



**LuxCreo**  
Simplify Digital Dentistry



**iCreo solutions**  
DENTAL 3D PRINTING



**4D Aligner™**

PRODUCT  
BROCHURE

**FASTER  
SMARTER  
BETTER**

**Your Easiest Chairside Solution for Orthodontic Practice!**

*Caution: iCreo shall not be held responsible for any adverse effects, safety concerns, or performance issues arising from the use of non-LuxCreo validated compatible equipment or failure to adhere to LuxCreo validated printing / post-processing settings.*

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# About iCreo Solutions

At iCreo, we believe innovation should serve people. By combining intelligent creation with advanced 3D printing, we deliver trusted solutions that support healthier, better lives. From dental care to personalized health applications, our mission is to make precision, efficiency, and reliability accessible to every professional and patient. With iCreo, intelligent ideas become real solutions that improve care and quality of life.

For more information, visit LuxCreo.com <http://icreo.ca>.

Contact Us Today to Learn More!



825-583-7999



[info@icreo.ca](mailto:info@icreo.ca)



iCreo|Creo Solutions Inc.  
236 Evergreen Plaza SW, AB, T2Y 5B2



# What is 4D Aligner™?

## World First “FDA Class II 510(k)” for Direct Print Clear Aligner

- LuxCreo Dental Clear Aligner (DCA) Resin



4D Aligner™ System consists of a series of doctor-prescribed, custom-made, thin, clear plastic removable orthodontic appliances (aligners).

They are directly printed from light-cured polyurethane resin. They gently move the patient's teeth in small increments from their original state to a more optimal, treated state.

## Printed by High-Speed, Accurate, Chairside Workhorse

- LuxCreo iLux Pro Dental (ILPD) Solution



- fastprint.io™ (FPIO) 3D Printing Solution



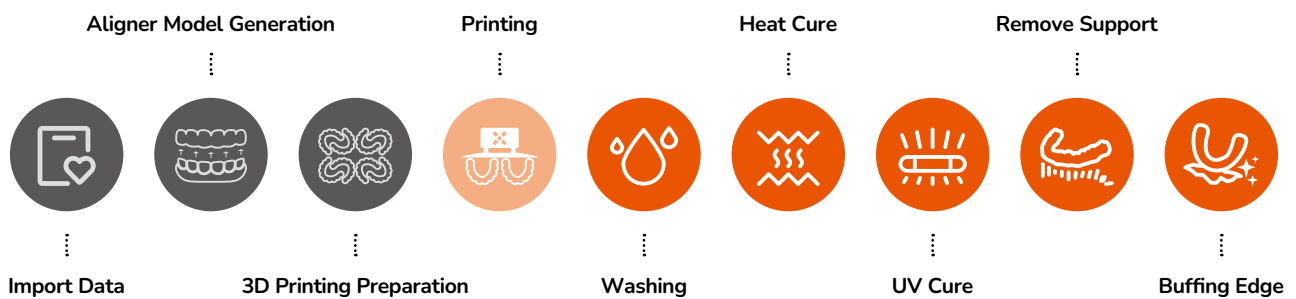
The 4D aligner system, enhanced by the Integrated LuxCreo Print solution – iLux Pro Dental solution, revolutionizes the production and application of orthodontic aligners directly within clinics, offering significant improvements in efficiency and patient care.

By utilizing LuxCreo's comprehensive system solution, you can streamline your chairside aligner production with efficiency and precision. This solution includes a high-performance DLP printer, a fully automated wash box, a baking box, and a UV curing box, all of which can be conveniently accommodated on a 35' x 20' table within your clinic.

With LuxCreo's advanced chairside printing technology, you can produce and deliver aligners swiftly and effectively. This technology empowers you to maintain control over your practice, prioritize patient-centric care, and consistently deliver high-quality orthodontic products.

### LuxCreo 4D Aligner Workflow

#### vs Outsourced Thermoformed Aligner Delivery



Start to Finished Product Delivery  
**2-3 Hours**

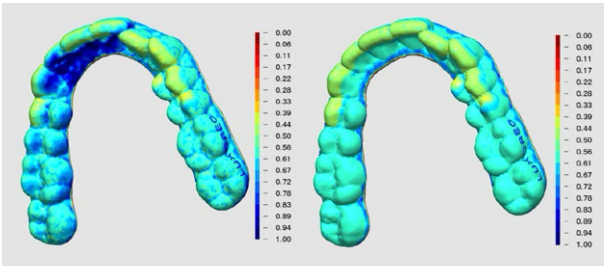
Outsourced Thermoformed Aligner Delivery  
**2-4 Weeks**

# Why Choose 4D Aligner™?



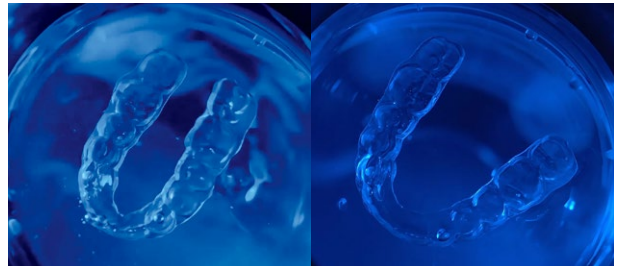
## Multi-Thickness

AI-generated thickness and gap to enhance control and achieve targeted force application



## Shape Memory

Maintain perfect shape and protect your oral hygiene with hot water (>60°C)



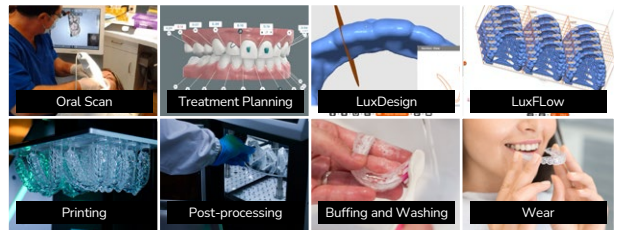
## Short Learning Curve with Simple One-Click

Simplified AI trim-line and block-out generation



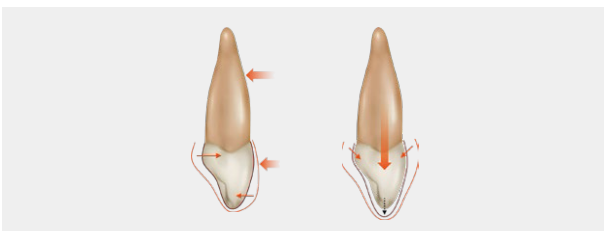
## Faster Turnaround Time

It takes less than 3 hours from scan to delivery, which helps to shorten turnaround time significantly.



## Enhanced Accuracy and Fewer/No Attachments

With enhanced accuracy, some traditional attachments could be replaced. 4D Aligner™ makes a more invisible smile and less chair time!



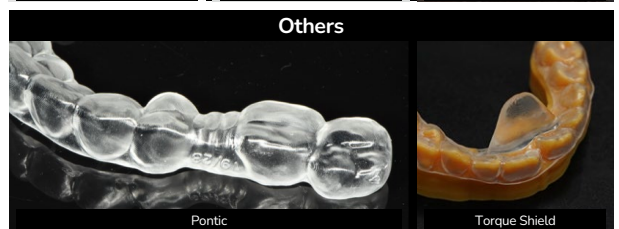
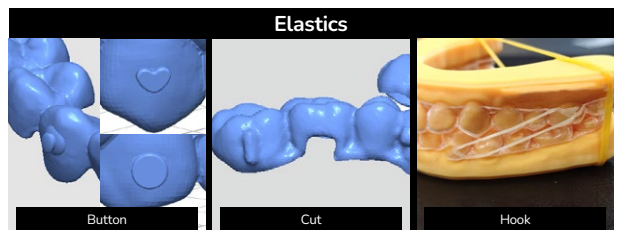
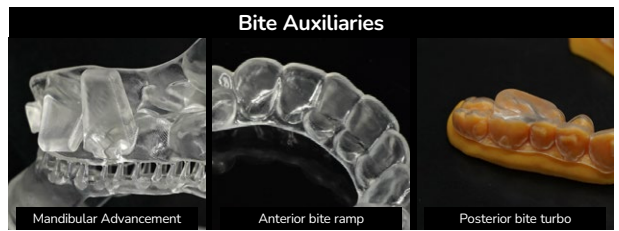
## Making Impossible Possible Unique direct print features

Direct-printed buttons, solid bite ramps, hooks, and slits with no more struggling of manual labor



## Cost effective and Eco-friendly

Say goodbye to the waste of physical teeth models. Every 4D Aligner™ is not only a step towards a healthier smile but also a step to a greener planet.



# What Cases are Suitable for 4D Aligner™?

## Teeth Crowding



Teeth crowding occurs when there isn't enough space in the jaw for all of the teeth to fit properly. This can result in overlapping or crooked teeth, which can make it difficult to clean between teeth and lead to an increased risk of tooth decay and gum disease.

## Openbite



Openbite is a condition where the upper and lower front teeth don't touch with each other when biting down. It can make it difficult or painful to bite into certain foods and may also lead to speech problems.

## Spacing



Teeth spacing refers to gaps between the teeth. While a small amount of spacing is normal and may not cause any issues, excessive spacing can lead to food getting stuck between the teeth and potential periodontal disease.

## Crossbite



A crossbite occurs when some of the upper teeth fit inside or outside of the lower teeth rather than on top of them. This misalignment can cause uneven wear on certain teeth and potentially lead to jaw pain or dysfunction.

## Overbite



An overbite occurs when the upper front teeth overlap significantly with the lower front teeth. This can lead to difficulty chewing food and may also cause wear on the lower front teeth.

## Underbite



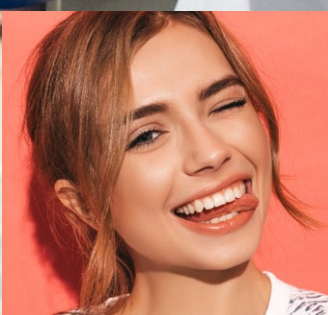
An underbite occurs when the lower teeth protrude past the upper teeth when the jaw is closed. This can result in an abnormal bite and misalignment of the teeth. It may cause difficulties with chewing, speaking, and overall oral health.

# How does 4D Aligner™ Work in Clinic?



## Real-Life Examples of Successful 4D Aligner Treatments

Powered by a multi-thickness design and unique direct print features, the 4D Aligner™ demonstrates impressive clinical efficacy and safety. At the same time, its smarter design and precise performance enhance treatment comfort and simplicity.



• **Supra-eruption/Intrusion - Bilateral Intrusive Force w/o TADs**



**Patient's Chief Concern:**

Create implant space for tooth #36

**Diagnostic Summary:**

26 supra-eruption, insufficient occlusal clearance of 36 crown restoration

**Treatment Summary:**

Open clearance for #36 crown restoration by distalization of tooth#27 and intrusion of tooth#26

**Treatment Notes:**

- Tooth#27 distalization in 2 trays
- Tooth#26 intrusion in 1 tray

**Aligner Design:**

- **Uniform thickness**
- **Direct printed button**
- **Subgingival trimline**
- **No TADs needed to achieve bilateral intrusive force**

**Change Frequency:**

10 days for distalization, 9 weeks for intrusion

**Treatment Duration:**

3 months

*The case is completed by Dr. Kelvin, Wen-Chung Chang, DDS, MS, Breeze Dental Center*

• **Dehiscence/Root Torque** - Multi-thickness for Sufficient Force Control



**Patient's Chief Concern:**

Gum recession, Dehiscence

**Diagnostic Summary:**

Class I malocclusion, Gingival recession and bone dehiscence at facial side of LR1

**Treatment Summary:**

Lingual root torque of tooth#41 into bony housing, get prepared for soft tissue grafting

**Treatment Notes:**

- **No attachment** on tooth #41

**Aligner Design:**

- **Multi-thickness**

**Change Frequency:**

10 days

**Treatment Duration:**

6 months

*The case is completed by Bill Layman DMD, MBA, Straighten Up Orthodontics.*

• Crowding/Crossbite - No Attachment



**Patient's Chief Concern:**

Crowded lower teeth

**Diagnostic Summary:**

Class I crowded malocclusion with anterior crossbite

**Treatment Summary:**

Correct crossbite, mild IPR

**Treatment Notes:**

- No attachment

**Aligner Design:**

- Multi-thickness
- Better retention w/o attachment with local thickening at undercuts

**Change Frequency:**

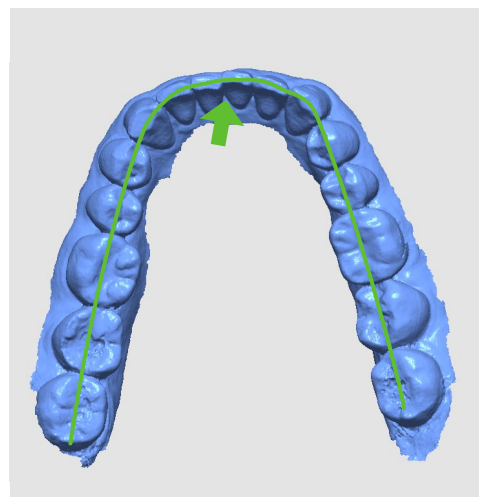
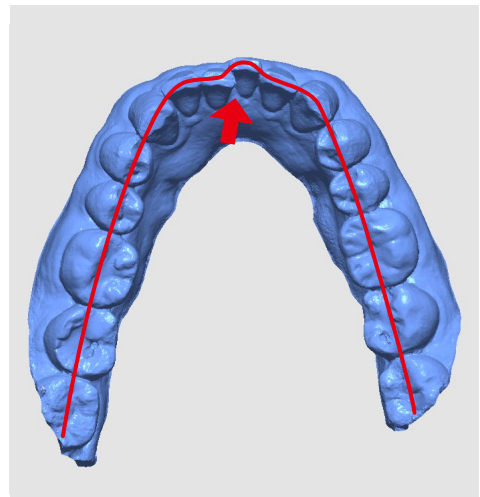
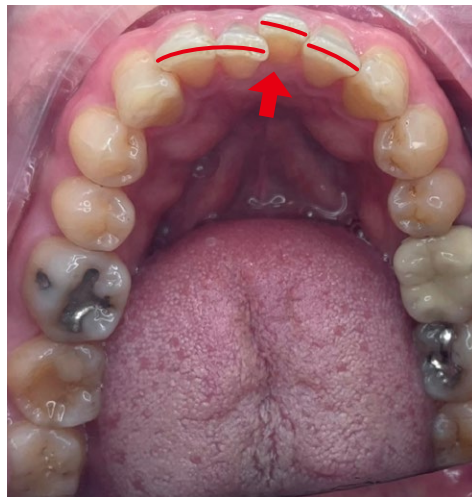
7 days

**Treatment Duration:**

10 months

*The case is completed by Bill Layman DMD, MBA, Straighten Up Orthodontics.*

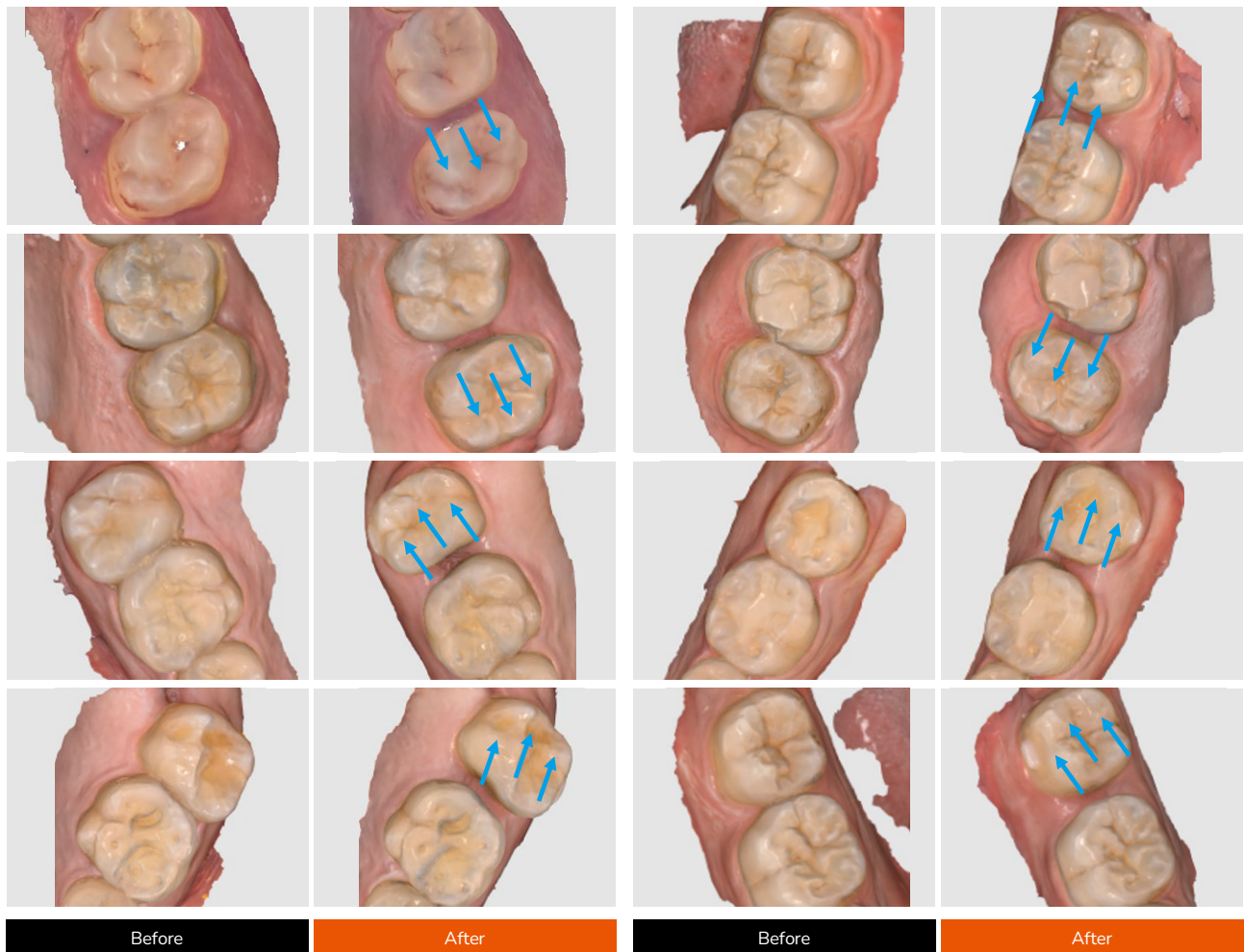
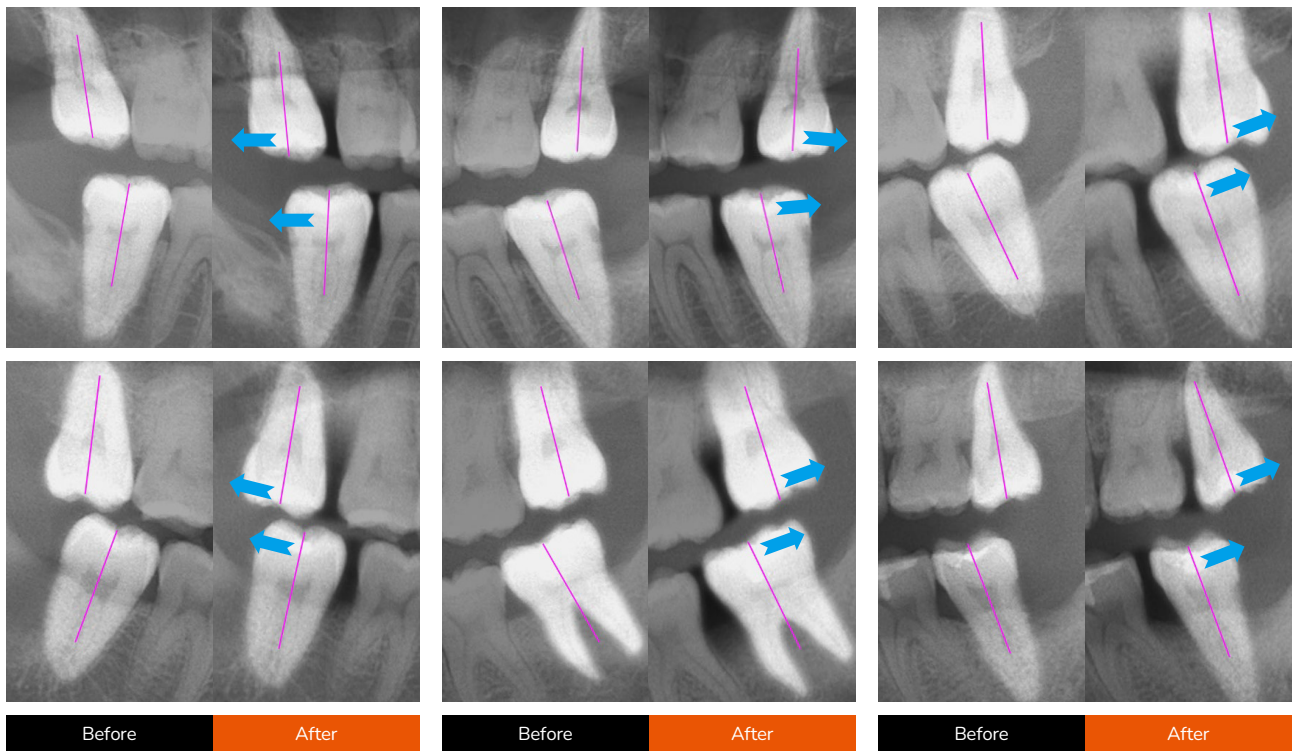
• Crowding/Expansion - No Attachment



- Patient's Chief Concern:** Crowded lower teeth
- Diagnostic Summary:** Class I malocclusion
- Treatment Summary:** Resolve lower crowding by expansion
- Treatment Notes:**
- **No attachment**
  - IPR after tray 5
- Aligner Design:**
- Tray 1-5 uniform thickness, 6-10 **multi-thickness**
  - Great fits and clamping with **local thickening**
- Change Frequency:** 10 days
- Treatment Duration:** 3 months, still in treatment

The case is completed by Dr Mario E. Tai, DMD, DMSc., Harvard, Tai Orthodontics

• **Bodily Movements in DISTALIZATION** - Key biomechanics for Class II cases



## Testimonials from Satisfied Dentists and Patients



“

*The iLux Pro Dental printer and workflow has created a simplified process that has been easy to integrate into our office's digital system. The option to adjust the parameter settings in LuxDesign has created a customized and efficient plan for our patients.”*

**Dr Lisa Alvetro, MSD**  
Alvetro Orthodontics

“

*I love my iLux Pro Dental workflow. With easy-to-use software and the FDA-cleared aligner resin, we can produce aligners with variable thicknesses for better aligner therapy. From automated design and nesting to time-saving Digital Polishing™, LuxCreo has thought-out how to drive efficiency for the dental users.“*

**Dr Bill Layman, Wharton**  
DDS, CEO & Founder



“

*The iLux Pro Dental and LuxDesign software has been a game changer for my practice. LuxDesign has saved my practice 60-75% in labor costs compared to the traditional workflow and has slashed waiting times for my patients.”*

**Dr Mike Pham, Baylor**  
Affordable Dental





*Multi-thickness aligners are the future of orthodontic aligner therapy. It the 'Holy Grail' and LuxCreo invented it. 4D Aligners have a superior fit that thermoformed trays simply cannot achieve, providing better control over torque forces in moving the teeth. They also require the orthodontist to use fewer attachments on the tooth surface of the patient. When that level of accurate is combined with the ability to design and print variable thickness trays, it yields better control over movements and a better patient experience. ”*

**Dr. Neil Warshawsky, DDS, MS**  
Get it Straight Orthodontics



*Implementing LuxCreo has been one of the best decisions we've made for our practice. We used to worry about outsourcing aligners and patient wait times, but now what used to take multiple visits now only takes one. The technology has allowed us to take on more patients, reduce treatment times, enhance patient outcomes, and set us up for significant financial growth.”*

**Dr. Anthony Bordas, DDS**  
Executive Director of Complete Dental Solutions

• Patient Feedback

They **fit comfortably**. I can feel shifts in my teeth and jaw alignment but overall manageable.

**Very easy** most of the time I can't tell I am wearing the aligners.

**Good** some slight discomfort but overall **easy**.



I think these aligners have been **great**. I think the most important thing is to clean them every day.

**Very happy** overall.

I **like** it, very **simple** to wear.

They **fit perfectly**.

**Easy** to use.

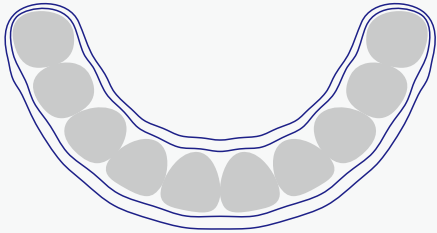
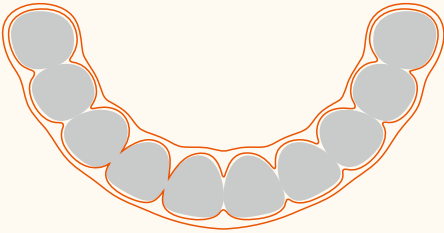
Much more **comfortable** than I expected, and the movement is tangible as I can feel the soreness after aligner removal.

The wells that get put on your teeth I would have liked for this to be on the molars so you don't notice them other than that **everything has been good** !

# Competitor Analysis and Cost Breakdown

## How is 4D Aligner™ Compared to Other Thermoformed Aligners?

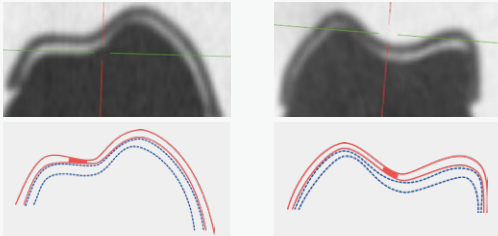
- Technical Feature Comparison

Thermoformed aligners	4D Aligner™
<b>Suitable for Most Cases from Mild to Moderate Complexity*</b>	
<ul style="list-style-type: none"> <li>• Almost invisible, attachments making it less invisible</li> </ul>	<ul style="list-style-type: none"> <li>• Create more natural smile, with no/fewer attachments</li> </ul>
<b>Customization</b>	
<ul style="list-style-type: none"> <li>• Limited, sometimes need tools to do manually</li> </ul>	<ul style="list-style-type: none"> <li>• Highly customization available</li> <li>• Direct printed unique features</li> <li>• Digital design by AI</li> </ul>
<b>Treatment Effectiveness</b>	
<ul style="list-style-type: none"> <li>• Irreversible creep and stress relaxation</li> </ul>	<ul style="list-style-type: none"> <li>• Shape memory, rejuvenation in hot water to restore strength</li> </ul>
<b>Thickness</b>	
<ul style="list-style-type: none"> <li>• Uniform only</li> </ul>	<ul style="list-style-type: none"> <li>• Uniform thickness</li> <li>• Multi-thickness</li> </ul>
<b>Effective Contact with Teeth</b>	
<ul style="list-style-type: none"> <li>• Cannot be well controlled due to process</li> </ul>	<ul style="list-style-type: none"> <li>• <b>200% higher</b></li> </ul>
	

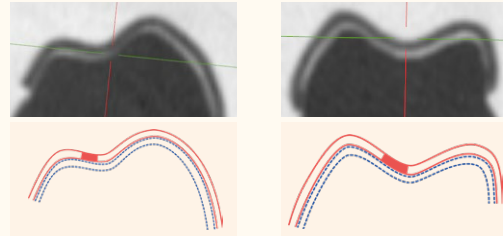
\* Treatment outcomes are dependent on the experience level of the practitioner.

**Accuracy (Precise treatment)**

- Unstable thickness and tooth fit under micro-CT scan



- Consistent thickness and tooth fit under micro-CT scan\*\*



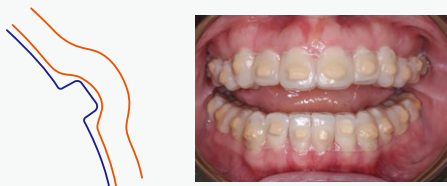
**Auxiliary (i.e button, hook, bite ramp)**

- Manual sticking or cutting

- All in one printed aligner, less likely to break comparing to manual sticking

**Attachments**

- Big gap and need large attachments for more contact



- Small gap with more contact.
- Achieve efficient movements with fewer and smaller attachment.
- Better clamping at undercut makes no attachment possible for treatment!



\*\* 4D Aligner under micro CT scan is in uniform thickness not multi-thickness.

**Cost Breakdown of Chairside Direct Printing VS Chairside Thermoform**

**In House MAKE Cost Comparison**

*Thermoform*

**\$15.32**

*Direct Print LuxCreo*

**\$12.47**

All Amounts in USD

Labor/Service Cost	\$3.90
Material cost	\$6.92
Software	\$5.00
Yield	\$0.053
<b>Total</b>	<b>\$15.87</b>



Labor/Service Cost	\$2.72
Material cost	\$4.67
Software	\$5.00
Yield	\$0.08
<b>Total</b>	<b>\$12.47</b>

Data Source: Dr. Bill Layman

# Usage and Maintenance

## Instruction for Use of 4D Aligner™

Using aligners created by LuxCreo system is not much different compared to traditional thermoforming ones.

**Wearing Time:** Patients should be instructed to wear their 4D Aligners for 20 to 22 hours daily, 7-14 days per tray to achieve optimal results. They should only remove the aligners during meals, brushing, and flossing to maintain oral hygiene and prevent aligner damage.

**Initial Fitting:** Conduct an initial fitting session when patients receive their aligners. Ensure the aligners fit snugly and comfortably over the teeth, applying the appropriate pressure for effective tooth movement. Provide patients with detailed instructions on how to properly insert and remove the aligners.

### Special Instructions:

- 1. Cleaning:** See detailed cleaning process suggestions at next chapter.
- 2. Eating and Drinking:** Instruct patients to remove their aligners before eating or drinking anything other than water to avoid damage and staining.

**Check-ups:** Schedule regular check-ups every 6 to 8 weeks to monitor patient progress and make any necessary adjustments. These appointments are crucial for ensuring the treatment stays on track.

### 4D Aligner™ System Contains:



• 4D Aligner™ box	
a) Wear and care guide x1	d) Paper box x1
b) Foil bags of aligner trays x10	e) Chewies x2
c) Aligner container x1	f) Aligner remover x1



• 4D Clean Kit (optional)
a) 4D Ultrasonic cleaner x1
b) Power adapter x1
c) Cleaning tablets x96

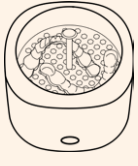
## Unique and Easy Maintenance

- By submerging aligners in hot water\*, your patients can experience shape memory (thermal excitation).
- Submerge aligners in hot water\* + cleaning tablet (e.g. Retainer Brite, Polident), to restore 4D Aligner™ to original clarity and original shape.
- For excessive staining, it's recommended to have your patients leave aligners submerged overnight for deep cleansing.

\*Hot water = Minimum 60-65°C (standard hot tap water setting). Use 85-100°C (standard for brewing tea/coffee) for faster results.


### • For users who have 4D Clean Kit

**Step 1:**




- Place 4D Aligner™ side by side, teeth cavities face-up, onto the filter rack, into the cleaner.

**Step 2:**



- Add tap water into cleaner, submerging appliances, below the max water level.
- If you want to clean the appliance, add Polident / Retainer Brite tablet(s).
- Close the lid.

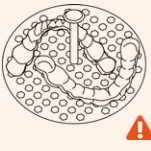
**Step 3:**



- By one click, enjoy 10 minutes of heating (60 °C) and ultrasonic.


**TIP: If you are not satisfied with the cleanliness, restart from Step 2 for another cycle.**

**Step 4:**



- Open the lid to cool down for 5 minutes.
- Use the rack to take appliances out.

**Step 5:**




- Rinse appliances with cold running tap water.
- Wear freshly rejuvenated appliances.

**TIP: It is normal for the appliances to feel tighter immediately after rejuvenation.**


### • For users who don't have 4D Clean Kit

**Step 1:**



- Place 4D Aligner™ side by side, teeth cavities face-up, into the microwave-safe container.

**Step 2:**



- Prepare boiling water (100°C) or hot tap water (60°C-65°C).
- Pour into container, submerging appliances.
- If you want to clean the appliance, add Polident / Retainer Brite tablet(s).

**Step 3:**


**Daily rejuvenation**

- Soak for 1-2 hour.

**Deep rejuvenation**

- Soak for at least 8 hours.


**Step 4:**



- Add cold tap water until overflowing.
- Continue for at least 1minute to cool.


**TIP: Place container in sink before adding water.**

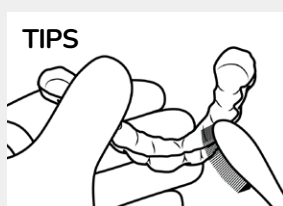
**Step 5:**



- Rinse appliances with cold running tap water.
- Wear freshly rejuvenated appliances.

**TIP: It is normal for the appliances to feel tighter immediately after rejuvenation.**

 Caution: Use caution and heat-resistant gloves when handling hot water. If you are under the age of 18, or have difficulty safely completing these tasks, please seek the assistance of a parent or guardian.



### TIPS

For heavy stain, to enhance the "deep rejuvenation" protocol, consider the following steps:

1. After soaking, rinse the rejuvenated appliances in cold tap water and gently brush to remove any tablet residue from the surface. The residue is easily washed away with a gentle rub, leaving your appliances feeling fresh and clean.
2. If concerned about cleaning tablet residue,

indulge in a short 1-2 minute thermal rejuvenation cycle by soaking the deep-rejuvenated part in boiling/hot water. This step further refreshes your appliances.

3. Before wearing, rinse the appliances in cold water to ensure optimal comfort and cleanliness.

**Note:** Do NOT brush under HOT tap water, which might cause damage to the appliance.

*Treating a 4D Aligner™ with hot water is a unique feature of 4D Aligner™ System solution that results in shape-restoration of the 4D Aligner™ to its original shape.*

# Frequently Asked Questions (FAQs)

## 01 What is the LuxCreo 4D Aligner System?

The LuxCreo 4D Aligner System is an advanced chairside solution designed to manage orthodontic treatment cases quickly and efficiently. It leverages LuxCreo's cutting-edge direct printing technology to produce high-precision aligners with minimal need for attachments.

## 02 What are the key benefits of using the LuxCreo 4D Aligner System?

- **Rapid Turnaround Time:** Aligners can be produced and delivered within 2-3 days.
- **Fewer Attachments:** Enhanced accuracy and multi-thickness design reduce the need for additional attachments.
- **Cost-Effective:** Offers a more affordable solution for both orthodontic practices and patients, improving patient conversion rates.

## 03 How does the direct printing technology improve aligner fit?

Unlike the traditional thermoforming process, our printing technology enables the production of direct print aligners without the need for complex heat-up and pressure squeeze processes, which can lead to deviations in accuracy. By directly designing and printing the shell, these aligners fit precisely around the teeth, ensuring the correct application of forces for effective tooth movement. This precision reduces the necessity for attachments and provides better control over tooth alignment.

## 04 What is the multi-thickness design, and how does it benefit treatment?

The multi-thickness design allows for targeted force application, enabling precise control over tooth movements. This design is particularly beneficial in minor corrections cases where specific teeth need minor corrections.

## 05 What are the main advantages of LuxCreo's aligner system over competitors like Invisalign and Spark?

- Higher conversion rate due to fast turnaround time and cost-effectiveness.
- Chairside ease of use and broader capability for treating easy cases with less chair time.

## 06 How can I get more information about the LuxCreo 4D Aligner System?

For more detailed information, you can refer to the product brochure, sales sheets, or contact LuxCreo's customer support for specific queries. Email [support@luxcreo.com](mailto:support@luxcreo.com) or visit [support.luxcreo.com](http://support.luxcreo.com)

## 07 What treatment plan is this 4D Aligner system using?

You can design your treatment plan using your existing treatment plan software. Just follow our 4D Aligner Design Guidance. Or you can outsource our treatment planning service, contact [support@luxcreo.com](mailto:support@luxcreo.com) for more information.

## 08 Do you have any recommendations or guidelines for attachment sizes or wear time?

These are suggested guidelines based on our experience and research. We trust and rely on the expertise of our doctors to continuously improve, so we will accommodate your submissions.

## 09 Will I (doctor) be designing the aligner shell myself?

Yes, if you purchase iLux Pro Dental Solution, you will receive LuxCreo's design software-LuxDesign to customize your aligners shells by simple but reliable "1-click" generation.

Or you can start from 4D-20S. In that case, the LuxCreo team will be designing the aligners based on the preferences you indicate on our Print Request forms.



# Ordering Information

## 4D Aligner™ Promotion 4D20

- Minor Correction Aligner Cases - 20 stages or less



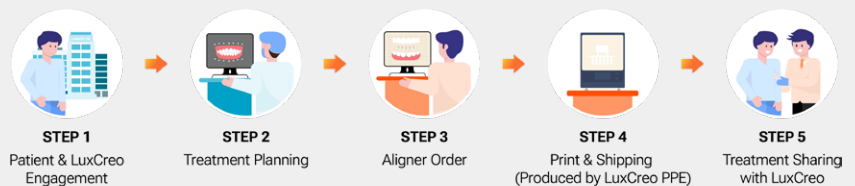
<b>4D20 Service Clear Aligner Production<sup>[1]</sup></b>	
4D20S	\$ 1,600/Case
<b>4D20 Partner Program Pricing<sup>[2]</sup></b>	
4D20S	\$ 1,250.00/Case
4D20FLEX	\$ 799.00/Case
<b>4D Aligner Packaging</b>	<b>\$ 19.00/pack</b>
10 foil bags, 1 aligner container, 1 paper box, 2 chewies, 1 removal hook, 1 care guide	
<b>4D Clean Kit</b>	<b>\$ 99.00/kit</b>

[1] 4D20 Full-Service - full case is produced by LuxCreo or LuxCreo Production Partner Ecosystem (PPE).

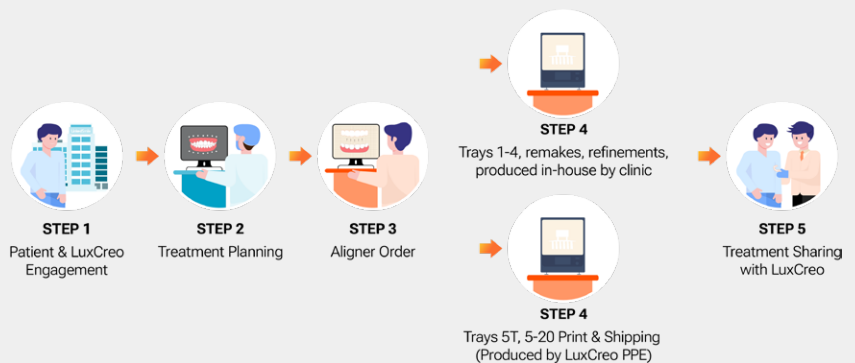
[2] iLux Pro Dental and fastprint.io solution customers are eligible to join the 4D20 Partner Program and receive 10 free case starts (1-4 In-House, 5-20 LuxCreo PPE in 1 Delivery) and discounted pricing.

\$22/aligner for additional aligners produced by LuxCreo or 4D Aligner™ Production Partners.

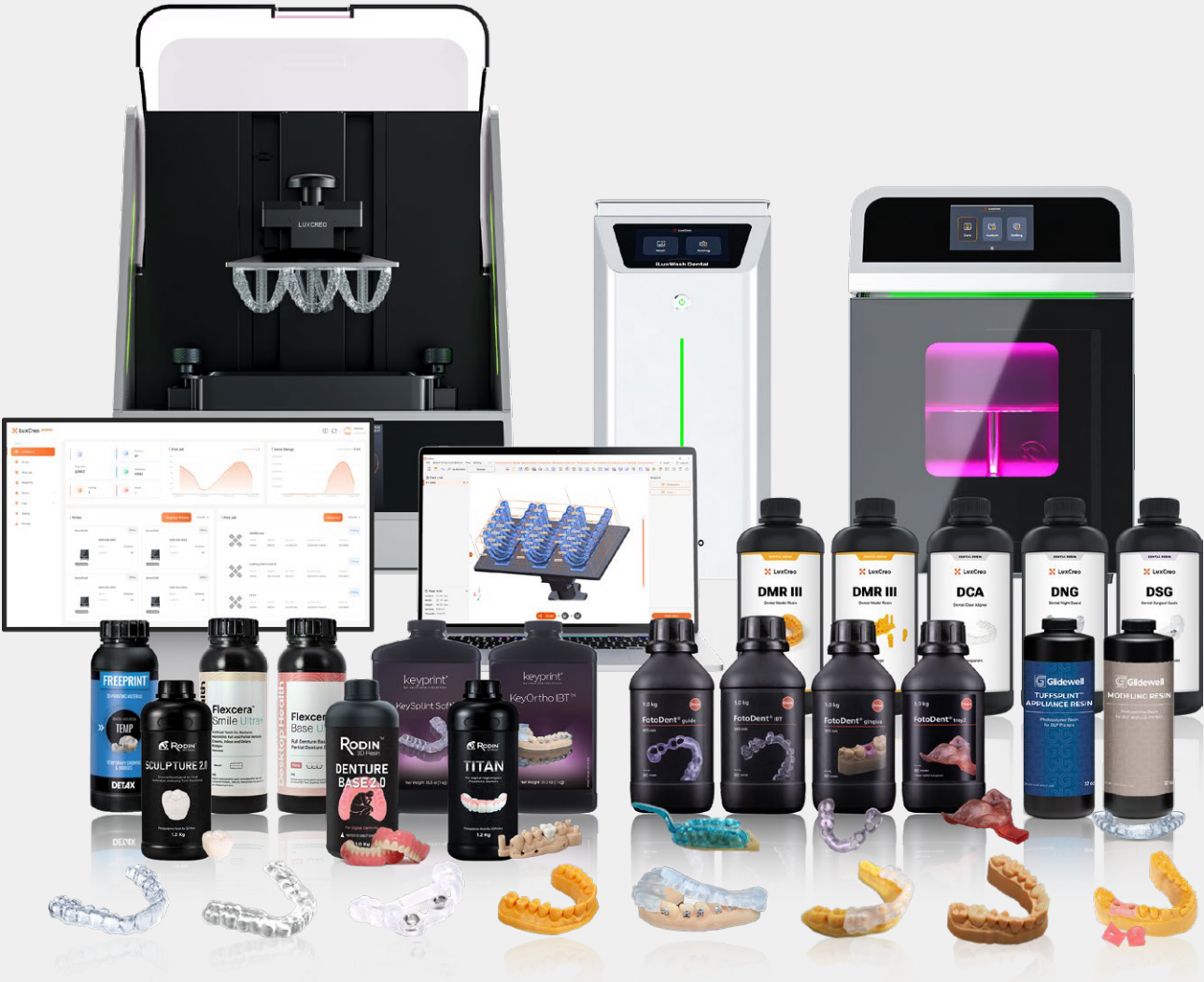
- **4D-20S**  
“Enjoy End to End Service from LuxCreo!”



- **4D-20FLEX**  
“Same-day Starts and We Do the Rest!”



# iLux Pro Dental 3D Printing Solution



For more detailed information, contact iCreo Solutions via:

-  825-583-7999
-  [info@icreo.ca](mailto:info@icreo.ca)
-  [Support@icreo.ca](mailto:Support@icreo.ca)
-  236 Evergreen Plaza SW, Calgary, AB, T2Y 5B2



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DENTAL 3D PRINTING



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