

## GRANULES

## SPINAL / ORTHOPEDIC APPLICATIONS

### Product Description

Actifuse is an osteostimulatory, phase-pure, porous, silicate substituted calcium phosphate bone graft substitute. Actifuse contains 0.8% silicon by weight, similar levels to those identified in naturally-growing bone. Calcium phosphate bone graft substitutes have been the topic of extensive clinical studies for several decades. Actifuse is safe and has excellent biocompatibility. The interconnected macro- and micro- porous structure and enhanced surface chemistry of Actifuse encourages the rapid formation of host bone and the growth of capillary blood vessels throughout the network of interconnecting pores. Actifuse is osteostimulatory based upon *in vitro* studies that show that cellular responses, such as metabolic activity and proliferation, are accelerated when compared to an identical material that did not contain 0.8% silicon by weight. After it is implanted, Actifuse undergoes physiologically-mediated resorption and is replaced by natural bone. Actifuse has a resorption time that lies between the least soluble pure Hydroxyapatite and the most soluble form of tricalcium phosphate.

Actifuse granules are supplied in two granule size ranges, 2 - 5 mm and 5 - 10 mm. **Actifuse does not set in-situ following implantation.** The bioactive and osteostimulatory nature of Actifuse has not been correlated with human clinical experience.

### Indications For Use

Actifuse is a bone void filler intended only for orthopedic applications as a filler for gaps and voids that are not intrinsic to the stability of the bony structure. Actifuse is indicated to be packed gently into bony voids or gaps of the skeletal system, i.e. extremities, pelvis and spine including use in posterolateral spinal fusion procedures with appropriate stabilizing hardware. These defects may be surgically created osseous defects or osseous defects created from traumatic injury to the bone. The product provides a bone void filler that resorbs and is replaced by bone during the healing process.

### Contraindications

Actifuse is not designed or sold for any use except as indicated. Do not use Actifuse in the presence of any contraindication. Actifuse is contraindicated where the device is intended as structural support in the skeletal system. Actifuse has not been cleared for use in vertebroplasty.

Other conditions representing contraindications include:

- severe vascular or neurological disease
- uncontrolled diabetes
- severe degenerative disease
- uncooperative patients who cannot or will not follow post-operative instruction, including individuals who abuse drugs and/or alcohol
- hypercalcemia, abnormal calcium metabolism
- existing acute or chronic infections, especially at the site of the operation
- inflammatory bone disease such as osteomyelitis
- malignant tumors
- severely impaired renal function.

### Warnings

Actifuse is not intended for load-bearing uses. It is important to ensure that the area where the Actifuse granules have been implanted be properly secured mechanically with rigid fixation to strengthen the surroundings. Attempts should not be made to modify the size of the granules or to change their shape. It is important to maximize contact between existing bone and the implant to ensure proper bone regeneration. The effect of Actifuse on patients with the following conditions is unknown:

- documented renal disease
- metabolic bone disease
- pregnancy and nursing
- radiation bone therapy
- long-term infection
- cardiovascular disease precluding elective surgery.

The effect of Actifuse in pediatric patients is not known. **The effect of mixing Actifuse with substances other than sterile saline/water, autologous blood or bone marrow aspirate is unknown.**

### Possible Complications

Successful results may not be achieved for every surgical case. Reoperation to remove or replace an implant may be required due to specific medical conditions or device failure. Possible adverse effects may include but are not limited to:

- wound complications including hematoma, edema, swelling and fluid accumulation, tissue thinning, bone fracture, infection, and other complications that are possible with any surgery
- fracture of the implant with or without generation of particulate debris
- bone deformity at the site
- delayed or non-union
- transient hypercalcemia.

### Precautions

Content of package is STERILE by prior exposure to gamma radiation unless opened or damaged. Read expiration date before use. Do not use if expiration date has been exceeded.

Actifuse is opaque to x-rays. This may mask areas under or above the implant on a radiograph.

The graft must be secured to prevent potential migration and should only be used in surgical procedures where bone grafts are adequately contained. Fully fill the bony defect ensuring maximal contact between Actifuse and the host bone.

**Do not overfill the bony defect.**

Dosage is for SINGLE USE ONLY. Do not attempt to re-sterilize or re-use.

### Instructions for use

**Step 1.** Open both outer (non-sterile) and inner (sterile) packaging.

**Step 2.** Actifuse is designed to be used alone. Actifuse granules can be mixed with sterile saline/water, autologous blood or bone marrow aspirate at the discretion of the surgeon.

**Step 3.** Implant. Secure the surgical site after implanting to prevent micro-motion and implant migration. When excess fluid is present at the surgical field, the surgeon may use cauterization, suction, and application of bone wax (if needed) to reduce bleeding. If the material is not positioned satisfactorily, remove the implant and start over with a new package of Actifuse.

### Storage Conditions, Shelf Life and Disposal

**Product should be stored between 10-70% Relative Humidity and 15-40 °C (59-104 °F).**

The expiration date is printed on the label. **DO NOT USE ACTIFUSE AFTER THE EXPIRATION DATE.**

Actifuse is environmentally friendly. No special disposal is necessary.

**Caution:** U.S. Federal Law restricts this device to sale by or on the order of a physician or hospital.

Note: Responsibility for proper selection of patients, for adequate training, for experience in the choice and placement of Actifuse, and for the choice of post-operative follow-up procedures rests entirely with the physician.

**Manufactured by:** ApaTech Ltd. 370 Centennial Avenue, Centennial Park, Elstree, Hertfordshire, WD6 3TJ, UK Tel: +44 20 8731 4666

**Distributed by:** ApaTech Inc. 2 Hampshire Street, Foxborough, MA 02035, USA Tel: 866-652-0700 (toll-free) 508-543-0700

## GRANULES

## PERIODONTAL / ORAL / CRANIOMAXILLOFACIAL APPLICATIONS

### Product Description

Actifuse is an osteostimulatory, phase-pure, porous, silicate substituted calcium phosphate bone graft substitute. Actifuse contains 0.8% silicon by weight, similar levels to those identified in naturally-growing bone. Calcium phosphate bone graft substitutes have been the topic of extensive clinical studies for several decades. Actifuse is safe and has excellent biocompatibility. The interconnected macro- and micro- porous structure and enhanced surface chemistry of Actifuse encourages the rapid formation of host bone and the growth of capillary blood vessels throughout the network of interconnecting pores. Actifuse is osteostimulatory based upon *in vitro* studies that show that cellular responses, such as metabolic activity and proliferation, are accelerated when compared to an identical material that did not contain 0.8% silicon by weight. After it is implanted, Actifuse undergoes physiologically-mediated resorption and is replaced by natural bone. Actifuse has a resorption time that lies between the least soluble pure Hydroxyapatite and the most soluble form of tricalcium phosphate.

Actifuse granules are supplied in the granule size range of 2 - 5 mm. Actifuse Granules Bone Graft Substitute is intended for placement into open bony voids or osseous defects. **Actifuse does not set in-situ following implantation.** The bioactive and osteostimulatory nature of Actifuse has not been correlated with human clinical experience.

### Indications For Use

Actifuse is a synthetic bone grafting material intended to fill, augment, and/or reconstruct maxillofacial osseous bone defects, including periodontal, oral, and craniomaxillofacial applications. These defects may be surgically created osseous defects or osseous defects created from traumatic injury to the bone. The product provides a synthetic bone grafting material that resorbs and is replaced by bone during the healing process.

### Contraindications

Actifuse is not designed or sold for any use except as indicated. Do not use Actifuse in the presence of any contraindication. Actifuse is contraindicated where the device is intended as structural support in the skeletal system. Actifuse has not been cleared for use in vertebroplasty. Actifuse is not intended to be used in direct contact with the brain.

Other conditions representing contraindications include:

- severe vascular or neurological disease
- uncontrolled diabetes
- severe degenerative disease
- uncooperative patients who cannot or will not follow post-operative instruction, including individuals who abuse drugs and/or alcohol
- hypercalcemia, abnormal calcium metabolism
- existing acute or chronic infections, especially at the site of the operation
- inflammatory bone disease such as osteomyelitis
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### Warnings

Actifuse is not intended for load-bearing uses. It is important to ensure that the area where the Actifuse granules have been implanted be properly secured mechanically with rigid fixation to strengthen the surroundings. Attempts should not be made to modify the size of the granules or to change their shape. It is important to maximize contact between existing bone and the implant to ensure proper bone regeneration. The effect of Actifuse on patients with the following conditions is unknown:

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The effect of Actifuse in pediatric patients is not known. **The effect of mixing Actifuse with substances other than sterile saline/water, autologous blood or bone marrow aspirate is unknown.**

### Possible Complications

Successful results may not be achieved for every surgical case. Reoperation to remove or replace an implant may be required due to specific medical conditions or device failure. Possible adverse effects may include but are not limited to:

- wound complications including hematoma, edema, swelling and fluid accumulation, tissue thinning, bone fracture, infection, and other complications that are possible with any surgery
- fracture of the implant with or without generation of particulate debris
- bone deformity at the site
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Actifuse is opaque to x-rays. This may mask areas under or above the implant on a radiograph.

The graft must be secured to prevent potential migration and should only be used in surgical procedures where bone grafts are adequately contained.

Fully fill the bony defect ensuring maximal contact between Actifuse and the host bone. Actifuse product of appropriate particle size must be considered depending on the size of bone defects to ensure maximum bone contact.

**Do not overfill the bony defect.**

Dosage is for SINGLE USE ONLY. Do not attempt to re-sterilize or re-use.

### Instructions for use

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