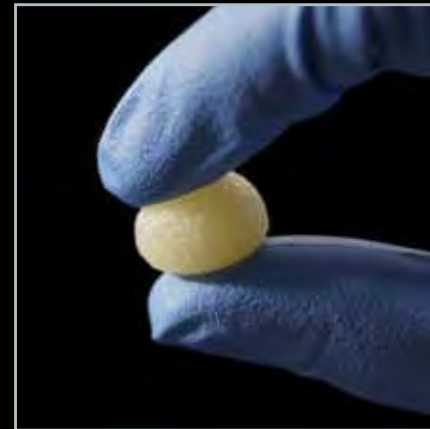


CenoBiologics

Technology Enhancing Life



What we do

We process and produce Bioimplants: Processed allograft bioimplants support tissue repair with a scaffold-like matrix having an all natural structure and composition. A biomaterial that does not encapsulate when surgically implanted, but is gradually remodelled, leaving behind organized tissue. It sounds like futuristic technology - but it is available today.

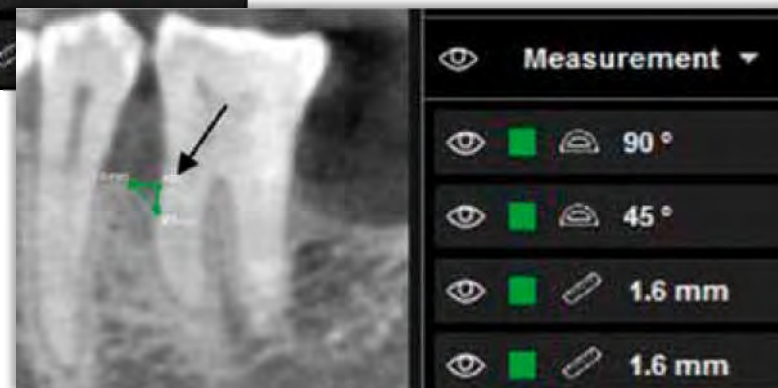
Biomaterials for replacement or repair of damaged tissues are utilized in a number of surgical procedures. The ideal material needs to be strong, easy to handle, and biocompatible, while supporting growth of new tissue. They are available pre-shaped to exact specifications.

Over years of production and usage of our product there is a proved product efficacy, used by surgeons in a wide variety of implant operations (see Refs).

2)



Before operation



Bone generation after CenoBone™ graft usage

Quality Assurance

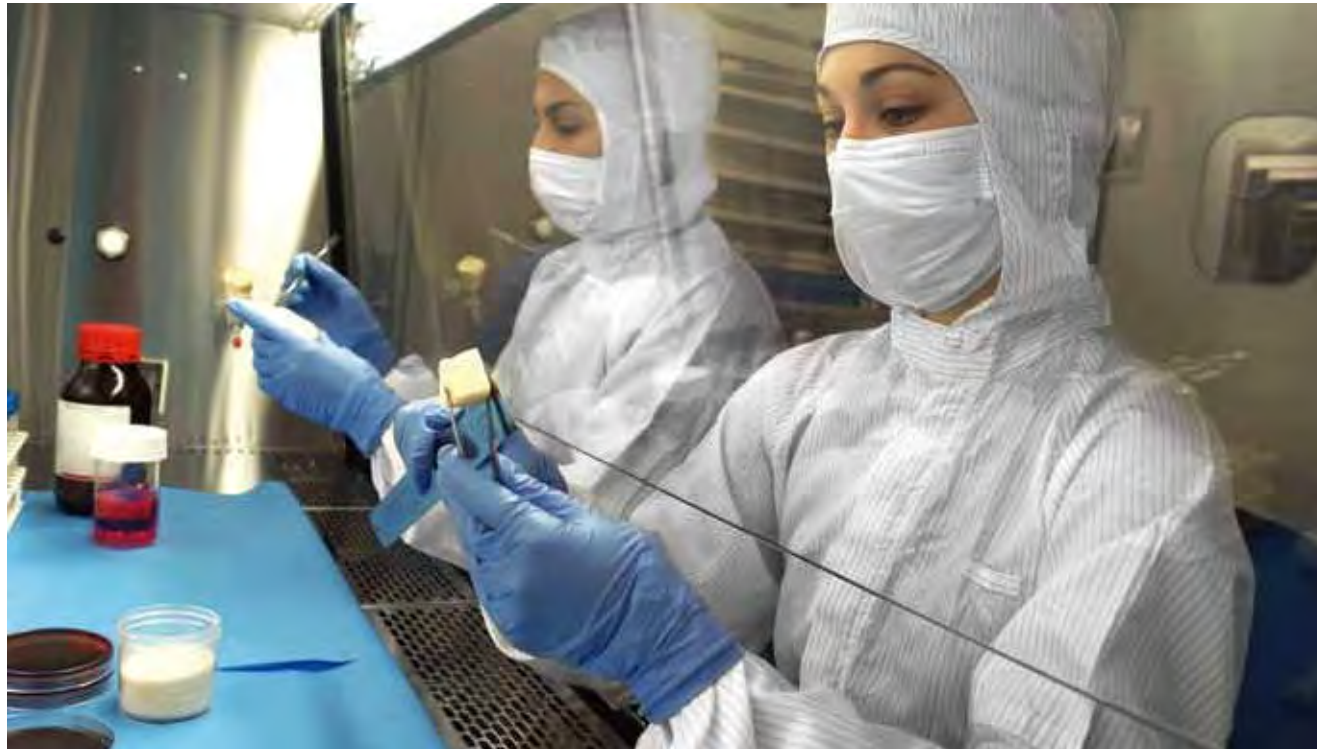
Every donated tissue is obtained by lawful consent and the donor's medical history, physical examination and Autopsy finding is considered before any tissue is accepted. Each donated tissue is tested using microbiologic and serologic tests, e.g. HBs Ag, HBc Ab, HIV Ab (1 & 2), HTLV Ab (I & II), RPR with ELISA method and complimentary tests, such as PCR method and FTA.

Preservation is achieved by lyophilisation (freeze drying); low temperature freezing or low pressure (1.5 Bar) medical grade liquid nitrogen.

With a SAL of 10^{-6} achieved with the use of Class II Microbiological Hoods, Hydrogen Peroxide Vapour decontamination (Bioquell) and Gamma sterilization of products and packaging, we can be sure of the safety of our products.

All procedures are carried out according to current Good Tissue Practice (cGTP) and the use of high standards of clean rooms to run its SOPs (Standard Operation Protocols) for the safety of personnel and environment.

We have developed robust quality management and monitoring processes to ensure the integrity of our tissue samples. Our inventory system maintains a full and detailed record of all samples, which allows for full traceability. Data held for each sample includes information on dates and times of storage, a continuous record of the storage temperature and a full audit trail detailing who has accessed the system and what changes were made. All data is securely held electronically in protected off-site data repositories for at least 30 years.



Our Advantage

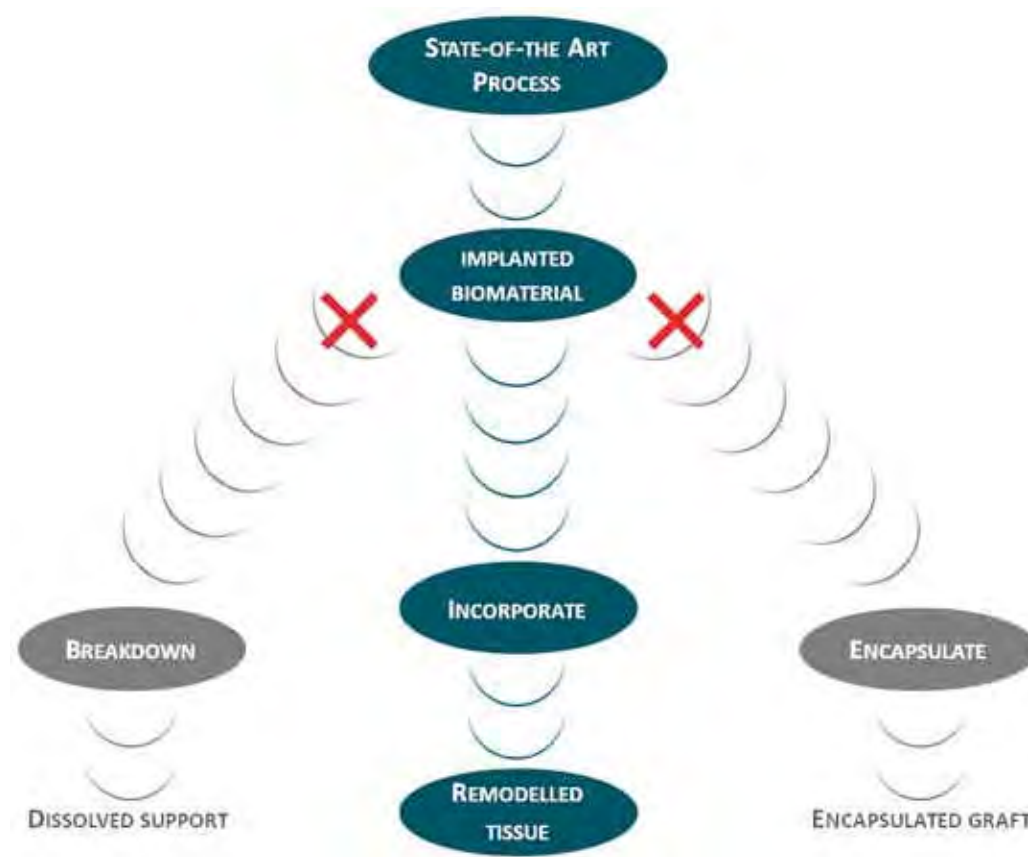
We supply our products and medical devices worldwide to medical centres; hospitals & doctors on a regular basis or as special orders for patients in urgent need. Our delivery rates to Europe and the Middle East outclass our competitors and the quality of our products is consistent, regardless of the destination.

Outreach

We provide a training service for overseas clients in the areas of tissue engineering and medical devices, such as biological graft and bioimplant surgery, special instrument and mould design.

As part of our commitment to advancing allograft engineering, Cenobiologics invests heavily in research and development. We are open to the possibility of joint research ventures.

4



Possible results of implanted biomaterials.

Our state-of-the-art processes guarantee that implanted tissue is incorporated into the patient's own remodelled tissue.



Musculoskeletal products

CenoBone™

A wide range of graft types are available for patients with bone cysts, malignancies, degenerative diseases, traumatic injuries or periodontal, spinal and maxillofacial reconstructive surgery. Bone grafts are frozen or freeze-dried to provide a structural matrix for new bone growth. Demineralized bone is available as an osteoinductive agent.

We produce a variety of pre-shaped Bioimplants for ease of use, such as powder, crushed and chips, wedge, ring, and segments.

CenoBone™-Putty & CenoBone™-Gel are delivered in wide mouth Jars and syringes respectively, ready for use. User-friendly, they deliver bone powder precisely where the surgeon requires it.

This catalogue only shows some of the products we produce. Please contact us for information about your enquiry.

Email: info@cenobiologics.co.uk

Cortical Cancellous Powder

Code	Description	Volume
19045	150-2000µm	5cc
19046	150-2000µm	10cc
19049	150-2000µm	20cc
19048	150-2000µm	30cc



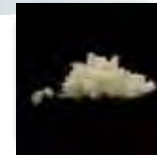
Cortical Cancellous Crushed

Code	Description	Volume
19055	2-5mm	5cc
19056	2-5mm	10cc
19059	2-5mm	20cc
19058	2-5mm	30cc



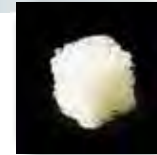
Cortical Cancellous Chips

Code	Description	Volume
19065	2-10mm	5cc
19066	2-10mm	10cc
19069	2-10mm	20cc
19068	2-10mm	30cc



Cancellous Cubes

Code	Description	Volume
19075	5x5x5mm	5cc
19076	5x5x5mm	10cc
19079	5x5x5mm	20cc
19085	10x10x10mm	5cc
19086	10x10x10mm	10cc
19089	10x10x10mm	20cc



Cancellous Matchsticks

Code	Description	Volume
19092	5x35mm	5 Pieces
19093	5x35mm	10 Pieces



Cortico-Cancellous Strip

Code	Description	Thickness	Volume
19155	20x40mm	(T)>= 4mm	1 Piece
19156	20x60mm	(T)>= 4mm	1 Piece



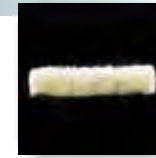
Cancellous Block

Code	Description	Volume
19181	15x15x30mm	1 Piece
19182	20x20x30mm	1 Piece



Demineralized Cancellous Matchsticks

Code	Description	Volume
19492	5x35mm	5 Pieces
19493	5x35mm	10 Pieces



Demineralized Cortical Cancellous Powder

Code	Description	Volume
19445	150-2000µm	5cc
19446	150-2000µm	10cc
19449	150-2000µm	20cc



Demineralized Cancellous Block

Code	Description	Volume
19501	15x15x30mm	1 Piece
19502	20x20x30mm	1 Piece



Demineralized Cortical Cancellous Crushed

Code	Description	Volume
19455	2-5mm	5cc
19456	2-5mm	10cc
19459	2-5mm	20cc



CenoBone™ Putty

Code	Description	Volume
19710	FDBA	0.25cc
19711	FDBA	0.5cc
19712	FDBA	1cc
19714	FDBA	2.5cc
19715	FDBA	5cc
19716	FDBA	10cc
19750	DFDBA	0.25cc
19751	DFDBA	0.5cc
19752	DFDBA	1cc
19754	DFDBA	2.5cc
19755	DFDBA	5cc
19756	DFDBA	10cc



Demineralized Cortical Cancellous Chips

Code	Description	Volume
19465	2-10mm	5cc
19466	2-10mm	10cc
19469	2-10mm	20cc



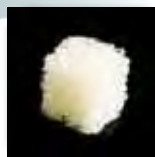
CenoBone™ Gel

Code	Description	Volume
19611	FDBA	0.5cc
19612	FDBA	1cc
19614	FDBA	2.5cc
19615	FDBA	5cc
19651	DFDBA	0.5cc
19652	DFDBA	1cc
19654	DFDBA	2.5cc
19655	DFDBA	5cc



Demineralized Cancellous Cubes

Code	Description	Volume
19475	5x5x5mm	5cc
19476	5x5x5mm	10cc
19479	5x5x5mm	20cc
19485	10x10x10mm	5cc
19486	10x10x10mm	10cc
19489	10x10x10mm	20cc



Shaft / Segment

Femoral	Code	Description	Quantity
	10120	H= 20mm	1 Piece
	10124	H= 100mm	1 Piece



Tibial	Code	Description	Quantity
	11120	H= 20mm	1 Piece
	11124	H= 100mm	1 Piece



Fibular	Code	Description	Quantity
	12120	H= 20mm	1 Piece
	12124	H= 100mm	1 Piece



Cross Section (Parallel)

Femoral	Code	Description	Quantity
	10113	H=10mm	1 Piece
	10118	H= 20mm	1 Piece



Tibial	Code	Description	Quantity
	11113	H=10mm	1 Piece
	11118	H= 20mm	1 Piece



Fibular	Code	Description	Quantity
	12111	H= 5mm	1 Piece
	12115	H= 14mm	1 Piece



Fibular Wedge	Code	Description	Quantity
	12132	H= 8mm	1 Piece
	12135	H= 14mm	1 Piece



Ilium Bicortical Strip

Code	Description	Thickness	Quantity
16165	20x40mm	(T)= 8-16mm	1 Piece
16166	20x60mm	(T)= 8-16mm	1 Piece



Tricortical Iliac Crest Wedge

Code	Description	Thickness	Quantity
16133	H= 10mm	L= 22-40mm	1 Piece
16138	H= 20mm	L= 22-40mm	1 Piece



Tricortical Iliac Crest Strip

Code	Description	Thickness	Quantity
16172	10x20mm	(T)= 8-30mm	1 Piece
16179	10x30mm	(T)= 8-30mm	1 Piece
16175	20x40mm	(T)= 8-30mm	1 Piece
16176	20x60mm	(T)= 8-30mm	1 Piece



Tricortical Patellar Wedge

Code	Description	Length	Quantity
19133	H= 10mm	L= 22-40mm	1 Piece
19138	H= 20mm	L= 22-40mm	1 Piece



Tibial Wedge

Code	Description	Length	Quantity
11133	H= 10mm	L= 22-60mm	1 Piece
11138	H= 20mm	L= 22-60mm	1 Piece



Osteochondral grafts

Osteochondral allografts (OCA) can be used in joint restoration procedures, treatment of individuals with symptomatic, disabling cartilage injury or disease. It can provide significant relief from pain and improved joint function for individuals with focal articular cartilage defects due to trauma or osteochondritis dissecans.

Orthopaedic surgeons perform limb-sparing procedures when transplanting large cryopreserved bone grafts such as whole femurs, tibias, ulnas and humerus into patients who, without the graft, may face amputation. These large grafts are also utilized for revisions of metallic total hip and knee replacements, which have failed.

If the surgeon needs to match the size, then the patient's X-ray will be reviewed and best match suggested.

Most of the popular osteochondral grafts are listed below but Please contact your representative for information about items not listed below:

- *Distal / Proximal / whole Femur*
- *Distal / Proximal / whole Tibia*
- *Distal / Proximal / whole Humorous*
- *Distal / Proximal / whole Ulna*
- *Distal / Proximal / whole Radius*

Email: info@cenobiologics.co.uk

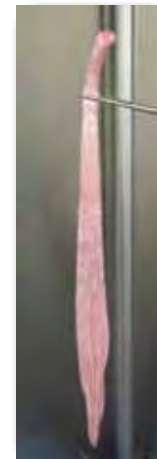
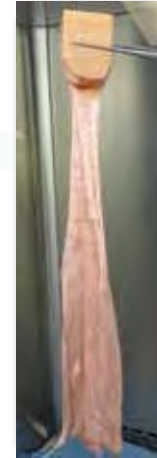


CenoTendon

Frozen Patellar and Achilles tendons are provided for patients who have traumatically ruptured their anterior cruciate ligament and have knee instability. Used in sport injury operations, tendon soft tissue augmentation or repair, our Achilles tendons come with or without Calcaneus.

CenoTendon

Code	Item	Description	Size
41209	Patellar Bone + Patellar Tendon + Tibial Bone (BTB)	Pre-shaped	(W)= 13-17mm (L)= 80-105mm
42201	Achilles Tendon with Calcaneus	Whole	(W)= 10-20mm (L)= 160-300mm
42202	Achilles Tendon with Calcaneus	Hemi	(W)= 6-12mm (L)= 160-300mm
42101	Achilles Tendon without Calcaneus	Whole	(W)= 10-20mm (L)= 160-300mm
42102	Achilles Tendon without Calcaneus	Hemi	(W)= 6-12mm (L)= 160-300mm
45101	Proneus Longus Tendon	Whole	(Folded Diameter)= 6-12mm (L)= 220-380mm
44101	Posterior Tibialis Tendon	Whole	(Folded Diameter)= 6-12mm (L)= 220-380mm
43101	Anterior Tibialis Tendon	Whole	(Folded Diameter)= 6-12mm (L)= 220-380mm
46101	Semitendinous Tendon	Whole	(W)= 3-10mm (L)= 220-380mm
47101	Gracilis Tendon	Whole	(W)= 3-10mm (L)= 220-380mm
48203	Medial Meniscus	With Tibial Plateau Bone Block	W/L varies
48204	Lateral Meniscus	With Tibial Plateau Bone Block	W/L varies



Reconstructive Membrane Products

CenoMembrane™

An acellular matrix derived from dermal, Fascia Lata or Pericardial membrane is useful for different kinds of reconstructive surgery and offers numerous advantages compared to connective tissue auto grafts from the patient's palate. Also membrane prepared from amniotic membrane is used in ophthalmology, dermatology and neurosurgery.

Membrane is provided in different thicknesses and origin and could be selected for specific treatment.

Membrane grafts are provided for patients suffering from severe burns. These grafts serve as a temporary covering to promote healing, reduce pain and prevent fluid loss and infection which can be dangerous in these immune compromised patients.

AmniPatch

Code	Item	Size
35903	Antibiotic Impregnated Amniotic Membrane	20x20mm
35908	Antibiotic Impregnated Amniotic Membrane	50x50mm
35916	Antibiotic Impregnated Amniotic Membrane	100x100mm

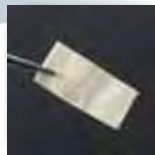


This catalogue only shows some of the products we produce. Please contact us for information about your enquiry.

Email: info@cenobiologics.co.uk

CenoMembrane™

Code	Description	Thickness	Quantity
36100	10x10mm	T= 0.2-0.6mm	1 Piece
36103	20x20mm	T= 0.2-0.6mm	1 Piece
36106	20x40mm	T= 0.2-0.6mm	1 Piece
36200	10x10mm	T= 0.6-0.9mm	1 Piece
36203	20x20mm	T= 0.6-0.9mm	1 Piece
36206	20x40mm	T= 0.6-0.9mm	1 Piece
36300	10x10mm	T= 1-1.4mm	1 Piece
36303	20x20mm	T= 1-1.4mm	1 Piece
36306	20x40mm	T= 1-1.4mm	1 Piece



CenoDerm

Code	Description	Thickness	Quantity
31100	10x10mm	T= 0.2-0.6mm	1 Piece
31103	20x20mm	T= 0.2-0.6mm	1 Piece
31106	20x40mm	T= 0.2-0.6mm	1 Piece
31200	10x10mm	T= 0.6-0.9mm	1 Piece
31203	20x20mm	T= 0.6-0.9mm	1 Piece
31206	20x40mm	T= 0.6-0.9mm	1 Piece
31300	10x10mm	T= 1-1.4mm	1 Piece
31303	20x20mm	T= 1-1.4mm	1 Piece
31306	20x40mm	T= 1-1.4mm	1 Piece
31400	10x10mm	T> 1.4mm	1 Piece
31403	20x20mm	T> 1.4mm	1 Piece
31406	20x40mm	T> 1.4mm	1 Piece



Cardiovascular products

CenoValve™ & CenoVein

Aortic and pulmonary valve allografts have a wide range of uses in cardiovascular surgery and are used to repair both congenital malformations and acquired valvular disease in adults. Because allograft heart valves are natural human valves, they provide advantages over prosthetic and porcine valve replacements and do not require the preventative use of anticoagulants postoperatively. Cenobiologics provides pulmonary conduit with first and second order pulmonary artery branches (see conduit). Pericardial and pulmonary patches are also supplied.

This catalogue only shows some of the products we produce. Please contact us for information about your enquiry.

Email: info@cenobiologics.co.uk

CenoValve™ Aortic Heart Valve

Code	Item	Size
21109	Aortic Heart Valve	D= 9mm
21111	Aortic Heart Valve	D= 11mm
21113	Aortic Heart Valve	D= 13mm
21115	Aortic Heart Valve	D= 15mm
21117	Aortic Heart Valve	D= 17mm
21119	Aortic Heart Valve	D= 19mm
21121	Aortic Heart Valve	D= 21mm
21123	Aortic Heart Valve	D= 23mm
21125	Aortic Heart Valve	D= 25mm
21127	Aortic Heart Valve	D= 27mm
21129	Aortic Heart Valve	D= 29mm
21131	Aortic Heart Valve	D= 31mm



CenoValve™ Pulmonary Heart Valve

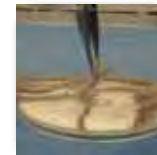
Code	Item	Size
21209	Pulmonary Heart Valve	D= 9mm
21211	Pulmonary Heart Valve	D= 11mm
21213	Pulmonary Heart Valve	D= 13mm
21215	Pulmonary Heart Valve	D= 15mm
21217	Pulmonary Heart Valve	D= 17mm
21219	Pulmonary Heart Valve	D= 19mm
21221	Pulmonary Heart Valve	D= 21mm
21223	Pulmonary Heart Valve	D= 23mm
21225	Pulmonary Heart Valve	D= 25mm
21227	Pulmonary Heart Valve	D= 27mm
21229	Pulmonary Heart Valve	D= 29mm
21231	Pulmonary Heart Valve	D= 31mm



Code	Item	Size
21309-21331	Aortic Conduit	D= 9-31mm
21409-21431	Pulmonary Conduit	D= 9-31mm



Code	Item	Size
22101	Femoral Artery	L< 50mm D= 5-15mm
22102	Femoral Artery	L= 50-100mm D= 5-15mm
22103	Femoral Artery	L>100mm D= 5-15mm
22201	Saphenous Vein	L< 40cm D= 2-4mm
22202	Saphenous Vein	L= 40-80cm D= 2-4mm
22203	Saphenous Vein	L> 80cm D= 2-4mm



Code	Item	Size
23103	Pulmonary Patch	20x20mm
23106	Pulmonary Patch	20x40mm
23109	Pulmonary Patch	20x60mm
23203	Pericardial Patch	20x20mm
23208	Pericardial Patch	50x50mm
23216	Pericardial Patch	100x100mm



Additional Resources

Bioimplant implantation and preparation of samples, such as thawing of cryopreserved products etc. require special solutions and supplies of a proper medical grade, which can come into contact and be used with Bioimplants.

Cenobiologics Ltd supplies solutions and sterile packaging which are processed in suitable certified cleanrooms and then sterilized with a validated system. This service is available through our well-known and high technology partner company, which manufactures under ISO9001:2008 & ISO13485:2003 compliant quality systems. These include Sterile Tyvek and foil pouches, thawing solutions, special Buffers, cell storage and culture medium.

Please send your enquiries to our Main Office, see contact details, back page.



Special Solutions



CenoFoil Pouches



Ordering information

Order enquiries can be sent to your local distributor or our UK Main Office (see back page for contact details).

CenoValve Description forms, detailing information and photographs of each valve can be sent in advance of official orders, for size and quality assurance for the Surgeon. Once selected, the ordered product will be reserved and shipped at a speedy and highly competitive rate.



Shipping

CenoBiologics has been audited for IATA (Dangerous Goods Regulations) and can ship Human tissue based products, including cryo-preserved or deep frozen products in dry ice or in a vapour phase LN₂ container (-130°C). The shipment process would be carried out under CenoBiologics' Licence.

Validated dry ice shippers preserve the integrity of the product for 48 hours during their journey.

A freezer may be required by the Client, in order to preserve the products in dry ice. Products transported in dry ice must not be stored in LN₂.

In the case of products transported in LN₂, a Vapour Phase LN₂ Shipper would preserve them and they could be stored in an LN₂ freezer.

All products have expiry dates and instructions on storage, thawing and rehydration, prior to transplantation.



References

- Vaziri S, Vahabi S, Torshabi M, Hematzadeh S. In vitro assay for osteoinductive activity of different demineralized freeze-dried bone allograft. *J Periodontal Implant Sci.* 2012 Dec; 42(6):224-30.
- Abed AM, Pestekan RH, Yaghini J, Razavi SM, Tavakoli M, Amjadi M. A comparison of two types of decalcified freeze-dried bone allograft in treatment of dehiscence defects around implants in dogs. *Dent Res J.* 2011 Sum; 8(3):132-7.
- Seifi M, Ghorraishian SA. Determination of orthodontic tooth movement and tissue reaction following demineralized freeze-dried bone allograft grafting intervention. *Dent Res.* 2012 Mar; 9(2):203-8.
- Abolfazli N, Saleh Saber F, Lafzi A, Eskandari A, Mehrasbi S. A clinical comparison of Cenobone (a decalcified freeze-dried bone allograft) with autogenous bone graft in the treatment of two- and three- wall intrabony periodontal defects: A human study with six-month re-entry. *J Dent Res Dent Clin Dent Prospects.* 2008 Win; 2(1):1-8.
- Behfarnia P, Shahabooui M, Mashhadiabbas F, Fakhari E. Comparison of bone regeneration using three demineralized freeze-dried bone allografts: A histological and histomorphometric study in rabbit calvaria. *Dent Res J.* 2012 Sep; 9(5):554-60.





CenoBiologics, Ltd.
Everest House, Rockingham Drive,
Linford Wood East, MK146LY
Milton Keynes, United Kingdom,
Tel: +44 (0)1908 990110
Email: info@ceno.co.uk
www.cenobiologics.co.uk