English

STERILE - SINGLE USE ONLY - NON-PYROGENIC
Sterilised by steam Do not use if the package is opened or damaged

■ DESCRIPTION:
Bead Block comprises a range of hydrogel microspheres that are biocompatible, hydrophilic, nonresorbable and precisely calibrated. Bead Block are produced from polyvinyl alcohol and are available in the following size ranges:

Nominal Bead Size	Label Colour
100-300 µm	Yellow
300-500 µm	Blue
500-700 µm	Red
700-900 µm	Green
900-1200 µm	Purple

■ PRESENTATION:
- Syringe of 20 ml presented in a sterile, sealed pre-formed Tyvek® peel-away tray.
- Each syringe contains approximately 1 ml or 2 ml of Bead Block in non-pyrogenic, sterile, physiological buffered saline.
- Each syringe is intended for single patient use only. Do not resterilise. Discard any unused material.

■ INDICATIONS:
Bead Block are intended to be used for the embolisation of hypervascular tumours, including uterine fibroids and arteriovenous malformations (AVMs).

■ CLINICAL APPLICATIONS:
The scientific literature provides extensive documentation of embolisation procedures using a wide variety of artificial agents in both neurological and peripheral vascular systems, including the head, neck, spine, liver, genitourinary tract, uterus, gastrointestinal system, limbs and lungs. A representative bibliography is provided following these instructions for use.

■ CONTRAINDICATIONS:
1. Patients intolerant to occlusion procedures
2. Vascular anatomy or blood flow that precludes catheter placement or emboli injection
3. Presence or likely onset of vasospasm
4. Presence or likely onset of haemorrhage
5. Presence of severe atheromatous disease
6. Presence of feeding arteries smaller than distal branches from which they emerge
7. Presence of patent extra-to-intracranial anastomoses or shunts
8. Presence of collateral vessel pathways potentially endangering normal territories during embolisation
9. Presence of end arteries leading directly to cranial nerves
10. Presence of arteries supplying the lesion not large enough to accept Bead Block
11. Vascular resistance peripheral to the feeding arteries precluding passage of Bead Block into the lesion
12. Do not use Bead Block in the following applications:
    i. Embolisation of large diameter arteriovenous shunts (ie. where the blood does not pass through the arterial/capillary/venous transition but directly from artery to vein).
    ii. The pulmonary arterial vasculature.
    iii. Any vasculature where Bead Block could pass directly into the internal carotid artery or non-target territories.

■ UFE SPECIFIC CONTRAINDICATIONS:
- Pregnant women
- Active or suspected pelvic inflammatory disease
- Malignancy of the pelvic region
- Endometrial neoplasia or hyperplasia
- Presence of submucosal fibroids with greater than 50% growth into the uterine cavity
- Presence of pedunculated serosal fibroid as the dominant fibroid(s)
- Fibroids with significant collateral feeding by vessels other than the uterine arteries

WARNING: Studies have shown that Bead Block do not form aggregates and, as a result, penetrate deeper into the vasculature as compared to similarly sized PVA particles. Care must be taken to choose a larger sized Bead Block when embolising arteriovenous malformations with large shunts to avoid passage of the product into the pulmonary or coronary circulation.

The colour of Bead Block could be visible through the skin if injected into arteries feeding superficial tissues.

■ UFE SPECIFIC WARNINGS:
Warnings about UFE and Pregnancy:

- There is no long term data on the effects of UFE on the ability to become pregnant and carry a foetus to term, and on the development of the foetus.
- This procedure should only be performed on women who do not intend future pregnancy.
- Women who become pregnant following UFE may be at increased risk for the following:
  - Postpartum haemorrhage
  - Preterm delivery
  - Caesarean delivery
  - Malpresentation
- Devascularisation of the uterine myometrium resulting from UFE may increase the risk of uterine rupture of women who subsequently become pregnant following UFE.

■ OTHER UFE WARNINGS:

- When using Bead Block for uterine fibroid embolisation, do not use beads smaller than 500 microns.
- An appropriate gynaecologic work-up should be performed on all patients presenting for embolisation of uterine fibroids (e.g. gynaecologic history, fibroid imaging, endometrial sampling to rule out carcinoma in patients with abnormal menstrual bleeding).
- The diagnosis of uterine sarcoma could be delayed by taking a non-surgical approach (such as UFE) to treating fibroids. It is important to pay close attention to warning signs for sarcoma (e.g., rapid tumour growth, postmenopausal with new uterine enlargement, MRI findings) and to conduct a more thorough work-up of such patients prior to recommending UFE. Recurrent or continued tumour growth following UFE should be considered a potential warning sign for sarcoma and surgery should be considered.

■ CAUTIONS:

- Do not use if the syringe or packaging appear damaged.
- Select the size and quantity of Bead Block appropriate for the pathology to be treated.
- Embolisation with Bead Block should only be performed by physicians who have received appropriate interventional occlusion training in the region intended to be embolised.

■ UFE SPECIFIC PRECAUTIONS:

- There is an increased chance of reflux of Bead Block into unintended blood vessels as uterine artery flow diminishes. Comparison of angiographic endpoint & infarction rate in individual patients indicates that best results were obtained with an endpoint close to stasis.
- The long-term outcome of UFE is at present unknown.

■ POTENTIAL COMPLICATIONS:

1. Undesirable reflux or passage of Bead Block into normal arteries adjacent to the targeted lesion or through the lesion into other arteries or arterial beds
2. Non-target embolisation
3. Pulmonary embolisation
4. Ischaemia at an undesirable location
5. Capillary bed saturation and tissue damage
6. Ischaemic stroke or ischaemic infarction
7. Vessel or lesion rupture and haemorrhage
8. Neurological deficits including cranial nerve palsies
9. Vasospasm
10. Death
11. Recanalisation
12. Foreign body reactions necessitating medical intervention
13. Infection necessitating medical intervention
14. Clot formation at the tip of the catheter and subsequent dislodgement

■ UFE SPECIFIC POTENTIAL COMPLICATIONS:
Potential post procedure complications include:
1. Abdominal pain
2. Discomfort
3. Fever
4. Nausea
5. Constipation
6. Premature ovarian failure (i.e. Menopause)
7. Amenorrhea
8. Infection of the pelvic region
9. Uterine/ovarian necrosis
10. Phlebitis
11. Deep vein thrombosis with or without pulmonary embolism
12. Vaginal discharge
13. Tissue passage, fibroid sloughing, or fibroid expulsion post UFE
14. Post-UFE intervention to remove necrotic fibroid tissue
15. Vagal reaction
16. Transient hypertensive episode
17. Hysterectomy

As of 2009, there have been 5 deaths reported worldwide following UFE (Hamoda CVIR 2009. 32(5); 1080-1082).

■ INSTRUCTIONS FOR USE:
- Carefully evaluate the vascular network associated with the lesion using high resolution imaging prior to beginning the embolisation procedure.
- Bead Block are available in a range of sizes. Care should be taken to choose the appropriate size Bead Block that best matches the pathology (ie. vascular target/vessel size) and provides the desired clinical outcome.
- When embolising arteriovenous malformations, choose a particle size that will occlude the nidus without passing through the AVM.
- Choose a delivery catheter based on the size of the target vessel. Bead Block can tolerate temporary compression of 20% to 30% in order to facilitate passage through the delivery catheter.
- Introduce the delivery catheter into the target vessel according to standard techniques. Position the catheter tip as close as possible to the treatment site to avoid inadvertent occlusion of normal vessels.
- Bead Block are not radio-opaque. It is recommended to monitor the embolisation under fluoroscopic visualisation by adding the desired amount of contrast medium to the physiologic suspension fluid.

■ ADDITIONAL UFE SPECIFIC INSTRUCTIONS:
- Use of 700-900µm Bead Block is recommended to treat UFE, with upsizing to 900-1200µm if required. An endpoint of stasis or near stasis is recommended with the main uterine artery remaining patent, but with negligible residual flow toward the uterus.
- This endpoint corresponds to an angiographic image of a patent horizontal segment with absent flow in the ascending segment of the uterine artery.
- At the discretion of the physician, pneumatic compression devices may be used for patients currently taking hormone therapy, uterine volume > 1000 cc, and patients that are overweight to lower the risk of deep vein thrombosis.

■ UFE PATIENT COUNSELLING INFORMATION:
- Patients should have a clear understanding prior to embolisation of who will provide their post procedure care and whom to contact in case of an emergency after embolisation.
- UFE candidates should have an understanding of the potential benefits, risks, and adverse events associated with UFE. In particular patients should understand that there is a chance their fibroid-related symptoms will not improve following UFE.

■ DELIVERY INSTRUCTIONS:
Preparation
1. Directly aspirate 5 ml of contrast medium into the syringe to obtain an approximate 50% contrast and approximate 50% saline solution mix. Remove all air from the syringe.
2. To evenly suspend the Bead Block/contrast solution, gently invert the 20 ml syringe several times. Attach the 20 ml syringe to one port of the luer-lock 3-way stopcock; and, if desired, a delivery catheter may be attached to the remaining port on the stopcock. Wait several minutes to allow the Bead Block to suspend properly.
3. Draw the Bead Block/contrast solution into the injection syringe slowly and gently to minimize the potential of introducing air into the system. Purge all air from the system prior to injection.

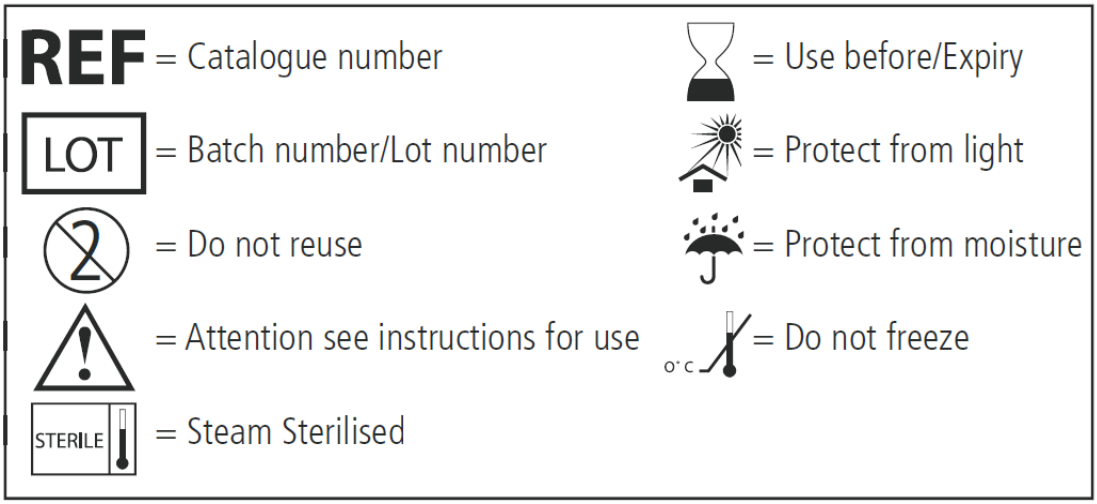
Delivery

1. Inject the Bead Block/contrast solution from the injection syringe under fluoroscopic visualisation using a slow pulsatile action, while observing the contrast flow rate. If there is no effect on the flow rate, repeat the delivery process with additional injections of Bead Block/contrast solution or larger sized Bead Block may be considered. If the Bead Block/contrast solution requires re-suspension, gently invert the 20 ml syringe several times.
2. Exercise conservative judgement in determining the embolisation endpoint.

Post Procedure

1. Upon completion of the treatment, remove the catheter while maintaining gentle suction so as not to dislodge Bead Block still within the catheter lumen.
2. Discard any open, unused Bead Block.

PACKAGE LABEL:



■ CONSERVATION AND STORAGE:

- Bead Block must be stored in a cool, dry and dark place in its original packaging.
- Use by the date indicated on the syringe label.
- Do not freeze.

References

UFE Specific

- Al-Badr et al Uterine artery embolization in an undiagnosed uterine sarcoma. Obstet Gynecol 97, 836, 2001.
- Andrews et al Patient care and uterine artery embolization for leiomyomata. JVIR, 15, 115, 2004.
- Common et al Therapeutic failure of uterine fibroid embolization caused by underlying leiomyosarcoma. JVIR 12, 1449, 2001.
- D'Angelo et al Uterine leiomyosarcoma discovered after uterine artery embolisation. J Obstet Gynaecol 23, 686, 2003.
- Joffe et al, FEMIC (Fibromes Embolisés aux MICrosphères calibrées): uterine fibroid embolization using tris-acryl microspheres. A French multicenter study. CVIR 27 (6), 600, 2004.
- Joyce et al Leiomyosarcoma after uterine artery embolization. A case report. J Reprod Med. 46, 278, 2001
- Kroencke et al Acrylamido polyvinyl alcohol microspheres for uterine artery embolization: 12-month clinical and MR imaging results. JVIR 19 (1), 47, 2008.
- Mara et al Midterm clinical and first reproductive results of a randomized controlled trial comparing uterine fibroid embolization and myomectomy. CVIR 31, 73, 2008.
- Spies et al Credentials for uterine artery embolization. JVIR, 15, 111, 2004.

All Indications

- Ahuja A, Gibbons K: Endovascular therapy of central nervous system tumours. Neurosurg Clin of N Am, 5(3): 541-554, 1994.
- Ajani JA, Carrasco CH, Wallace S: Neuroendocrine tumours metastatic to the liver: Vascular occlusion therapy. Ann NY Acad Sci, 733:479-487, Sep 1994.
- Beaujeux R, Laurent A, Wassef M et al: trysacryl gelatin microspheres for terapeutic embolization, II: Preliminary evaluation in tumours and arteriovenous malformations. AJNR, 17:541-548, March 1996.
- Bendszus M, Klein R, Burger R, et al: Efficacy of trisacryl gelatin microspheres and polyvinylalcohol (PVA) particles in the preoperative embolization of meningiomas. Presented at the ASNR 36th Annual Meeting, May 17-21, 1998.

- Charnsangavej C, Wallace S: Transcatheter regional therapy of extremity tumours. In: Peripheral Vascular Intervention.
- Clouse ME: Hepatic artery embolisation for Bleeding and tumours. Surg clin N Am, 69(2):419-432, Apr 1989.
- Derdeyen C, Graves V, Salamat M, Rappe A: Collagen-coated acrylic microspheres for embolotherapy: In vivo and in vitro characteristics. AJNR, 18:647-653, April 1997.
- Deveikis JP: endovascular therapy of intracranial arteriovenous malformations: materials and techniques. Neuroimaging Clin of N Am, 8(2):401-424, 1998.
- Encarnacion CE, Kadir S, Beam CA, Payne CS: Gastrointestinal bleeding: Treatment with gastrointestinal arterial embolization. Radiol, 183(2):5085-508, May 1992.
- Frizzel RT, Fisher WS: Cure, morbidity and mortality associated with embolization of brain arteriovenous malformations: A review of 1246 patients in 32 series over 35-year period. Neurosurg, 37(6): 1031-1040, Dec 1995.
- Laurent A, Beaujeux R, Wassef M, et al: Trisacryl gelatin microspheres for therapeutic embolization, I: Development and in vitro evaluation. AJNR 17:533-540, March 1996.
- Rose SC: Transcatheter occlusion of injured extremely and pelvic arteries. In: Peripheral Vascular Intervention.
- Bendszus M, Klein R, Burger R, et al: Efficacy of trisacryl gelatin microspheres versus polyvinyl alcohol particles in the preoperative embolization of meningiomas. AJNR, 21(2):255-261, Feb 2000.