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LIGAMED

A biotechnology company that focuses on the development, manufacturing and marketing of innovative and functional biomaterials.

Ligamed Medical Co. Ltd. is one the leading company in the world that can produce osteoinductive and osteoconductive synthetic bone graft materials, barrier membrane, bone cement and cartilage graft. Ligamed R&D activites take place at Ege University Technology Development Centre under ISO-7 (Class 10000). Since 2016 production to ISO-5, ISO 6 and ISO-7 (Class 100,1000,10,000) conditions takes place in Manisa.

In addition to expert employees, high technology and strongcapital, Ligamed Medical customer service exceeds Internationally recognised quality and management standards.



VISION-MISSION

Our Vision;

Our aims are to become a globally competitive and respected biomaterials company that draws attention to developed strategic innovations and to bring the name and power of our country in the field of biomaterials manufacturing to the top.

Our Mission;

To have the widest and most innovative biomaterials range in the field of orthopedic, spine, trauma, and dental surgeries with the maximum investment power to R&D studies.



CLEAN ROOMS



Ligamed's modern production facility is electronically controlled. Multiple production parameters are observed in real time 24/7 according to ISO7 standard. The production areas ar monitored according to ISO14644 Class 10.000 and Fed.Std.209 D, ISO5. ISO 14644 is applied to the clean rooms and packaging areas to Fed.Std.209D.

Quality

Quality control is carried out in accordance with production instructions using measurement devices unique to each specific medical device.

BIOMATERIAL INNOVATION REPLACED BY NEW BONE

- Innovative Flexible Bone Graft
- Connected high pore structure, cross-section of bone grafts for different geometries and sizes
- Bone graft in injectable form that does not require mixing

R&D

Our R&D unit, located in Ege University Technology Development Zone has a special focus on novel synthetic technologies designed for tissue engineering and regeneration of bone and cartilage tissue.

LIGAMED PRODUCT TECHNOLOGY

Ligamed products are designed to repair bone defects caused by surgery or traumatic injury, to increase bone formation or support the formation of new bone tissue in non-load bearing sites. Many of our biomaterials can be mixed with bone marrow, blood products, pharmaceuticals such as antibiotics or other bone grafts materials.



CERTIFICATES



-130 - 13403

•ISO 9001

•CE Certificates for each product groups



PRODUCTS

SILICATE ADDITIVE GRANULE, STICK, BLOCK & WEDGE

Osteoconductive and Osteoinductive

- The high porosity of Ligamed products support initial clot stabilisation.
- Calcium phosphate provides a conductive scaffold for blood vessels and bone stimulating cells - a structure very similar to the mineral component of natural bone.
- Ligamed materials include silicate which increases circulating protein retention giving bioactive characteristics to the graft.



Biodegradable

Biodegradable with Full Resorption. With its optimized porous structure and chemical composition, Ligamed grafts are optimised for bone healing. During the healing process, silicate is adsorbed first followed by the B-TCP scaffold in 4-6 months promoting replacement with native new bone.



Safe, Biocompatible and Sterile

Ligamed grafts are supplied sterile and CE marked as a Class III Medical Device according to 93/42 / EC directive. Biocompatibility (in vitro and in vivo), biodegradation, bioburden and sterility tests are applied to each material.

Radiopaque

CT and X-ray traceability is possible.





B ±1	

Ligamed Granule



Ligamed Granule in the Bottle



Reference Code	Size	Volume	Reference Code	Size	Volume
LC02501005	0.25-1 mm	0,5 cc	LC020415	2-4 mm	15 cc
LC02501010	0.25-1 mm	1 cc	LC020420	2-4 mm	20 cc
LC02501020	0.25-1 mm	2 cc	LC020430	2-4 mm	30 cc
LC05001005	0.5-1 mm	0,5 cc	LC030505	3-5 mm	5 cc
LC05001010	0.5-1 mm	1 cc	LC030510	3-5 mm	10 cc
LC05001020	0.5-1 mm	2 cc	LC030515	3-5 mm	15 cc
LC05001050	0.5-1 mm	5 cc	LC030520	3-5 mm	20 cc
LC05001075	0.5-1 mm	7,5 cc	LC0305230	3-5 mm	30 cc
LC05001100	0.5-1 mm	10 cc	LC040705	4-7 mm	5 cc
LC10002005	1-2 mm	0,5 cc	LC0407075	4-7 mm	7,5 cc
LC10002010	1-2 mm	1 cc	LC040710	4-7 mm	10 cc
LC10002020	1-2 mm	2 cc	LC040715	4-7 mm	15 cc
LC10002050	1-2 mm	5 cc	LC040720	4-7 mm	20 cc
LC10002075	1-2 mm	7,5 cc	LC040730	4-7 mm	30 cc
LC10002100	1-2 mm	10 cc	LC070905	7-9 mm	5 cc
LC10002150	1-2 mm	15 cc	LC0709075	7-9 mm	7,5 cc
LC10002200	1-2 mm	20 cc	LC070910	7-9 mm	10 cc
LC10002300	1-2 mm	30 cc	LC070915	7-9 mm	15 cc
LC020405	2-4 mm	5 cc	LC070920	7-9 mm	20 cc
LC02004075	2-4 mm	7,5 cc	LC070930	7-9 mm	30 cc
LC020410	2-4 mm	10 cc			

Size

1-2 mm

1-2 mm

1-2 mm

1-2 mm

1-2 mm

Volume

0,5 cc

1 cc

2 cc

5 cc

10 cc

Reference Code	Size	Volume	Reference Code
LCSGB02501005	0.25-1 mm	0,5 cc	LCSGB10002005
LCSGB02501010	0.25-1 mm	1 cc	LCSGB10002010
LCSGB02501020	0.25-1 mm	2 cc	LCSGB10002020
LCSGB05001005	0.5-1 mm	0,5 cc	LCSGB10002050
LCSGB05001010	0.5-1 mm	1 cc	LCSGB10002100
LCSGB05001020	0.5-1 mm	2 cc	
LCSGB05001050	0.5-1 mm	5 cc	
LCSGB05001100	0.5-1 mm	10 cc	

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Ligamed Stick, Block & Wedge



Reference Code	Size	Volume
LS44204	4x4x20 mm (4 pcs)	8,10 cc
LS44205	4x4x20 mm (5 pcs)	10,13 cc
LS44206	4x4x20 mm (6 pcs)	12,15 cc
LS55204	5x5x20 mm (4 pcs)	16,50 cc
LS55205	5x5x20 mm (5 pcs)	20,63 cc
LS55206	5x5x20 mm (6 pcs)	24,76 cc
LS55254	5x5x25 mm (4 pcs)	18,80 cc
LS55255	5x5x25 mm (5 pcs)	23,50 cc
LS55256	5x5x25 mm (6 pcs)	25,00 cc
LSC3204	3x20 mm (4 pcs)	7,80 cc
LSC4204	4x20 mm (4 pcs)	10,40 cc
LSC6204	6x20 mm (4 pcs)	15,56 cc
LSC8204	8x20 mm (4 pcs)	20,76 cc
LW082530	8x25x30 mm	7,65 cc
LW102530	10x25x30 mm	10,15 cc
LW122530	12x25x30 mm	15,15 cc
LW142530	14x25x30 mm	20,15 cc

SILICATE ADDITIVE FLEXIBLE STRIP



Ligamed Flexible Strip is a biodegradable synthetic bone graft that is easy to use due to its high elasticity, especially in bone defects of the pelvis and lower extremities as well as posteriolateral spinal fusion cases. Dental applications include ridge augmentation as an alternative to autogenous bone plates.

Ligamed Flexible Strip consists of silicate-added B-TCP embedded inside a PLA based synthetic polymer lattice of varying thicknesses. Osteoinductive characteristic are achieved through the addition of silicate to the embedded Ligamed graft material.



Ligamed Flexible Strip Implantation;

- Ligamed Flexible Strip can be applied to the surgical area directly or combined with bone marrow aspirate or blood.
- When wetted the flexibility of Ligamed Flexible Strip increases significantly.
- Ligamed Flexible Strip must be implanted just before all metallic implants are stabilized and the surgical site is closed.
- Ligamed Flexible Strip can be cut and placed in the spinal cage.
- Ligamed Flexible Strip gains osteoinductive characteristic due to silicate addition to the product content.

Ligamed Flex



Reference Code	Size	Volume	Reference Code	Size	Volume
LFS25254	25x25x4mm	2,50 cc	LFS50754	50x75x4mm	15,00 cc
LFS25504	25x50x4mm	5,00 cc	LFS60505	60x50x5mm	15,00 cc
LFS30306	30x30x6mm	5,40 cc	LFS251006	25x100x6mm	15,00 cc
LFS25505	25x50x5mm	6,25 cc	LFS75405	75x40x5mm	15,00 cc
LFS25506	25x50x6mm	7,50 cc	LFS251008	25x100x8mm	20,00 cc
LFS25754	25x75x4mm	7,50 cc	LFS501004	50x100x4mm	20,00 cc
LFS25804	25x80x4mm	8,00 cc	LFS60606	60x60x6mm	21,60 cc
LFS201004	20x100x4mm	8,00 cc	LFS45806	45x80x6mm	21,60 cc
LFS25508	25x50x8mm	10,00 cc	LFS50756	50x75x6mm	22,50 cc
LFS25805	25x80x5mm	10,00 cc	LFS501006	50x100x6mm	30,00 cc
LFS50504	50x50x4mm	10,00 cc	LFS751004	75x100x4mm	30,00 cc
LFS201005	20x100x5mm	10,00 cc	LFS701104	70x110x4mm	30,00 cc
LFS251004	25x100x4mm	10,00 cc	LFS25252	25x25x2mm	
LFS35605	35x60x5mm	10,50 cc	LFS25502	25x50x2mm	
LFS25806	25x80x6mm	12,00 cc	LFS25503	25x50x3mm	
LFS60504	60x50x4mm	12,00 cc	LFS25802	25x80x2mm	
LFS201006	20x100x6mm	12,00 cc	LFS35602	35x60x2mm	
LFS251005	25x100x5mm	12,50 cc	LFS201002	20x100x2mm	
LFS35606	35x60x6mm	12,60 cc			
LFS50506	50x50x6mm	15,00 cc			
LFS50754	50x75x4mm	15,00 cc			
LFS60505	60x50x5mm	15.00 cc			

SILICATE ADDITIVE PUTTY



- Minimally invasive surgical application.
- Quick and easy application. Does not require mixing.
- Accelerates Bone formation.
- Designed for the healthy development of bone and periodontal support tissue.



- Composed of silicate added B-TCP and resorbable cellulose carriers of varying viscosities.
- Ligamed syringe delivered grafts gains osteoinductive properties due to silicate addition.

Ligamed Putty



Reference Code	Volume
LPS005	0,5 cc
LPS01	1 cc
LPS015	1,5 cc
LPS02	2 cc
LPS03	3 сс
LPS05	5 cc
LPS075	7,5 cc
LPS10	10 cc

CHONDRO MATRIX



Ligamed Chondro Matrix is one-step, hydrophilic, sterile, bioresorbable, CE marked, cell-free implant used to treat articular cartilage defects in the knee, ankle or hip. It uses the biological potential of stem cells to potential of stem cells to restore damaged cartilage tissue in the joints.

Ligamed Chondro Matrix is composed of biomedical grade Polylactic Polylactic Acid (PLA) to provide structural support for 1-2 months and sodium hyaluronate (hyaluronic acid) to promote chondrogenesis.

Chondro Matrix does not contain human or animal tissue, removing any risk of viral or disease transmission as well as complying with the wishes of vegans who avoid animal derived products.

Due to its complete resorption, a second surgery for removal is not required.

Used for repair and surgical treatment of pain and limited mobility. When placed next to the damaged area, Chondro Matrix absorbs the accumulated blood and provides optimal defect coverage, induces the formation of cartilage repair tissue, reduces pain and symptoms associated with joint defects, and improves patients' quality of life and mobility.



Chondro Matrix low (a) and high (b) magnification SEM image.

Use of Ligamed Chondro Matrix;

- 1 Microfracturing
- Mesenchymal stem cells are obtained by Marrow stimulating procedures, such as microfracturing or Pridie drilling.
- 2 Preparation and Implantation of Ligamed Chondro Matrix
- Ligamed Chondro matrix can be easily trimmed to match the defect.
- Ligamed Chondro matrix is implanted into the defective cartilage by mini-open or keyhole procedure.
- 3 Fixation of Ligamed Chondro Matrix
- Ligamed Chondro matrix can be fixed to the defect by commonly used orthopeadic fixation methods.
- Bioresorbable pins.
- Cartilage suture.
- Fibrin glue.

Ligamed Chondro Matrix



Reference Code	Size
LK202011	20-20-1,1 mm
LK203011	20-30-1,1 mm
LK251711	25-17-1,1 mm
LK252511	25-25-1,1 mm
LK253511	25-35-1,1 mm
LK353511	35-35-1,1 mm

BONE CEMENT

Polymethyl methacrylate (PMMA) based Bone Cement is a widely used biomaterial due to its ease of use in clinical practice and its long survival rate, especially with prosthetics.

Common indications for using Bone Cement:

Total joint replacement, bone and joint reconstructions, fracture fixation and treatment of osteoporotic vertebral fractures.

- Bone Cement consists of two phases, solid and liquid phases.
- Ligamed Bone Cement it is presented in three different viscosities as low, standard and high.
- Dough and setting times, maximum temperature and mechanical strength values are matched to Internationally recognised ISO 5833 standards.



Ligamed Bone Cement ISO 5833









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Ligamed Bone Cement



Reference Code	Size
LVC-LV-20	20 g (LV Radiopaque Vertebroplasty Bone Cement)
LVC-LV-40	40~g~ (LV Radiopaque Vertebroplasty Bone Cement)
LKC-LV-20	$20~{ m g}$ (LV Radiopaque Kyphoplasty Bone Cement)
LKC-LV-40	40~g (LV Radiopaque Kyphoplasty Bone Cement)
LOC-SV40	40~g (SV Radiopaque Orthopedics Bone Cement)
S-LC-HV20	20 g (HV Radiopaque Bone Cement)

BONE CEMENT APPLICATOR TOOL KIT

Bone Cement Applicator Tool Kit is a set of sterile manual devices used to create a percutaneous access channel in the vertebral body or other bones (e.g. hand, tibia, calcaneus) prior to Bone Cement injection during kyphoplasty/osteoplasty.

It typically consists of bone access needles, cannulas, orthopedic bone wires (Kirschner wire) expander and bone drill.

In order to effectively deliver bone cement into the vertebral defect without removing the larger sized healthy bone, using a bone cement applicator kit is the most current technology for bone cement release in kyphoplasty/vertebroplasty treatment.

Bonegraft Bone Cement Applicator Kit products are supplied EO sterile and CE marked Class IIa Medical Device according to medical device regulation 93/42/EC.



Ligamed Bone Cement Applicator Tool Kit

Reference Code	Size
LVBIS	Cannula (1pcs)+ Needle (1pcs)
LBCAFP2	PPKBF-01 Filler (221,5x192x3,5) (1pcs) PPKBF-02 Pusher (259x222x3) (1pcs)
LBCVPK0106	6 Pieces Tools (Guide Wire+Guide Cannula+Gauge Needle+Bone Drill+Filler+Pusher)
LBCVPK0108	8 Pieces Tools (Guide Wire+Guide Cannula+Gauge Needle+Bone Drill+2xFiller+2xPusher)
LFPCS	Bone Filler (79,2(length) x 1,77 (od)x 1,25(id) Bone Pusher (79,2(length)x1,20 (diameter)

BONE SCRAPER

The Ligarned Bone Scraper is produced from a non toxic polymer. A stainless steel cutter is used to scrape and collect autogenous bone fragments from the chin or ramus area.



The Ligamed Bone Scraper is a disposable device used to collect autogenous bone particles for use in guided bone regeneration procedures.



Bone Scraper Application

The resulting bone fragments provide a high volume due to their curved shape, which significantly reduces the amount of augmentation material required and reduces the invasiveness of the intervention.

Ligamed Scrapers offer the possibility of obtaining both cortical and spongy bone. Manual removal mixes bone fragments directly with patient blood and retains cellular components such as osteocytes for optimal bone regeneration.

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