, sterile
Fields of application

Siluron® silicone oils are used as long-term tamponades after operative treatment of severe retinal detachment, particularly for:

- Retinal detachments with giant tears
- Retinal detachments with proliferative vitreo-retinopathy (PVR)
- Retinal detachments in cases of proliferative diabetic retinopathy (PDR)
- Traumatic retinal detachments

Due to their specific density of 0.97g/cm³ the Siluron® silicone oils float on water.

Good long-term tolerability
Excellent chemical purity
Chemically and physiologically inert

Siluron® 1000
Easily injectable
Siluron® 5000
Higher resistance to emulsification

Packaging units

- G-80720 Siluron® 1000 Syringe 10 ml, sterile
- G-80820 Siluron® 5000 Syringe 10 ml, sterile
- G-80710 Siluron® 1000 Vial 10 ml, sterile
- G-80810 Siluron® 5000 Vial 10 ml, sterile

Standard silicone oils also available in vials

References

### Overview of properties

#### Physicochemical properties of Siluron® oils

<table>
<thead>
<tr>
<th>Property</th>
<th>Siluron® 1000</th>
<th>Siluron® 5000</th>
<th>Siluron® 2000</th>
<th>Siluron® XTRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density [g/cm³] at 25° C</td>
<td>0.97</td>
<td>0.97</td>
<td>0.97</td>
<td>0.97</td>
</tr>
<tr>
<td>Viscosity [mPas] at 25° C</td>
<td>900 - 1200</td>
<td>4800 - 5500</td>
<td>2000 - 2400</td>
<td>4100 - 4800</td>
</tr>
<tr>
<td>Refractive index</td>
<td>1.404</td>
<td>1.404</td>
<td>1.404</td>
<td>1.404</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>non miscible</td>
<td>non miscible</td>
<td>non miscible</td>
<td>non miscible</td>
</tr>
<tr>
<td>Composition [w %]</td>
<td>100 % Polydi-methylsiloxane (PDMS)</td>
<td>100 % Polydi-methylsiloxane (PDMS)</td>
<td>95 % Siluron® 1000 + 5 % PDMS (2.5 M mPas)</td>
<td>90 % Siluron® 1000 + 10 % PDMS (2.5 M mPas)</td>
</tr>
<tr>
<td>Elasticity [Jₑ⁹] [Pas]</td>
<td>2 x 10⁻⁵</td>
<td>1 x 10⁻⁵</td>
<td>6.5 x 10⁻⁴</td>
<td>1.4 x 10⁻³</td>
</tr>
<tr>
<td>Shear viscosity</td>
<td>931</td>
<td>4303</td>
<td>1800</td>
<td>4377</td>
</tr>
<tr>
<td>(at 8.37 s⁻¹ and 37° C) [mPas]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatile components</td>
<td>≤ 0.2 %</td>
<td>≤ 0.2 %</td>
<td>≤ 0.2 %</td>
<td>≤ 0.2 %</td>
</tr>
<tr>
<td>[200° C, 24 h] [%]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


#### Comparison of emulsification rate

![Comparison of emulsification rate](image)

Comparison of injection time 5.5 bar injection pressure, 20 gauge injection cannula

The heavy silicone oil with molecular design

Unique molecular design

Heavier than water

Ideal for inferior pathologies

Removing proliferative milieu in lower part of retina

Avoiding unpleasant constraints for patient ("head-down-position")

Easy to inject

25G compatible

Highly resistant against emulsification


Composition and properties

Density [g/cm³] at 25° C:
1.05 - 1.07

Viscosity [mPas] at 25° C:
1.000 – 1.400

Composition [w%]:
30.5 % F6H8
69.5 % Siluron® Xtra

Packaging units

G-80925 Densiron® Xtra Syringe
10 ml syringe, 1 pc. per box, sterile
**Fields of application**

Densiron® Xtra is used as a temporary tamponade after operative treatment of severe retinal detachment, particularly for:

- Inferior and posterior retinal holes
- Retinal detachments with giant tears
- Retinal detachments with proliferative vitreoretinopathy (PVR)
- Retinal detachments in cases of proliferative diabetic retinopathy (PDR)
- Traumatic retinal detachments

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**Injection times Densiron® Xtra**

![Graph showing injection times for Densiron® Xtra](image)

**In vitro emulsification ranges of various silicone oils when using plasma as emulsifier**

![Graph showing emulsification rates](image)

“Temporal inverted ILM flap technique combined with heavy silicone oil (Densiron Xtra) for macular detachment associated with ODP is a highly effective alternative technique. This procedure achieved very rapid resolution of the submacular fluid with successful anatomical and functional results.”

Oncel, M. A Novel Approach for the Management of Macular Detachment Associated with Optic Disc Pit: Temporal Inverted Internal Limiting Membrane Flap Technique and a New Heavy Silicone Oil (Densiron Xtra)

**Which are the key pathologies and why?**

“As tamponade in recurrent inferior rhegmatogenous retinal detachment, especially if complicated by severe proliferative vitreoretinopathy.”

**What features do you like most?**

“It can effectively tamponade inferior retina with the patient standing upright (...). I routinely use 25G system and I never met any trouble in injecting and aspirating Densiron Xtra.”

**What is your conclusion about Densiron Xtra?**

“It’s an essential surgical tool for every vitreoretinal surgeon who needs to face with complex pathologies. It is effective in tamponing and stabilising the inferior retina and safe at the same time.”

**Prof. Francesco Boscia**

MD, Associate Professor and Chair at the Department of Ophthalmology at the Sassari University, Sassari, Sardegna (IT)

---

**Dr. Vignesh Raja**

Joondalup Eye Clinic and Perth Eye Hospital, Perth, Australia

**Which are the key pathologies and why?**

“I prefer to use Densiron Xtra for pathologies such as persistent macular hole, inferior retinal detachment with PVR, inability to posture face down, recurrent and chronic retinal detachment that need long term silicone oil endotamponade.”

**What features do you like most?**

“I like Densiron Xtra because of its heavier than water property, low risk of emulsification and low risk of developing retinal/macular toxicity. Removal of Densiron is straightforward [with the correct technique] with low risk of residual silicone oil bubbles.”

**What is your conclusion about Densiron Xtra?**

“Densiron Xtra adds to my retinal armamentarium and is my preferred agent for endotamponade in challenging and complicated cases.”

---

Testimonials Densiron® Xtra
Which are the key pathologies and why?
“The treatment of inferior proliferation in recurrent retinal detachment [...] to exclude the aqueous environment containing cytokines and proliferative agents entirely from the retinal area which had just been treated.”

What features do you like most?
“I can use Densiron Xtra irrespective of the gauge. The process of injection and removal has stopped being lengthy and arduous.”

What is your conclusion about Densiron Xtra?
“Easy to inject and aspirate, decreased emulsification rate, yet heavy tamponade agent.”

Which are the key pathologies and why?
“Mainly for complicated retinal detachements (PVR) with tear formation and tensions in the inferior segment, also for tractions due to diabetic retinopathy and I’m happy with the results.”

What features do you like most?
“The comparable low viscosity and hence the excellent injectability even via 25G systems [...]”

What is your conclusion about Densiron Xtra?
“I use Densiron Xtra because I feel more secure in complicated retinal detachements with pathologies in the inferior segment for elderly patients for whom correct patient positioning cannot be guaranteed.”

Which are the key pathologies and why?
“We use it in all retinal surgery in which are predisposing factors for PVR.”

What features do you like most?
“The quality that I appreciate most is the ease of injection, even with 25G. Also its intraocular tolerance and stability against emulsification is appreciable.”

What is your conclusion about Densiron Xtra?
“These referred qualities make Densiron Xtra an important ally in complex vitreoretinal surgery improving its prognosis.”
F4H5® WashOut
The simple solution for oil residues in vitreoretinal surgery

Unique amphiphilic properties
Solves silicone oil efficiently
Removes silicone oil residues and "sticky oil"
Rinses silicone oil-polluted IOL
Biocompatible

Composition and properties
Density [g/cm³] at 25°C: 1.28
Viscosity [mPas] at 25°C: 1.05
Mix ratio F4H5 : Silicone oil:
Mix in all ratios

Packaging units
G-80615 F4H5® WashOut Vial
5 ml vial, 1 pc. per box, sterile

Fields of application
F4H5® WashOut is a biocompatible solvent for removing silicone oil residues from the retina and for cleaning intraocular lenses after silicone oil tamponades.

References
**F6H8® Vitreous Substitute**

The rinsing tamponade in vitreoretinal surgery

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**Composition and properties**

- **Density [g/cm³] at 25° C:** 1.33
- **Viscosity [mPas] at 25° C:** 3.44
- **Mix ratio F6H8 : Silicone oil:** optimal 50:50 to 30:70

**Packaging units**

- **G-80606 Vitreous Substitute F6H8® Vial**
  - 6 ml vial, 1 pc. per box, sterile

- **G-80609 Vitreous Substitute F6H8® Vial**
  - 9 ml vial, 1 pc. per box, sterile

**Fields of application**

F6H8® serves as an endotamponade in complicated retinal detachments and as an intraoperative tool for retinal surgery. Due to its significantly lower density compared to conventional perfluorocarbon liquids, F6H8® offers enormous advantages particularly for retinal translocation. F6H8® is also an excellent biocompatible solvent for the removal of silicone oil residues from the vitreous chamber as well as being suitable for cleaning intraocular lenses after a silicone oil tamponade.

**References**


Accessories PFCL

G-33057
Chang
PFCL Cannula
for injection of heavy fluids
dual bore, coaxial
25 gauge / 0.5 mm tip
20 gauge / 0.9 mm shaft

G-34285
Single-Use PFCL Cannula
for injection of heavy fluids
dual bore, coaxial
23 gauge / 0.64 mm
10 pcs. per box, sterile

G-37002
Backflush Handpiece
with silicone chamber and
Luer-Lock connector
overall length 115 mm

G-34289
Single-Use
Backflush Handpiece
with silicone chamber, Luer-Lock
10 pcs. per box, sterile

Accessories EasyGas®

G-80975
Single-Use Injection Cannula
for EasyGas®
30 gauge / 0.3 x 12 mm
100 pcs. per box, sterile

G-34492
Kirchhof
Single-Use Injection Cannula
for gas / viscous fluids
5.0 mm beveled tip with 4 infusion
side ports
2 metal sleeves, Luer-Lock plastic
adapter and 40 cm silicone tube
20 gauge / 0.9 mm
10 pcs. per box, sterile

* Accessories are optional. Further products available on demand.
Accessories silicone oils

Heidelberg Model
Cannula
for injection or aspiration
of viscous fluids
and Densiron® 68, bevel 30°
G-32699  19 gauge / 1.1 mm
G-32698  18 gauge / 1.2 mm

G-33056
Raider
Aspiration Cannula
for viscous fluids
0.7 mm side port
19 gauge / 1.0 mm

Hamburg Model
Injection Cannula
for viscous fluids
25 cm silicone tube with metal sleeve
and Luer-Lock adapter
3 spare silicone tubes
G-33470  20 gauge / 0.9 mm, beveled, 4 mm
G-33471  20 gauge / 0.9 mm, beveled, 5 mm
G-33472  20 gauge / 0.9 mm, beveled, 6 mm
G-33473  23 gauge / 0.6 mm, beveled, 4 mm
G-33474  23 gauge / 0.6 mm, beveled, 6 mm

G-33482
Single-Use Injection Cannula
for viscous fluids, self-retaining,
4.0 mm tip
with 25 cm PVC tube
Luer-Lock plastic adapter
20 gauge / 0.9 mm
5 pcs. per box, sterile

G-34480
Single-Use Injection Cannula
for viscous fluids
4.0 mm beveled tip
with 2 metal sleeves, Luer-Lock
plastic adapter
and 25 cm silicone tube
19 gauge / 1.1 mm
10 pcs. per box, sterile

Single-Use Cannula
to inject silicone oil
10 pcs. per box, sterile
G-34497  20 gauge / 0.9 mm x 8 mm
G-34498  23 gauge / 0.6 mm x 8 mm

Roider
Aspiration Cannula
for viscous fluids
0.7 mm side port
19 gauge / 1.0 mm

Heidelberg Model
Cannula
for injection or aspiration
of viscous fluids
and Densiron® 68, bevel 30°
G-33482  beveled tip, 4.0 mm
G-33489  beveled tip, 6.0 mm

Single-Use Injection Cannula
for viscous fluids
with 1 metal sleeve, Luer-Lock
plastic adapter
and 25 cm PVC tube
20 gauge / 0.9 mm
5 pcs. per box, sterile
G-33488  beveled tip, 4.0 mm
G-33489  beveled tip, 6.0 mm
Accessories silicone oils

**G-32697**
**Pressure Tube** (reusable)
for injection of viscous fluids
Luer-Lock female / male

**G-32696**
**Single-Use Pressure Tube**
for injection of viscous fluid,
Luer-Lock female / male
10 pcs. per box, sterile

**G-28766**
**Single-Use Oil Injection System**
to inject silicone oil pneumatically,
with protective cover for glass syringe,
pressure tube fits megaTRON® S3 / S4 HPS and Pentasys**, sterile
(G-28767 for megaTRON® and Accurus®, G-28768 for Millennium®)**

**G-28752**
**Syringe Holder**
for manual injection of viscous fluids in glass syringes,
with clamp and retraction mechanism

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* Accessories are optional. Further products available on demand.
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** Pentasys is a registered trademark of Fritz RUCK Ophthalmologische Systeme GmbH
** ACCURUS® is a registered trademark of Alcon Laboratories, Inc.
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Fluoron GmbH, based in Ulm, Germany, was founded in 1996 by Prof. Dr. Hasso Meinert and is a sister company of Geuder AG, Heidelberg. With his intellectual property rights, Prof. Meinert laid the foundation for a successful development of the company and accompanied Fluoron GmbH over 10 years on scientific topics. The company is managed by Mr Volker Geuder.

Fluoron GmbH develops and manufactures ultrapure innovative biomaterials for retinal and cataract surgery. In this field, Fluoron GmbH plays a worldwide leading role in providing ophthalmic surgeons with creative and efficient solutions and consolidated its international competitive position by acquiring extensive intellectual property rights. The company’s competence focuses on the development, manufacture and regulatory approval of light and heavy tamponades for retinal surgery, perfluorohydrocarbons and semifluorinated alkanes as temporary tamponades, as well as dyes for anterior and posterior segment surgery.

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Illustrations not drawn to scale.

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