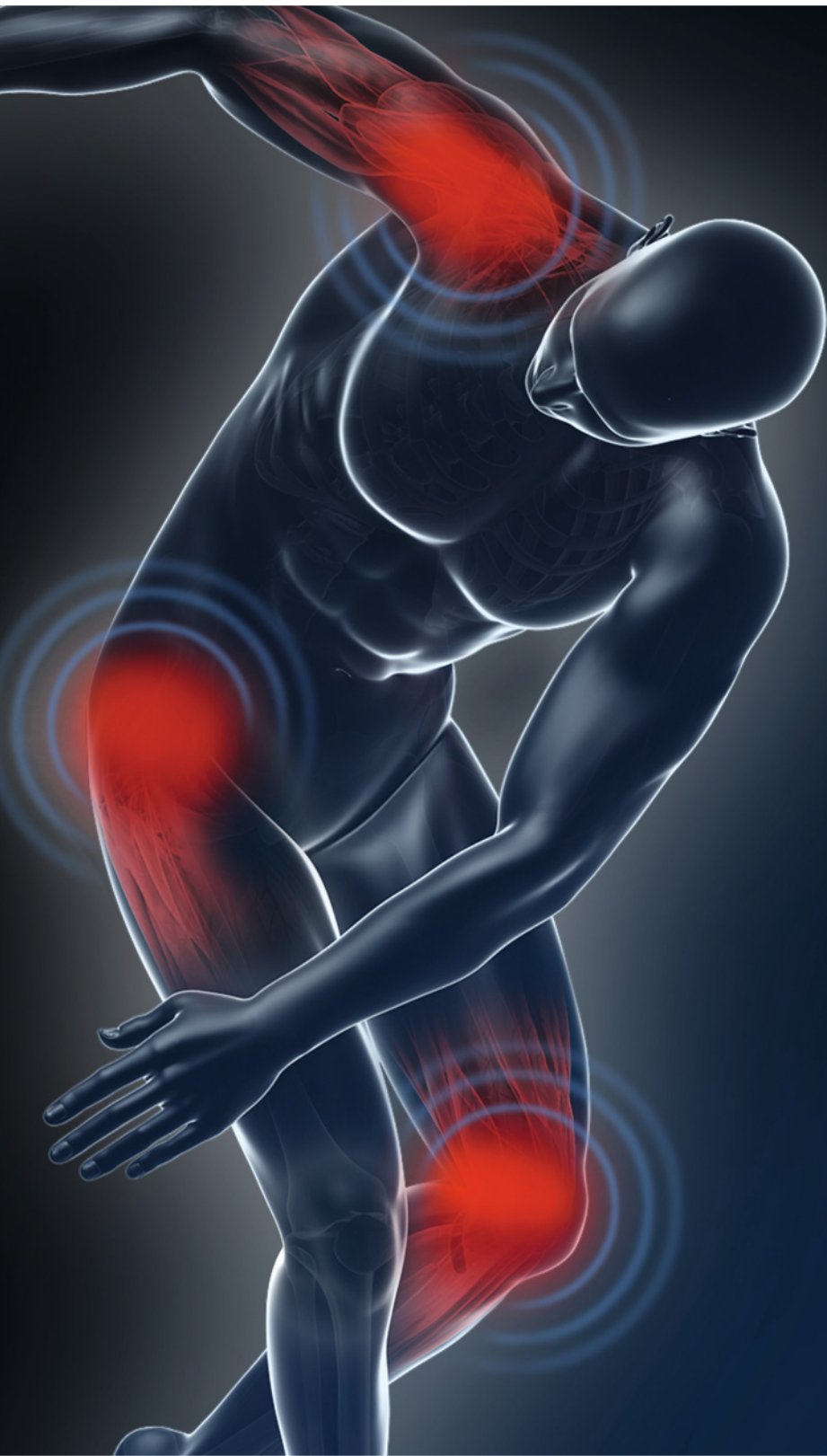


Heraeus



**COPAL<sup>®</sup>**

Expert in revision



# EXPERTISE. COMMITMENT. RESPONSIBILITY.

## Know-how in revision arthroplasty.

*Effectively combining technical expertise, thinking progressively, and thinking outside the box – these are the principles according to which Heraeus develops solutions for arthroplasty and trauma surgery. With the COPAL® product range for revision surgery, Heraeus is continuing this approach: the result is a specialised product portfolio for the stringent requirements of revision surgery that offers the proven characteristics of PALACOS® bone cement. COPAL® products allow the risks associated with revision surgery to be successfully mitigated, as well as meeting the need for responsible use of antibiotics.*



# SIMPLICITY. SAFETY. SERVICE.

## The COPAL® portfolio for revision surgery.

Joint replacement using prosthetic implants is one of the most successful surgical procedures in the medical field. As the use of implants becomes more widespread, periprosthetic infections are becoming an increasingly common challenge. In the United States, for example, the annual number of revision surgery procedures related to periprosthetic infections in the case of knee replacements has doubled over a period of eight years (1).

### **COPAL®: EXPERTISE AND RESPONSIBILITY**

Infections are a common cause of revision surgery. The use of antibiotic-loaded bone cement plays an important role in an effective preventive antibiotic concept following surgical debridement as it provides high local antibiotic concentrations. The COPAL® products provide broad-spectrum, highly effective combinations of antibiotics aimed at combating the spectrum of pathogens associated with revision surgery. Due to the high local antibiotic concentration achieved, COPAL® cements are recommended as standard in revision surgery procedures in combination with the systemic administration of antibiotics for prevention of infection.

### **DIAGNOSIS: THE KEY TO A SUCCESSFUL CONCEPT FOR REVISION SURGERY**

Exact microbial detection and microbial identification are the basis for the targeted and responsible use of antibiotics. Given the increasing resistances, antibiotics should be adapted effectively to the spectrum of pathogens and used in a targeted fashion. The COPAL® product range meets these particular requirements as part of prevention of infection in revision surgery.




### **THE COPAL® MODEL FOR REVISION SURGERY**

**SIMPLICITY:** Saving of time, straightforward handling, and direct use of the products

**SAFETY:** Fewer risks for the patient and practitioner due to reproducible cement quality, homogenous antibiotic mixture, broad spectrum of activity and high local antibiotic concentration, in the form of certified medical products

**SERVICE:** Competent support and fast assistance with application-specific as well as logistic queries





**A GOOD DECISION.  
IN ALL CASES.**  
**The gold standard  
in revision surgery.**

*COPAL® G+C comprises of the same high quality raw materials as PALACOS® and has very good material and processing properties. The use of COPAL® G+C is indicated for the prevention of infection in septic revision surgery as well as in the cases of aseptic procedures in which infection cannot be excluded. COPAL® G+C is considered the gold standard in revision surgery. In the case of high-risk patients, COPAL® G+C may also be used in primary arthroplasty procedures.*

# COPAL® G+C

## Effectiveness in revision surgery.

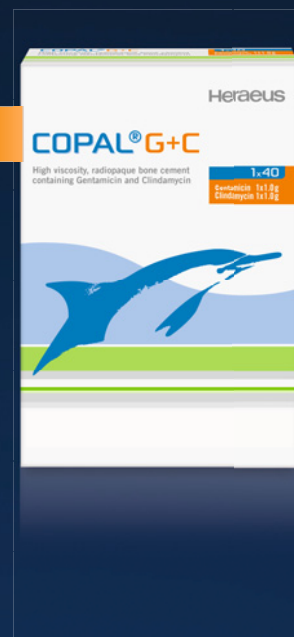
COPAL® G+C is a high-viscosity bone cement for anchoring prosthetic implants in revision surgery. It contains the antibiotics gentamicin and clindamycin. This combination offers a broad spectrum of activity against around 90% of clinically-relevant pathogens. Clindamycin specifically targets anaerobic pathogens and offers a high degree of bone penetration. COPAL® G+C supports a very high initial local concentration of antibiotics. This means that a build-up of resistance can be minimised. The result is effective protection of the prosthetic implant against bacterial colonisation and the formation of biofilm, with minimal systemic exposure for patients (2).

### RELIABLE ACROSS THE BOARD

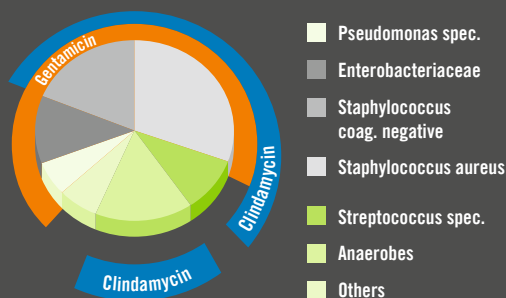
Due to the combination of gentamicin and clindamycin, COPAL® G+C meets the requirements for an effective revision surgery concept. The use of COPAL® G+C for prevention of infection is also recommended in the cases of revision surgery procedures that are considered aseptic in which the risk of late infection as a result of slow-growing pathogens (known as low-grade infection) cannot be completely excluded (3).

### SIMPLE TO USE

COPAL® G+C offers consistent quality due to industrial production. COPAL® G+C supports an efficient workflow as well as the minimization of the potential for errors.



### SPECTRUM OF ACTIVITY OF GENTAMICIN AND CLINDAMYCIN



### COPAL® G+C: ADVANTAGES AT A GLANCE

- Broad, highly-effective spectrum of activity against around 90% of clinically-relevant pathogens, including anaerobes
- Efficient effective concentration in situ due to initially high local antibiotic release
- Reduction of resistances through the use of two antibiotics
- Reproducible antibiotic release due to homogenous mixture
- For permanent anchoring of prosthetic implants
- Contains 1 g of gentamicin and 1 g of clindamycin

**= THE GOLD STANDARD IN REVISION SURGERY.**

(2) Engesæter L. et.al, Acta Orthop Scand 2003; 74 (6): 644–651

(3) Moojen, D., Acta Orthopaedica 2010; 81 (6): 667–673

# COPAL® G+V

## Effective against proven MRSA/MRSE\*.

Prosthetic implant infections caused by MRSA result in an increased rate of complications as well as higher costs in comparison with prosthetic implant infections that are not MRSA-related (4).

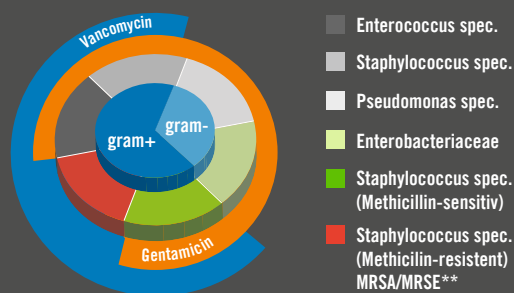
### PREREQUISITE FOR SURGICAL SUCCESS: EXACT DIAGNOSIS

Due to increasing resistances, the reserve antibiotic vancomycin should only be used following exact diagnosis and microbial identification of the pathogens. The use of COPAL® G+V to prevent infection is only recommended in the case of proven vancomycin-sensitive MRSA/MRSE and thus requires exact microbiological diagnosis.

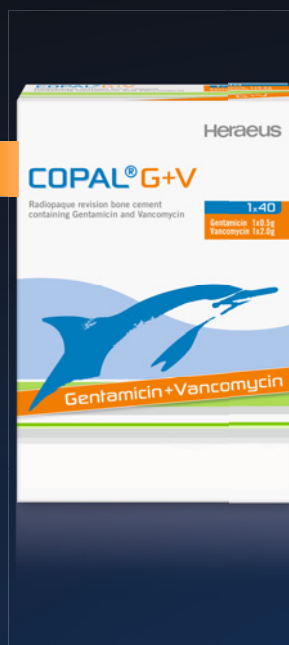
### PREVENTION OF INFECTION IN SEPTIC REVISION SURGERY

COPAL® G+V is a high-viscosity bone cement for anchoring prosthetic implants in the case of septic revision surgery procedures with proven vancomycin-sensitive MRSA/MRSE. It contains the antibiotics gentamicin and vancomycin for the prevention of infection. This combination of antibiotics specifically targets vancomycin-sensitive MRSA/MRSE in the case of bone and joint infections.

#### SPECTRUM OF ACTIVITY OF VANCOMYCIN AND GENTAMICIN



G+V



#### COPAL® G+V: ADVANTAGES AT A GLANCE

- Broad spectrum of activity due the use of two antibiotics
- Effective inter alia against vancomycin-sensitive MRSA/MRSE
- For permanent anchoring of prosthetic implants
- Suitable for the fabrication of temporary spacers
- Contains 0.5 g of gentamicin and 2 g of vancomycin

\* Methicillin-resistant *Staphylococcus aureus*/Methicillin-resistant *Staphylococcus epidermidis*

\*\* Vancomycin-sensitive MRSA/MRSE

(4) Edwards C et al.: Early infection after hip fracture surgery. The Journal of Bone and Joint Surgery 2008; 90-B: 776.

# PALAMIX®

## Vacuum mixing in revision surgery.

The PALAMIX® vacuum mixing system enables outstanding processing of COPAL® cements for permanent anchoring of prosthetic joint implants. Using this system, the cement can be directly applied in the bone once it has been mixed.



### PALAMIX®: ADVANTAGES AT A GLANCE

- Safe and easy handling
- Reproducible mixing results due to a standardized mixing process
- Easy to incorporate into surgical procedures
- Accessories for a variety of indications

COPAL®	Description	Content	REF
COPAL® G+C	High-viscosity, radiopaque bone cement with gentamicin and clindamycin	1 x 40	66041214
COPAL® G+V	High-viscosity, radiopaque bone cement with gentamicin and vancomycin	1 x 40	66038973

PALAMIX®	Description	Content	REF
PALAMIX® uno 1 x 80	Vacuum mixing system	10	66036743
PALAMIX® uno 1 x 120		10	66036744
Accessories	PALAMIX® cement gun	1	66036163
	PALAMIX® vacuum pump	1	66036748
	PALAMIX® nozzle medium	10	66043960

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