AH Plus®

The No. 1 Endo Sealer*

SCIENCE **UPDATE**

On the Gold Standard in Root Canal Sealer Materials



Sealed. Safe.

For better dentistry

DENTSPLY

* Data on file.

AH Plus®

#1

SCIENCE **UPDATE**

Bond Strength

Push-out bond strengths of the dentine-sealer interface

Study Site: The University of Melbourne, Melbourne, Victoria, Australia

Authors: A. Jainaen, J. E. A. Palamara, H. H. Messer

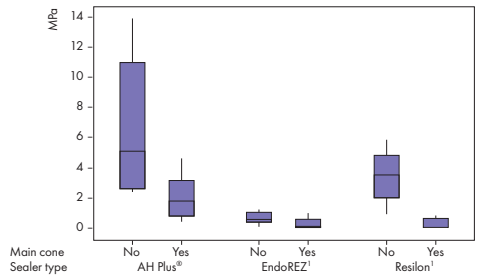
Published: International Endodontic Journal, 40, 882-890, 2007

Aim: To evaluate the push-out bond strength of the dentine-sealer interface with and without a main cone for AH Plus®, EndoREZ[1] and Resilon[1].

Method: Thirty extracted maxillary premolar teeth with two separate canals were prepared using 0.04 taper Profile® instruments to size 35-45. Teeth were divided into three groups for filling using AH Plus®, EndoREZ or Resilon sealers. In each tooth, one canal was filled with a matching single-cone technique, the other was filled with sealer alone. A 1 mm slice of mid-root dentine was prepared for the push-out test.

Result: Overall, the epoxy resin based sealer AH Plus® provided the highest push-out bond strengths.

Bond strength of three different sealer groups



Push-out bond strength of obturations with and without main cone.

Professor Harold H. Messer, PhD
School of Dental Science
The University of Melbourne
Australia



"The epoxy resin-based sealer AH Plus® had the highest push-out bond strength."

[1] EndoREZ and Resilon are not registered trademarks of DENTSPLY International, Inc.

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#2

SCIENCE **UPDATE**

Bond Strength

An in vitro comparison of bond strength of various obturation materials to root canal dentine using a push-out test design

Study Site: Department of Endodontics, Marquette University, School of Dentistry, Milwaukee, Wisconsin

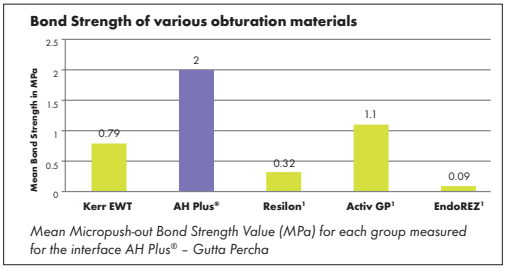
Authors: M.A. Fisher; D.W. Berzins; J.K. Bahcall

Published: Journal of Endodontics Volume 33, Number 7, July 2007

Aim: To compare the bond strengths of various obturation materials to root canal dentine by using a push-out test design.

Method: 25 single-rooted extracted human teeth were prepared for obturation and divided into 5 groups. Group 1 was filled with Kerr EWT[1] pulp canal sealer (zinc oxide-eugenol-based) and gutta percha. Group 2 was filled with DENTSPLY AH Plus® (epoxy-amine-resin-based) and gutta percha. Group 3 was filled with Pentron Epiphany[1] sealer and Resilon[1] points. Group 4 was filled with the Brasseler Activ GP[1] obturation system and Group 5 with the Ultradent EndoRez[1] obturation system. The teeth were cut perpendicular to the long axis to create 1mm thick slices from the apical, middle and coronal thirds. Bond strength was measured for each test slice.

Result: Group 2 showed a significantly greater bond strength compared with all other groups. Groups 1 and 4 had significantly higher bond strengths compared with groups 3 and 5.



Mean Micropush-out Bond Strength Value (MPa) for each group measured for the interface AH Plus® – Gutta Percha

Matthew A. Fisher, DDS
School of Dentistry,
Department of Graduate Endodontics
Marquette University
Milwaukee, WI; USA

"AH Plus® / Gutta Percha showed a significantly greater bond strength compared with all other groups."

[1] Kerr EWT, Epiphany, Resilon, Activ GP and EndoREZ are not registered trademarks of DENTSPLY International, Inc.

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#3

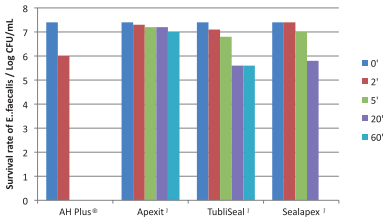
SCIENCE **UPDATE**

Antibacterial Activity

Antibacterial activity of endodontic sealers by modified direct contact test against Enterococcus faecalis

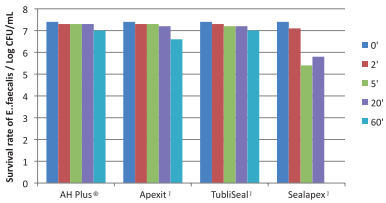
Study Site: University British Columbia, Vancouver, Canada
Authors: H. Zhang, Y. Shen, N.D. Ruse, M. Haapasalo
Published: Bayerisches Zahnärzteblatt, Sept. 2004, 32
Aim/ Method: The purpose of this study was to use a modified DCT assay to evaluate the antibacterial activity of 7 different endodontic sealers against E. faecalis 20 minutes after mixing (fresh samples) and 1, 3 and 7 days after mixing (set samples).
Result: The present study also showed that fresh AH Plus® had significant antibacterial effect whereas set samples did not show any antibacterial activity.

Antibacterial activity of fresh sealer



Survival rate of E.faecalis after direct contact for 2, 5, 20 and 20 minutes with fresh sealer.

Antibacterial activity of sealer set for 7 days



Survival rate of E.faecalis after direct contact for 2, 5, 20 and 20 minutes with sealer set for 7 days.

Professor Dr. M. Haapasalo
Division of Endodontics and Division of Biomaterials,
Department of Oral Biological & Medical Sciences,
Faculty of Dentistry,
University British Columbia, Vancouver, Canada

"Fresh AH Plus® killed Enterococcus faecalis effectively."

[1] Apexit, TubliSeal and Sealapex are not registered trademarks of DENTSPLY International, Inc.

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#4

SCIENCE **UPDATE**

Radiopacity

Radiopacity evaluation of new root canal filling materials by digitalization of images

Study Site: Dental School, São Paulo State University, Brazil

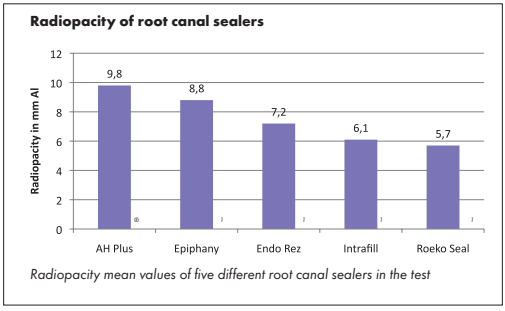
Authors: M. Tanomaru-Filho; É. Gouveia Jorge; J.M. Guerreiro Tanomaru and M. Gonçalves

Published: Journal of Endodontics, Volume 33, Number 3, March 2007

Aim: To evaluate the radiopacity of five root canal filling materials (AH Plus®, Intrafill[1], Roeko Seal[1], Epiphany[1] and EndoRez[1])

Method: Samples of the prepared sealer were inserted into impressions and stored in a moist chamber at 37°C until completely set. The specimens were positioned on five occlusal radiographic films and exposed along with an aluminum step-wedge with variable thickness. Radiographs were digitalized. The area corresponding to the specimen was selected from each radiographic image to verify which thickness of the aluminum step-wedge was detected by the software as equivalent to the radiographic density of the sample. This determined the radiopacity of the selected material compared with a particular thickness of aluminum measured in mm.

Result: AH Plus® (9.8 mm Al) and Epiphany (8.8 mm Al) presented the highest mean values of radiopacity ($p < 0.05$)



Radiopacity mean values of five different root canal sealers in the test

Mário Tanomaru-Filho, PhD
Department of Restorative Dentistry
Dental School, São Paulo State University, UNESP,
Araraquara
Brazil



"With 9.8 mm Al, AH Plus® was the most radiopaque material in the test."

[1] Epiphany, EndoREZ, Intrafill and RoekoSeal are not registered trademarks of DENTSPLY International, Inc.

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#5

SCIENCE **UPDATE**

Sealing Ability

Long-term obturation quality using non-instrumentation technology

Study Site: Department of Operative, Preventive and Pediatric Dentistry; University of Bern, Switzerland

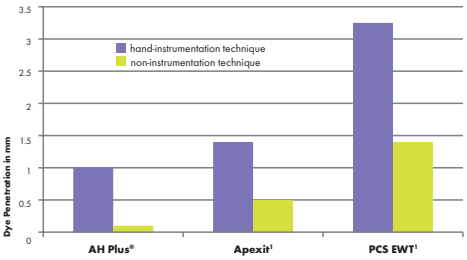
Authors: A. Lussi, S. Imwinkelried, P. Hotz and J. Grosrey

Published: Journal of Endodontics, Volume 26, Number 9, September 2000

Aim: To evaluate and compare the sealing quality of hand- or vacuum-obturated root canals after hand-instrumentation or non-instrumentation cleansing.

Method: A total of 60 single-rooted teeth were divided into six comparable groups. The root canals of three groups were instrumented with the balanced-force technique (hand-instrumentation) and obturated with gutta-percha condensation. The remaining teeth were cleansed and filled using non-instrumentation technology. For both obturation types, the same sealers were used (AH Plus®, Apexit[1], Pulp Canal Sealer EWT[1]). After aging, the quality of coronal seal was assessed with a dye penetration method.

Result: Superior sealing of the machine-filled roots (non-instrumentation technology), compared with laterally condensed conventionally filled root canals. AH Plus® showed less dye penetration compared to EWT and Apexit.



Results of the coronal dye penetration test using three different sealers (AH Plus®, Apexit, Pulp Canal Sealer (PCS) EWT) and two preparation techniques.

Professor A. Lussi
Department of Operative,
Preventive and Pediatric Dentistry
University of Bern, School of Dental Medicine
Switzerland



"AH Plus® filled root canals exhibited the last leakage / dye penetration among all groups."

[1] Apexit and PCS EWT are not registered trademarks of DENTSPLY International, Inc.

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#6

SCIENCE **UPDATE**

Gold Standard

Root canal sealing materials up-to-date

Comparison of classic and modern root canal sealers

Study Site: University Erlangen-Nürnberg, Germany
Author: M. Roggendorf
Published: Bayerisches Zahnärzteblatt, Sept. 2004, 32
Aim: The article is focused on handling and properties of different sealers.
Result: The newly developed AH Plus® sealer is almost insoluble, shows slight expansion and has certain adhesive properties. The composition of the sealer seems to be responsible for the superior sealing efficiency of AH Plus®. Microleakage investigations revealed a very good seal so that this sealer quasi represents a "gold standard".



"I have been using AH Plus® for more than 5 years, mainly in combination with cold but also with warm filling techniques. The excellent flow behavior allows for reliable sealing in the root canal. Compared to sealers based on zinc-eugenol and calcium salicylate, shrinkage and solubility are negligible. The working time is sufficient for all kinds of obturation techniques. The product is delivered in a double barrel syringe which ensures homogeneous and void-free mixing of both pastes."

Matthias J. Roggendorf, DMD
Associate Professor
Department of Operative Dentistry and Endodontics
Medical Center for Oral and Maxillofacial Sciences
Philipps University of Marburg and University
Hospital Giessen and Marburg, Germany



"AH Plus® is quasi a "Gold standard" due to its excellent sealing ability, adhesive and good handling properties."

Zahnerhaltung Marburg

AH Plus® Jet™ Starter Kit

1 x AH Plus® Jet™ Mixing Syringe, 15 g
20 x Mixing Tips with Intra Oral Tip
1 x Mixing Pad
1 x Illustrated Technique Guide
1 x Organizer Tray



ReOrder 606.20.115

AH Plus® Jet™ Refill

2 x AH Plus® Jet™
Mixing Syringe, 15 g



ReOrder 606.20.118

Mixing/Intra Oral Tips for AH Plus® Jet™

40 x Mixing Tips with Intra Oral Tip



ReOrder 606.20.116

AH Plus® Export Package (Tube Set)

1 x Tube of paste A, 4 ml
1 x Tube of paste B, 4 ml
1 x Mixing Pad



ReOrder 606.20.112

AH Plus® China Package (Tube Set)

1 x Tube of paste A, 3 ml
1 x Tube of paste B, 3 ml
1 x Mixing Pad



ReOrder 606.20.113

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