primodent

innovations for dentistry

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fire and ice

thermodynamic mixing panel

instruction manual and technical references

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Dear customer,

We congratulate you to the purchase of our innovative thermodynamic mixing panel **fire & ice**. The product corresponds with the highest standards of functionality, quality and operation safety!

fire & ice was invented by dentists for dentists. In dentistry, advanced techniques combined with modern dental materials require optimal and continuous processing temperatures. This is the best way, to obtain high-quality work results steadily.

fire & ice is an absolutely new invention which will give you the following benefits:
In it's cooling operation mode:

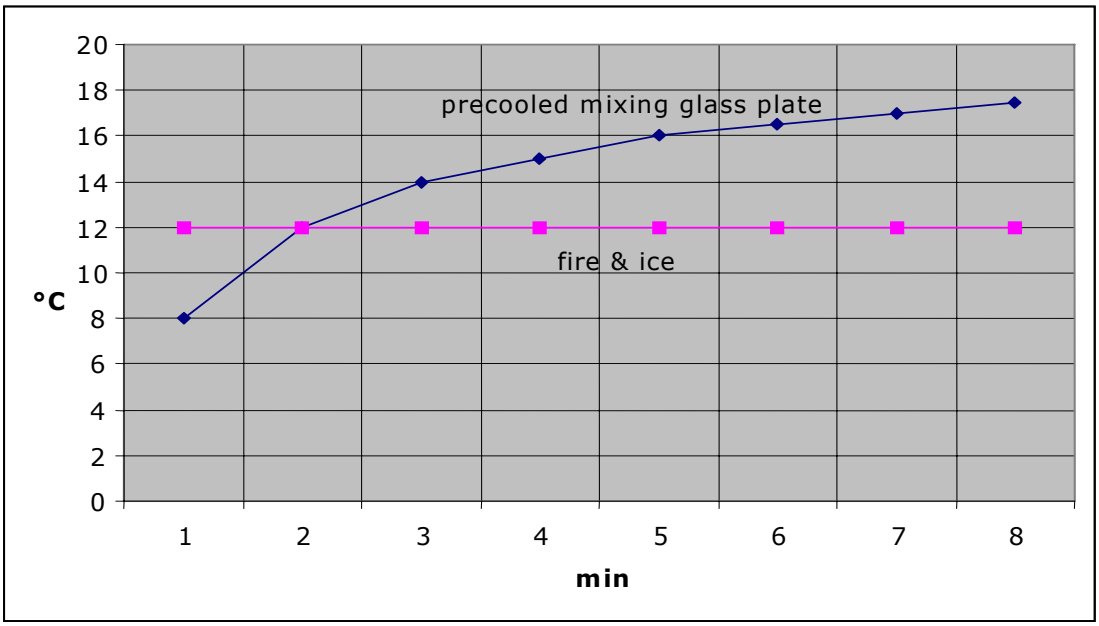
- to cool dental cements before, during and after mixing, in order to minimize marginal discrepancies and high occlusion in small as well as comprehensive dental cases.
- the ideal utilization of the best physical-mechanical properties of dental cements,
- the pre tempering (18°C) of impression materials.

In contrast to a pre cooled mixing glass plate, most common in dental practices, whose surface already warms up a few minutes after the withdrawal from the refrigerator to the environmental temperature, the mixing panel fire & ice maintains the pre selected temperature! Thus e.g. the setting time of dental cements extends up to four times. That again means a gain of time thereby the necessary security for precise working even with complex prosthetic cases. Consequently marginal discrepancies and high occlusion can be avoided.

In it's heating operation mode **fire & ice**:

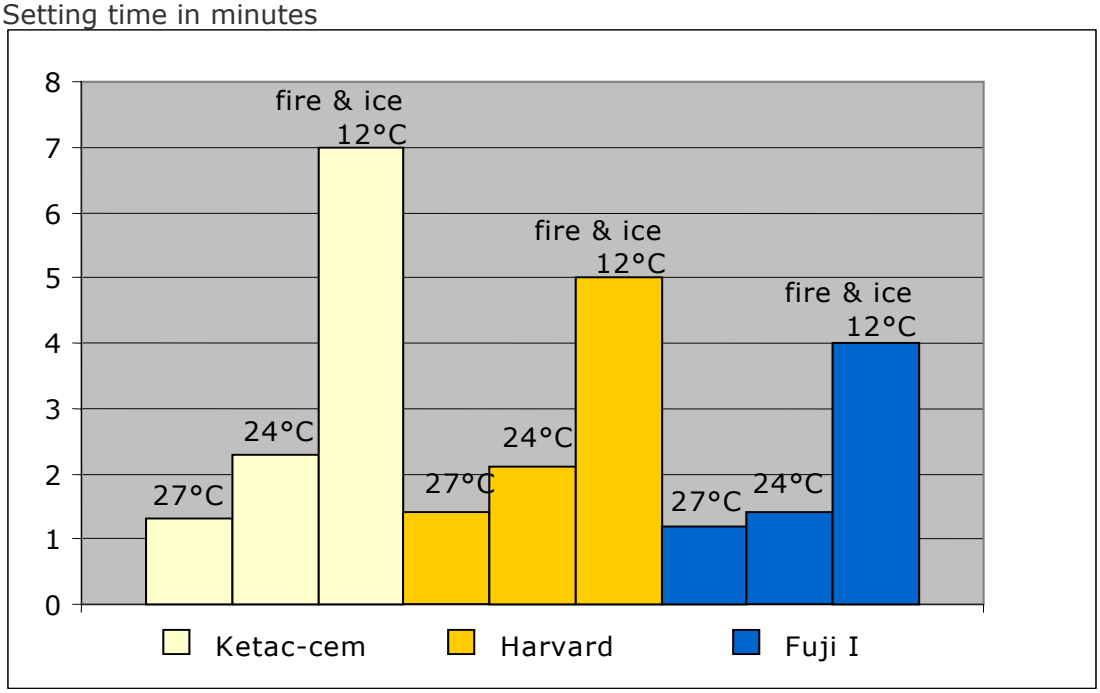
- it improves the characteristics of dental composites such as density, homogeneity marginal integrity and flow. This enables an optimal tuning of the dental composites to respective applications, which is under material-technical aspects the most important condition for precise and durable work,
- the exact heating up of Gutta Percha for endodontic purposes
- a simplified wax bite registration by even pre tempering of the wax bite material.

Further applications such as pre warming of anesthetics etc. are possible and depend on the creativity of the practice staff in their daily work.



Tab. 1: comparison temperature increase of pre cooled glass plates vs. fire & ice
(ambient temperature 23,5°C, refrigerator 8°C)
3 minutes after the glass plate was taken out of the refrigerator, it´s surface already warms up to approx. 15°C (2/3 of the ambient temperature)

Setting time in minutes

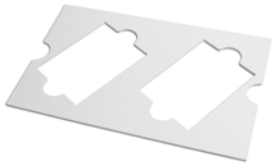


Tab. 2: increased setting time of different dental cements utilizing fire & ice vs. room temperature (in °Celsius)

one complete fire & ice unit consists of:

1 control unit **fire & ice**
1 power cord
1 removable aluminum plate
1 plastic template for the positioning of 2 mixing glass plates
1 aluminum block for „unidose-tips"
1 aluminum block for composite syringes
1 aluminum block for impression material containers (mixers)
1 plastic cover
1 instruction manual

Control unit fire & ice with aluminum blocks for „unidose-tips", composite syringes, impression material mixers and plastic cover



Plastic template for the positioning of 2 mixing glass plates

Removable aluminum plate

After receipt of the equipment please make sure that all parts are enclosed as listed above.

Technical description

- thermodynamic aggregate with coolable and heatable plate for dental materials
- removable aluminum plate
- plastic cover (to accelerate cooling/heating up and to avoid unintentional pre polymerization of light-cured materials)
- electronic control unit with acoustic and visual signal
- soft touch keyboard with LCD display
- digital temperature sensor
- cooling fan
- power transformer
- switch with safety device

Technical data

Supply voltage:	110-240 V ~
Electric current:	0.75 A
Temperature range:	5-65°C
Temperature constancy:	+/- 0.5°C
Dimensions of the coolable surface of the equipment:	244 x 154 mm
Dimensions of the removable aluminum plate:	270 x 154 mm
Dimensions of the fire & ice control unit:	329 x 252 x 127 mm (W x D x H)
Weight:	4,5 kg

Operating instructions

First insert the power cord into the mains connection socket at the rear panel of the control unit, and then connect it to a power outlet.
Always place the device on a smooth, even surface, to avoid waggling and slipping.
Make sure that the circulation of air is not obstructed. The air ventilation ports must remain free.

Switch on the main switch on the backside of the control unit (next to the mains connection socket).

On the soft touch keyboard the red **"POWER"** diode lights up:

Before you start working you should set the desired language. To do so, please press the button L LANGUAGE **.** On the display appears:

„Language / Sprache / Язык "

By pressing the △ or ▽ button you can make your selection.

An additional push on button L LANGUAGE accepts the choice.

On the display appears for approx. 10 seconds: **„Guten Tag"**,

Subsequently the status message appears: **„Sollwert ... °C" (desired temperature)**
„Istwert ... °C" (actual temperature)

Push the arrow keys △ and/or ▽ to set the desired temperature.

The device accepts the temperature value, you entered, automatically.

After reaching the desired temperature the **"READY"** diode will light up:

Depending on what you would like to do, place the mixing glass plates, the removable aluminum plate or one of the aluminum blocks on the aluminum surface of the control unit. For cementation with zinc-phosphate cement, place the mixing glass plates into the provided cut-outs of the plastic template. On one mixing glass plate the cement powder and –liquid, on the other one the bridge is pre cooled.

timer adjustment

After about 3 minutes (with closed plastic cover) the cement powder and –liquid have reached the opted processing temperature, consequently the mixing procedure can be started.

For that purpose set the mixing time given by the manufacturer (e.g. dental cement – 30 seconds) with the button T TIME and subsequent pressing of the arrow keys △ and ▽ .

The selected time is taken over automatically by the microprocessor. To start the timer press the T TIME button one more time.

In order to change or waive the input, press the button T TIME for three seconds.

Practical step to step procedure of mixing by the example of cementing a restoration with zinc-phosphate cement

Place the restoration to be cemented on one of the mixing glass plates. For a better cooling transmission, especially for larger restorations, it is recommendable to put the reconstruction (upside down) on a wet cotton wool or paper tissue. Place the required quantity of cement powder and liquid on the second, pre cooled glass plate (Fig. 1).

If you should work with proportioned cement capsules or syringes, place those on the cooled surface of the mixing glass plate before shaking. After shaking deplete the content of the whole cap and/or syringe in the center of the mixing glass plate.

Once you started the timer, immediately start the mixing procedure. Mix the cement accurately according to the manufacturer's instructions. When you hear the sound of the audio signal the time for mixing the cement is over (Fig. 2).

It is recommendable to leave the restoration on the glass plate while the cement is filled in.

Please don´t touch the restoration with bare hands! If possible, use plastic tweezers or latex-gloves to avoid a loss off cooling. Hand on the mixing glass plate with the filled up restoration to the dentist.

Clean the mixing glass plate under running water before the cement has set.

If you want to cool not only zinc phosphate -, glasionomer and carboxylate cements, but also composite cements (for example dual cure acrylics), it is advisable to cover the surface of the mixing glass plate with a wide tape; thereby the cooling is not hindered, but the glass plate can be cleaned easily by just removing the tape later on.

When you use the removable aluminum plate, depending on the material you would like to mix, cover the plate with a piece of mixing paper, this facilitates the cleaning i.e. when working with impression materials (Fig. 7).

Fig. 1

Fig. 2

Further applications

The aluminum blocks for "unidose-tips", composite syringes and impression material containers ensure a fast and even temperature adjustment of these materials.

To preheat filling and bonding composites (44°C-56°C), equip the corresponding aluminum block with the required "unidose tips" or composite syringes and place the block directly on the aluminum panel of the **fire & ice** control unit (Fig. 3 and4).

Fig. 3

Fig. 4

Impression materials are tempered at 18°C. Insert the mixing containers into the appropriate aluminum block opening and place the block (as well as the impression tray) directly on the aluminum panel of the **fire & ice** control unit. (Fig. 5 and 6).

Fig. 5

Fig. 6

Impression materials from the tube should be tempered and mixed on the removable aluminum plate, which was covered before with an appropriate mixing paper. This way any surplus material can be disposed easily (Fig. 7).

The same applies for wax bites. In both cases the removable aluminium plate must, of course, be positioned on the aluminum panel of the **fire & ice** control unit, in order to achieve the preset temperatures.

Anaesthetics can be tempered to 37°C directly on the aluminum panel of the control unit (Fig. 8).

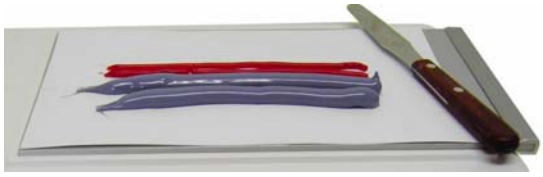


Fig. 7

Fig. 8

Care and maintenance

Yet soft cement can be rinsed off the plates very simply under running water. For cleaning and disinfection of the control unit's aluminium panel, use a damp cleaning cloth and the usual disinfectants. This way, also the device's housing can be cleaned.

Scrubbing means or aggressive cleaning agents must not be used!!!

Troubleshooting

If the device should not switch on, please check the power cord and the fuse on the back of the device first.

If the device doesn't supply the necessary cooling capacity, please check whether the fan runs. If this should not be the case, usually there is a mechanical blocking. In this case switch off the apparatus and remove the blocking artifact.

Before you switch on the device, make sure that the circulation of air is immaculative.

Make sure that there is a close contact between the mixing glass plates or the removable aluminum plate and the aluminium panel of the control unit, in order to avoid a loss of temperature energy. Also assure that the mixing glass plates are placed in the cut-outs of the plastic template correctly.

Switch off the equipment, when not in use. Inappropriate continuous operation may cause damages due to eventual condensates.

Warranty

The following remarks about the range of warranty, warranty terms and the registration of warranty claims apply to Germany.

The devices of primodent are high tech products, which are manufactured with the best precision and highest diligence.
Despite all that accuracy the apparance of errors cannot be excluded. Your contact partner to recover such errors is the supplier, you purchased the device from.

If a case of complaint occurs, please address primodent or the authorized primodent sales agent presenting the original invoice.

I. Duration and beginning of the warranty

The warranty is granted for 24 months.
The guarantee period starts with the delivery date of the device by primodent or an authorized sales agent. There is no extension of the orgiginal guarantee period in a case of parts replacement because of warranty reasons.

II. Warranty conditions

The apparatus was purchased from primodent directly or an authorized sales agent. Warranty claims can only be asserted, if the notification of defects was brought in to primodent or the agent in written form within 14 days after discovery of the defect.

III. Contents and range of the warranty

All warranty claims are subject to our general trading conditions and the legal regulations.

IV. Restriction of the warranty

Defects and errors don't come under warranty if they result from:
a) incorrect installation e.g. non-observance of the written installation instruction or the valid electric regulations,
b) inappropirate appliance or load e.g. the use of unsuitful wash/detergents or chemicals,
c) outside effects, e.g. transport damages, damage by impacts or percussions, damage by climatic influences or other natural phenomena,
d) repairs and alternations that were carried out by a not authorized third party,
e) genuine wear and tear damages by extreme demands.

EC-declaration of conformity

- acc. EN 61000-4-2	ESD, unloading of static electricity
- acc. EN 61000-4-4	burst, snaps transient electrical variable disturbances
- acc. EN 61000-4-5/1995	surge, impulse voltages
- acc. EN 61000-4-11/1994	tension variations
- acc. EN 61000-4-6	line-led noise immunity
- acc. EN 55022	radiated noise immunity
- acc. EN 55022	line-led breakdown sending
- acc. EN 55022	radiated breakdown sending

the manufacturer / seller

primodent – Joachim Mosch
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hereby explains that the following product

thermodynamic mixing panel
fire & ice

corresponds with the above mentioned regulation(s)– including their valid revisions at the time of declaration.

Bad Homburg, 11/25/2004

authorized signature

primodent, Joachim Mosch
president

Zertifiziertes QM-System mdc ISO 13485 ISO 9001