

DePuy CMW™ Heritage Bone Cements

Product Information



INTRODUCTION



Our experience in Polymethyl methacrylate (PMMA) bone cements is extensive. The long clinical heritage of our DePuy CMW bone cement product range has allowed us to evaluate and refine the product range over time. DePuy CMW Bone Cements are the heritage cements in the DePuy Synthes portfolio. Developed and first implanted without radiopacifier in 1958-1962 by Sir John Charnley, published evidence for the CMW 1 Bone Cement with radiopacifier proves good clinical outcome¹⁻³ – even in the early years of cementing. In 1991 CMW 1 and CMW 3 with the addition of Gentamicin were launched.

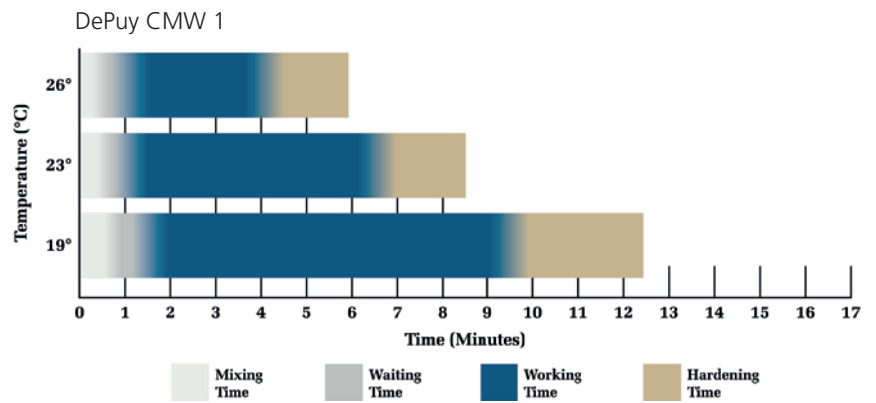
Since its commercialization in 1966 the process of manufacturing the cement is largely unchanged (except for addition of radiopacifier), suggesting that the performance of CMW 1 reported historically is representative of the results that can be expected today. Eventually the CMW heritage brands were rebranded to DePuy CMW. The portfolio of DePuy CMW 1, DePuy CMW 2 and DePuy CMW 3 covers high and medium viscosity formulations, and is also available with Gentamicin (DePuy CMW 1 Gentamicin, DePuy CMW 2 Gentamicin and DePuy CMW 3 Gentamicin).

WORKING TIMES

The DePuy CMW 1 Bone Cement is a high viscosity medium-setting time bone cement relative to other DePuy Synthes PMMA cements. It provides a reliable working time for modern cementing techniques with a setting time of approximately 12.5 minutes at 19°C (66°F).⁴

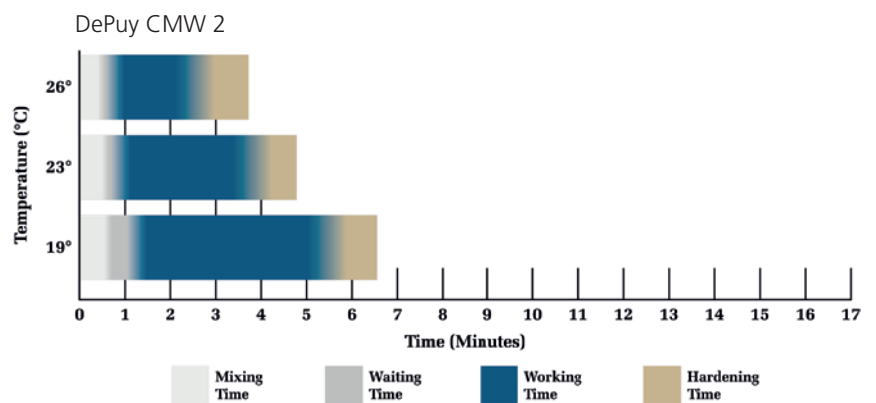
DePuy CMW 2 Bone Cement was developed specifically to allow surgeons to work directly and accurately in a range of joint procedures. DePuy CMW 2 Bone Cement is a high viscosity cement which has a fast setting time of approximately 6½ minutes at 19°C (66°F),⁴ ideal for use in the knee, acetabulum, patella and all small joint arthroplasty. The setting time of this bone cement allows individual knee components to be cemented one at a time without prolonged waiting in between each cementation. Compared to other DePuy Synthes Bone Cements, DePuy CMW 2 Bone Cement provides rapid working time for efficient surgery. It was developed to have a shorter setting time and thus increase efficiency of surgery. It was anticipated that a shorter pressurization time would reduce the risk of movement whilst waiting for the cement to set.

DePuy CMW 3 is a medium viscosity bone cement with a medium setting time compared to other DePuy Synthes Bone Cements. It is primarily recommended for use in syringe due to its viscosity. At 19°C (66°F) DePuy CMW3 bone cement sets approximately after 12 ½ minutes.⁴



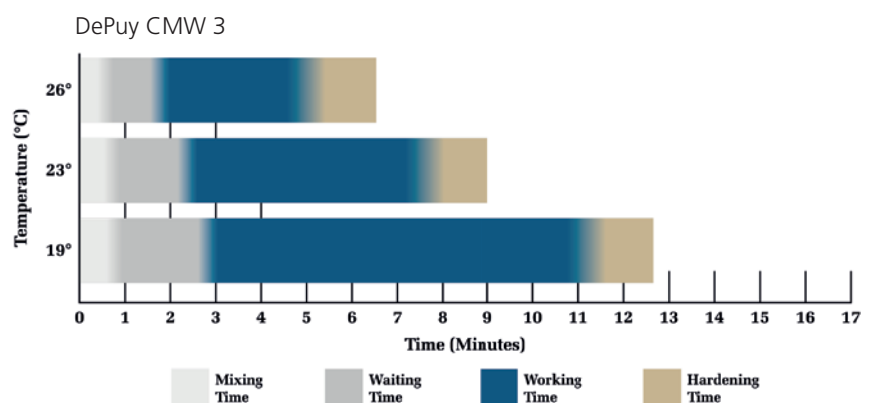
The handling times displayed are with digital (manual) mixing. Please note that mixing under vacuum will accelerate these times.

Graph 1



The handling times displayed are with digital (manual) mixing. Please note that mixing under vacuum will accelerate these times.

Graph 2



The handling times displayed are with digital (manual) mixing. Please note that mixing under vacuum will accelerate these times.

Graph 3

CLINICAL EVIDENCE



Clinical Results DePuy CMW 1/DePuy CMW 1 Gentamicin: More Than 40 Years of Clinical Experience

DePuy CMW 1 bone cement has the longest clinical heritage of any orthopaedic bone cement.^{3,5} Used by Sir John Charnley, who pioneered modern joint replacement, CMW 1 Bone Cement (without barium sulphate) was the first dedicated orthopaedic bone cement. CMW PMMA bone cement was used in the first documented clinical series of Sir John Charnley showing good long-term data.⁵ This unrivalled clinical history is supported by J.Older, who reports an 83% survival rate of the CHARNLEY® Stem with DePuy CMW 1 bone cement at the 20 year follow up stage.⁶

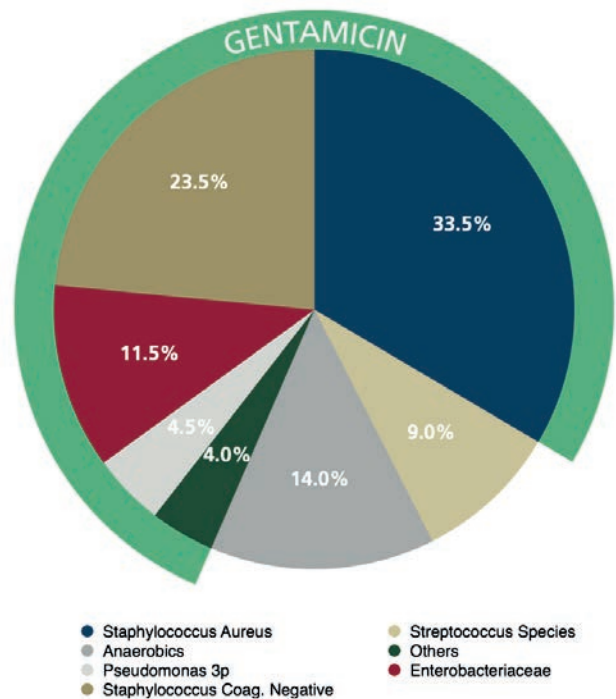
This has been further demonstrated by excellent clinical results in a recent knee RSA study.⁷

ANTIBIOTIC

Antibiotic-Loaded Bone Cements – Gentamicin

It has been demonstrated in the Norwegian Arthroplasty Registry that patients receiving antibiotic-loaded bone cement and systemic antibiotics show lower revision rates than no antibiotic prophylaxis or antibiotic cement on its own.⁸ Furthermore, antibiotic loaded bone cement is proven to reduce infection risk as demonstrated in the Parvizi et al study on primary hip replacement, which showed that antibiotic in the cement provides effective prophylaxis against infection leading to an incidence of deep infection of only 1.2% compared to 2.3% when no antibiotic was used in the bone cement.⁹

Bone cement with admixed Gentamicin leads to much higher levels of Gentamicin in the joint than systemic antibiotic.¹⁰ Therefore, our bone cements are also available with the addition of Gentamicin. DePuy CMW 1 Gentamicin Bone Cement, DePuy CMW 2 Gentamicin Bone Cement and DePuy CMW 3 Gentamicin Bone Cement are antibiotic-loaded with 1g Gentamicin base in a standard 40g pack. Gentamicin is effective in reducing the risks presented by gram-positive and several gram-negative bacteria.¹¹ Graph 4 displays the most relevant micro-organisms associated with infected hip replacement.



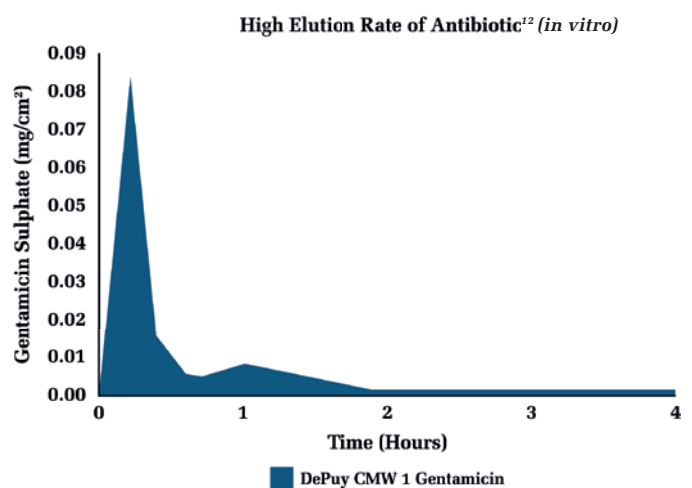
Graph 4

Antibiotic Release DePuy CMW 1 Gentamicin

DePuy CMW 1 Gentamicin bone cement contains 1g of Gentamicin base in a standard 40g powder pack. An independent *in vitro* study, supervised by Dr Lars Frommelt (Endoklinik, Hamburg), looked at the elution rate of DePuy CMW 1 Gentamicin bone cement.¹² It concludes that DePuy CMW 1 Gentamicin has a fast and high release of antibiotic. This is particularly important during the first few hours post-operatively, the time when the risk of infection is at its greatest.¹³

Antibiotic Release DePuy CMW 2 Gentamicin: High and Fast Elution of Antibiotic

DePuy CMW 2 Gentamicin Bone Cement reduces the potential risk of an infection from Gentamicin sensitive organisms with each 40g pack containing 1g of Gentamicin base. The Gentamicin in DePuy CMW 2 Gentamicin Bone Cement elutes rapidly *in vivo* during the first few hours after the operation when the risk of infection is greatest.¹⁴

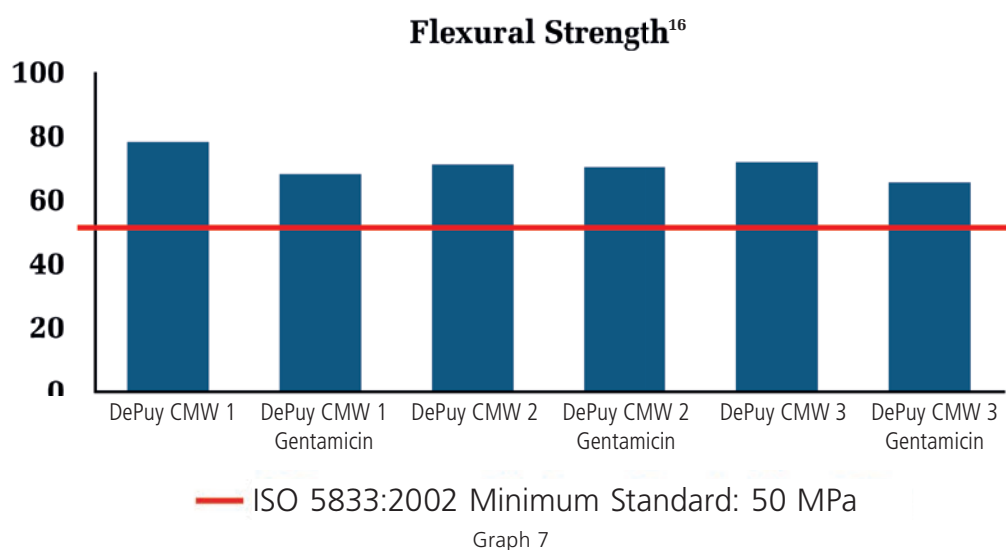
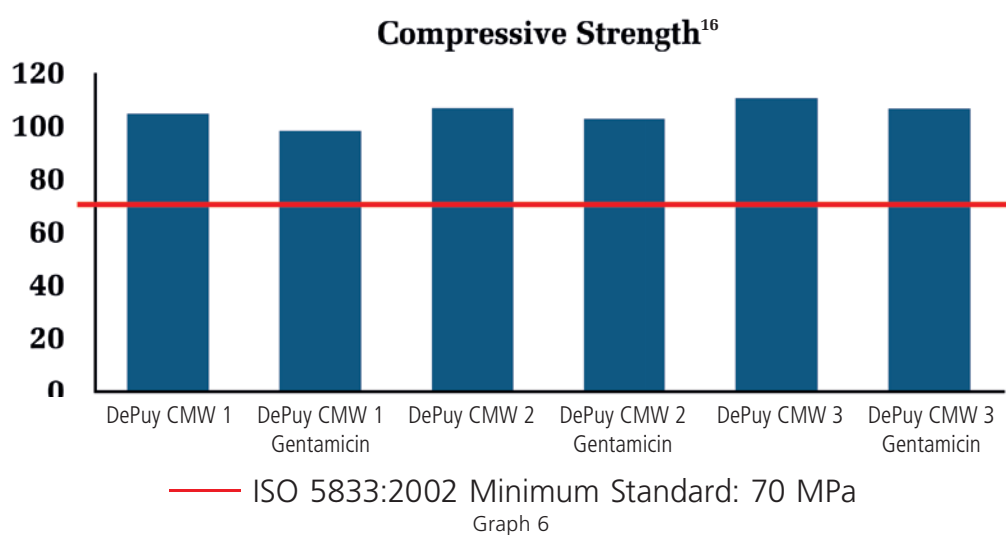


Graph 5

MECHANICAL PROPERTIES

Following the implantation of a cemented prosthesis, bone cement is subjected to different stresses.

The DePuy CMW bone cement exceeds all the requirements for set and polymerized bone cement in the international standard for Acrylic Bone cements (ISO 5833:2002).^{15,16}



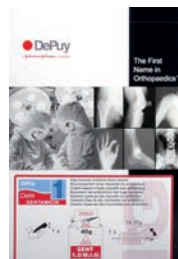
ORDERING INFORMATION

The DePuy Synthes Portfolio

Our broad portfolio of different bone cements with different viscosities, working properties and the possibility of an antibiotic version allow flexibility according to surgeon preferences.



Cat. No.	Description
3312020	DePuy CMW 1 Bone Cement, 20g
3312040	DePuy CMW 1 Bone Cement, 40g



Cat. No.	Description
3315020	DePuy CMW 1 GENTAMICIN Bone Cement, 20g
3315040	DePuy CMW 1 GENTAMICIN Bone Cement, 40g



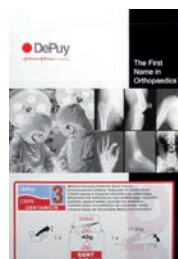
Cat. No.	Description
3322020	DePuy CMW 2 Bone Cement, 20g
3322040	DePuy CMW 2 Bone Cement, 40g



Cat. No.	Description
3332020	DePuy CMW 3 Bone Cement, 20g
3332040	DePuy CMW 3 Bone Cement, 40g



Cat. No.	Description
3325020	DePuy CMW 2 GENTAMICIN Bone Cement, 20g
3325040	DePuy CMW 2 GENTAMICIN Bone Cement, 40g



Cat. No.	Description
3335020	DePuy CMW 3 GENTAMICIN Bone Cement, 20g
3335040	DePuy CMW 3 GENTAMICIN Bone Cement, 40g

References

1. Older J. Low-friction arthroplasty of the hip. Clin Orthop 1986; 211: 36-42.
2. Wroblewski BM, Taylor GW, Siney P. Charnley low-friction arthroplasty: 19- to 25-year results. Orthopedics. 1992;15(4):421-4.
3. Wroblewski BM, Siney PD, Fleming PA. Charnley low-friction torque arthroplasty. J Bone Joint Surg [Br] 2009;91-B:447-50.
4. Instruction for use (March 2007)
5. Wroblewski BM, Siney PD. Charnley Low Friction Arthroplasty of the Hip. Clinical Orthopaedics, No 292, 1993.
6. Older J. Charnley Low-Friction Arthroplasty: A Worldwide Retrospective Review at 15 to 20 years. The Journal of Arthroplasty, 2002, 17 (6).
7. Adalberth BM, Nilsson KG, Karrholm J, Hassander H. Fixation of the tibial component using CMW 1 or Palacos bone cement with Gentamicin. Acta Orthop Scand 2002, 73 (5): 531-538.
8. Espehaug B, Engesaeter LB, Vollset SE, Havelin LI, Langeland N. Antibiotic prophylaxis in total hip arthroplasty. The Journal of Bone and Joint Surgery, 1997 Vol. 79B.
9. Parvizi J, Saleh KJ, Ragland PS, Pour AE, Mont MA. Efficacy of antibiotic-impregnated cement in total hip replacement. Acta Orthopaedica, 2008; 79 (3): 335-341.
10. Srivastav AM, Nadkarni B, Srivastav S, Mittal V, Agarwal S. Prophylactic use of antibiotic-loaded bone cement in primary total knee arthroplasty: Justified or not. Indian J Orthop 2009; 43(3): 259-263.
11. Förster G. et al.: Die infizierte Hüftendoprothese – Spätinfektion nach der 6. postoperativen Woche, In: Kühn, KD (2000). Bone cements. Springer Verlag. Page 254-255.
12. DePuy CMW Internal Test Report: R244; Research Independently supervised by Dr L. Frommelt, Hamburg, 2003.
13. Macdonald DA. The infected joint replacement: Prevention, diagnosis and treatment. Curr Orthop 1995; 9: 21-27.
14. Loudon JR, Clinical trial report: A comparative analysis of Gentamicin release from CMW 2 Gentamicin and CMW 1 Gentamicin Bone Cements following primary Hip and Knee Replacement Surgery, 1998.
15. ISO 5833:2002 Implants for surgery – Acrylic resin cements.
16. DePuy CMW Internal Test Report: RR-TS-0110-TR; Mechanical Testing Data Review for Bone Cements.

The third-party trademarks used herein are trademarks of their respective owners.



Johnson & Johnson Medical Limited PO BOX 1988, Simpson Parkway, Livingston, West Lothian, EH54 0AB, United Kingdom.
Incorporated and registered in Scotland under company number SC132162.

Manufactured by:
DePuy International Ltd
Trading as DePuy CMW
Cornford Road
Blackpool
Lancashire, FY4 4QQ
United Kingdom
Tel: +44 (0)1253 765 167



depuysynthes.com

©Johnson & Johnson Medical Limited. 2016. All rights reserved.

CA#DSEM/BIO/0516/0054 Issued: 10/16