viscover

PolySon™ H

Ultrasound contrast agent for pre-clinical imaging

1 vial (5 x 100 µL injections) # 130-095-152
5 vials (25 x 100 µL injections) # 130-095-153

Contents

1. Description

Components **50 mg PolySon™ H,** ultrasound contrast agent (polymeric microbubbles)
or
5 × 50 mg PolySon™ H, ultrasound contrast agent (polymeric microbubbles).

Capacity **5 × 100 µL injections** after reconstitution
or
25 × 100 µL injections after reconstitution.

Product format PolySon H is supplied as a lyophilized preparation. After reconstitution, the isotonic suspension contains ~2.5 × 10^8 microbubbles per mL.

Appearance White lyophilizate. Opaque, white liquid after reconstitution. Upon standing for several hours the liquid separates into a clear, colorless phase with an upper layer of air-filled microbubbles.

Storage Store at 2–8 °C. Do not freeze. The expiration date is indicated on the vial label.

For laboratory and animal research use only. Warning: Not for human or animal therapeutic or diagnostic use. Make sure to comply with all laws and regulations governing research on animals.

1.1 Background information

PolySon H consists of micrometer-sized air-filled polymeric particles of high mechanical stability specifically formulated for pre-clinical ultrasound imaging.
Due to large differences in their density and compressibility compared to tissue or plasma, dispersed PolySon H microbubbles are highly echogenic.

Upon intravenous injection, the intact microbubbles circulate in the blood pool for up to 10 minutes and are taken up by the reticuloendothelial system (RES), particularly in the liver and spleen.

1.2 Applications

PolySon H can be applied in various ultrasound imaging techniques, such as harmonic, subharmonic and B-mode imaging. Moreover, it is particularly suited for stimulated acoustic emission (SAE) imaging (bubble rupture) using a relatively high-energy ultrasound beam (high mechanical index). PolySon H is indicated for use in ultrasound imaging of small animals, for example mice, to facilitate the visualization of the liver and spleen. Examples include sensitive particle acoustic quantification (SPAQ) studies and imaging of liver tumors.

1.3 Physico-chemical properties

Particle size (number-weighted): 1–3 µm.

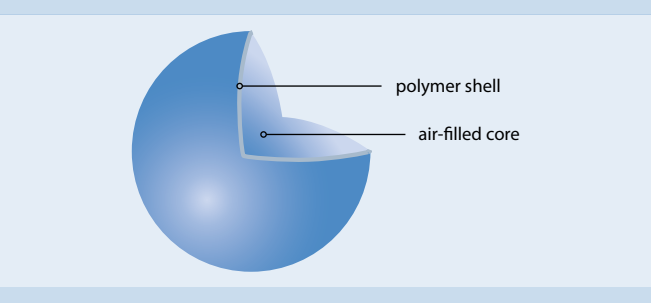

Figure 1: Schematic diagram of a polymeric microbubble.

1.4 Requirements

- Sterile syringes and needles (27–30 G)
  Note: To allow sufficient volume for 5 × 100 µL injections per vial, the syringe/needle dead volume should be kept below 70 µL.
  Tip: Use insulin or tuberculin syringes.
- 70 % ethanol
- Sterile water for injection (WFI)
- Physiological saline (0.9 % NaCl) solution

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2. Protocol

2.1 Preparation

- Read the entire protocol before starting.
- To reconstitute the lyophilizate, inject 850 µL of sterile water for injection (WFI) into the vial. Do not use saline solution! Gently agitate the vial by hand until a homogenous suspension is obtained. Do not vortex!
- For a mouse weighing 20–30 g the typical injection volume is 100 µL corresponding to a dose of ~1.0×10^9 microbubbles/kg body weight (for a 25 g mouse).

  Note: Standard animal-handling procedures and local regulations must be followed.

2.2 Injection

- Reconstitute the PolySon H lyophilizate prior to injection as described in section 2.1.
- Disinfect the septum with 70% ethanol. Let septum dry.
- Warm the mouse tail to dilate the veins and enhance their visibility.
- Gently agitate the vial by hand until a homogenous suspension is obtained. Do not vortex!
- Inject PolySon H (typically 100 µL, slowly, within at least 20–30 seconds) via the lateral tail vein of the mouse. Immediately flush with physiological saline solution.

  Note: PolySon H contains no preservatives. Avoid microbial contamination and discard any unused material after 24 hours.

2.3 Imaging

- For non-destructive imaging use a low mechanical index (MI < 0.4).
- For SAE imaging use a high mechanical index (MI > 0.7).
- Prior to liver or spleen imaging, a waiting period of 15 minutes, preferably 30 minutes, is recommended to allow for sufficient uptake by the RES.

Find examples of PolySon H-enhanced ultrasound images at **www.viscover.berlin**.

3. References

1. Reinhardt, M. *et al.* (2005) Sensitive particle acoustic quantification (SPAQ): a new ultrasound-based approach for the quantification of ultrasound contrast media in high concentrations. Invest. Radiol. 40: 2–7.
2. Tiemann, K. *et al.* (2000) Stimulated acoustic emission: pseudo-doppler shifts seen during the destruction of nonmoving microbubbles. Ultrasound Med. Biol. 26: 1161–1167.
3. Forsberg, F. *et al.* (1999) Tissue-specific US contrast agent for evaluation of hepatic and splenic parenchyma. Radiology 210: 125–132

4. Related products

PolySon™ L	# 130-095-150, # 130-095-151
PolySon™ T	# 130-095-148, # 130-095-149

A comprehensive product portfolio for the imaging modalities MRI, CT, US, OI, SPECT, and PET is available at **www.viscover.berlin**.

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