



Drug Delivery Embolisation System
INSTRUCTIONS FOR USE

STERILE
SINGLE USE ONLY
NON-PYROGENIC

Sterilised by steam
Do not use if the package is opened or damaged

DC Bead with doxorubicin

DESCRIPTION:

DC Bead are precisely calibrated, hydrogel Drug Delivery Embolisation System. DC Bead, are made from polyvinyl alcohol, are biocompatible, hydrophilic and non-resorbable.

DC Bead is capable of loading and eluting doxorubicin and is available in the following size ranges:

Nominal Bead Size	Label Colour	Upon loading with doxorubicin, DC Bead undergo a slight decrease in size, up to 20% when loading at 25mg/ml.
100 – 300 µm	Yellow	
300 – 500 µm	Blue	
500 – 700 µm	Red	
700 – 900 µm	Green	

PRESENTATION:

- 10 ml glass vial.
- Each vial contains approximately 2 ml of DC Bead in non-pyrogenic, sterile, physiological buffered saline solution. The total volume of saline and DC Bead is approximately 8ml.
- The vial is stopper sealed by an aluminum cap equipped with a colour-coded lid.
- Each vial is intended for single patient use only. Do not resterilize. Any unused material should be discarded.

INDICATIONS:

DC Bead[®] with doxorubicin is indicated for trans-arterial chemoembolization (TACE) of unresectable hepatocellular carcinoma (HCC).

CONTRAINDICATIONS – DC BEAD:

- Patients intolerant to vascular occlusion procedures.
- Vascular anatomy that precludes catheter placement or emboli injection.
- Presence or likely onset of vasospasm.
- Presence or likely onset of haemorrhage.
- Presence of severe atheromatous disease.
- Presence of feeding arteries smaller than distal branches from which they emerge.
- Presence of patent extra-to-intracranial anastomoses or shunts.
- Presence of collateral vessel pathways potentially endangering normal territories during embolization.
- Presence of end arteries leading directly to cranial nerves.
- Presence of arteries supplying the lesion not large enough to accept DC Bead.
- Vascular resistance peripheral to the feeding arteries precluding passage of DC Bead into the lesion.
- Do not use DC Bead in the following applications:
 - i. Embolization of non-malignant tumours.
 - ii. Embolization of large diameter arteriovenous shunts (i.e. where the blood does not pass through the arterial/capillary/venous transition but directly from artery to vein).
 - iii. Any vasculature where DC Bead Embolic Agent could pass directly into the internal carotid artery or other non-target territories.

CONTRAINDICATIONS – DOXORUBICIN:

- See doxorubicin package insert for contraindications regarding use.

WARNING: Studies have shown that DC Bead do not form aggregates and, as a result, penetrate deeper into the vasculature as compared to similarly sized PVA particles.

CAUTIONS:

- Do not use if the vial or packaging appears damaged.
- Select the size and quantity of DC Bead appropriate for the pathology to be treated.
- Embolization with DC Bead should only be performed by a physician with appropriate interventional occlusion training in the region intended to be embolized.
- **Exceeding a loading dose of 37.5mg doxorubicin per 1ml DC Bead may lead to some systemic distribution of doxorubicin and related side effects.**

POTENTIAL COMPLICATIONS:

- Undesirable reflux or passage of DC Bead into normal arteries adjacent to the targeted lesion or through the lesion into other arteries or arterial beds.
- Non-target embolization.
- Pulmonary embolization.
- Ischemia at an undesirable location.
- Capillary bed saturation and tissue damage.
- Ischemic stroke or ischemic infarction.
- Vessel or lesion rupture and haemorrhage.
- Neurological deficits including cranial nerve palsies.
- Vasospasm.
- Death.
- Recanalisation.
- Foreign body reactions necessitating medical intervention.
- Infection necessitating medical intervention.
- Clot formation at the tip of the catheter and subsequent dislodgement.

DRUG LOADING INSTRUCTIONS:

DC Bead is suitable for loading doxorubicin-HCl ONLY. Liposomal formulations of doxorubicin are not suitable for loading into DC Bead.

To obtain a final loading of 50mg doxorubicin per 2ml vial of DC Bead:

- i. Reconstitute a vial containing 50mg of doxorubicin with 2ml of sterile water for injection. Mix well to obtain a clear red solution (25mg/ml).
- ii. Remove as much saline as possible from a vial of DC Bead using a syringe with a small gauge needle.
- iii. Using a syringe and needle add the 2ml of reconstituted doxorubicin solution directly to the vial of DC Bead.
- iv. Agitate the DC Bead/doxorubicin solution occasionally to encourage mixing until the DC Bead is red. Although the solution retains a red colour, the doxorubicin will be loaded.
- v. Loading will take a minimum of 20 minutes for the smallest size DC Bead and up to 120 minutes for the largest size DC Bead.
- vi. Prior to use, transfer the DC Bead loaded with doxorubicin to a syringe and add an equal volume of non-ionic contrast media. Invert the syringe gently to obtain an even suspension of DC Bead.
- vii. A dose of up to 37.5mg doxorubicin per ml DC Bead can be loaded.
- viii. **The maximum recommended total dose of doxorubicin per procedure is 150mg.**

STORAGE OF DRUG LOADED DC BEAD:

DC Bead loaded with doxorubicin may be stored for up to 24 hours in a fridge at 2-8°C in the presence or absence of non-ionic contrast media.

DC Bead loaded with doxorubicin is physically and chemically stable for 14 days if stored in a refrigerator at 2-8°C. Once mixed with contrast media DC Bead loaded with doxorubicin is physically and chemically stable for 7 days if stored in a refrigerator at 2-8°C.

DELIVERY INSTRUCTIONS:

- Carefully evaluate the vascular network associated with the lesion using high resolution imaging prior to beginning the embolization procedure.
- DC Bead is available in a range of sizes. Care should be taken to choose the appropriate size of DC Bead that best matches the pathology (i.e. vascular target/vessel size) and provides the desired clinical outcome.

- Choose a delivery catheter based on the size of the target vessel. DC Bead 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.
- DC Bead is not radio-opaque. It is recommended to monitor the embolization under fluoroscopic visualization by adding the desired amount of contrast medium to the suspension fluid.
 - Take care to ensure proper suspension of the DC Bead in the contrast medium to enhance distribution during injection.
 - Draw the DC Bead into a syringe needle of a size greater than or equal to 19 gauge (1.07 mm).
 - Slowly inject DC Bead into the delivery catheter under fluoroscopic visualization while observing the contrast flow rate. Exercise conservative judgment in determining the embolization endpoint.
- Upon completion of the treatment, remove the catheter while maintaining gentle suction so as not to dislodge DC Bead still within the catheter lumen.
- Discard any unused DC Bead loaded with doxorubicin.
- The recommended size of catheter for each bead size are outlined below:

Nominal Bead Size	Recommended Catheter for unloaded DC Bead	Recommended Catheter for Doxorubicin Loaded DC Bead
100 – 300µm	> 2.4 Fr	> 2.4 Fr
300 – 500µm	> 2.4 Fr	> 2.4 Fr
500 – 700µm	> 2.7Fr	> 2.7 Fr
700 – 900µm	> 4.0 Fr	> 4.0 Fr

CONSERVATION AND STORAGE:

- Store unopened DC Bead in a cool, dry and dark place in its original packaging.
- Use by the date indicated on the vial label.
- Do not freeze.

DC Bead with irinotecan

DESCRIPTION:

Upon loading with Irinotecan, DC Bead undergo a slight decrease in size, up to 30% when loading at 50mg/ml.

INDICATIONS:

DC Bead are intended to be loaded with irinotecan for the purpose of:

- Embolization of vessels supplying malignant colorectal cancer metastasised to the liver (mCRC)
- Delivery of a local, controlled, sustained dose of irinotecan to the mCRC.

CONTRAINDICATIONS - irinotecan:

See irinotecan package insert for contraindications regarding use.

CAUTIONS:

On addition of contrast/water mixture to loaded beads some irinotecan will be eluted. On delivery a bolus of between 10-20mg irinotecan may be delivered. Exceeding a loading dose of 50mg irinotecan per 1ml DC Bead may lead to some systemic distribution of irinotecan and related side effects. Do not use irinotecan loaded DC Bead with contrast agents containing salts (eg. Calcium chloride)

DRUG LOADING INSTRUCTIONS:

DC Bead are suitable for loading irinotecan solution (20mg/ml) ONLY.

To obtain a final loading of 100mg Irinotecan per 2ml vial of DC Bead:

- Remove as much saline as possible from a vial of DC Bead using a syringe with a small gauge needle.
- Using a syringe and needle add the 5ml of Irinotecan solution directly to the vial of DC Beads.
- Agitate the DC Bead / irinotecan solution gently to encourage mixing then allow to stand. The beads will turn a turquoise colour as the loading progresses.
- Loading will take a minimum of 2hrs for all sizes of DC Bead.
- Prior to use, transfer the DC Bead loaded with irinotecan to a syringe and add an equal volume of non-ionic contrast media. Invert the syringe gently to obtain an even suspension of DC Bead.

- A dose of up to 50mg Irinotecan per ml DC Bead can be loaded.
- The maximum recommended total dose of Irinotecan per procedure is 200mg.

STORAGE OF DRUG LOADED DC BEADS:

DC Bead loaded with irinotecan may be stored for up to 24 hours in a fridge at 2-8°C or 4 hrs at room temperature in the presence or absence of non-ionic contrast media.

DC Bead loaded with irinotecan is physically and chemically stable for 14 days if stored in a refrigerator at 2-8°C. Once mixed with contrast media DC Bead loaded with irinotecan must be used immediately.

DELIVERY INSTRUCTIONS:

Discard any unused DC Bead loaded with irinotecan.

The following table shows the sizes of catheter which are compatible with delivering the product.

Microcatheter Size	Loading with irinotecan	Compatible DC Bead	
		100-300µm	300-500µm
5Fr	Unloaded	Y	Y
	Loaded	Y	Y
3.0 Fr	Unloaded	Y	Y
	Loaded	Y	Y
2.7 Fr	Unloaded	Y	Y
	Loaded	Y	Y
2.4Fr	Unloaded	Y	Y
	Loaded	Y	Y
2.3 Fr	Unloaded	Y	Y
	Loaded	Y*	Y*
1.8 Fr	Unloaded	Y	Y
	Loaded	Y*	Y*

*Not tested but expected to deliver without any issues

PACKAGE LABEL:

REF Catalogue number	Steam Sterilised	Protect from moisture
LOT Batch number/Lot number	Use before/Expiry	Attention see instructions for use
Do not reuse	Protect from light	Do not freeze