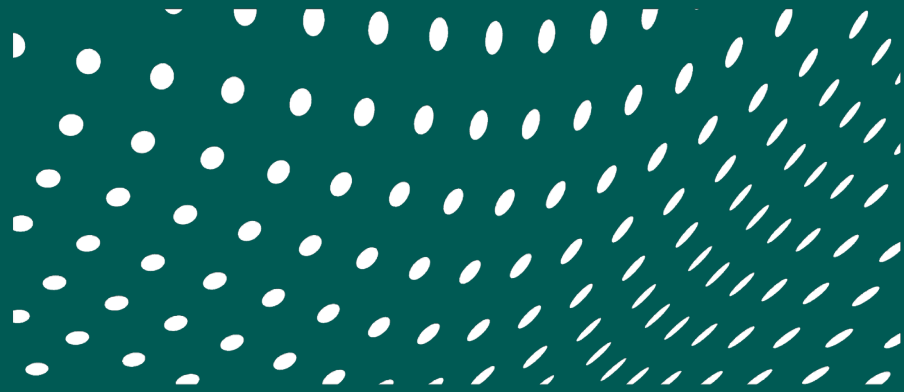
UCAST™

Fact Sheet



Executive Summary

Clinical efficacy
UCAST is a safe and effective treatment for fractures

- ✓ Backed by multiple RCTs
- ✓ CE & FDA approved

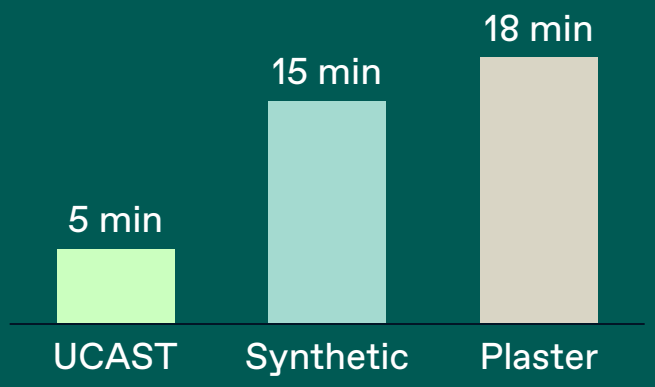
Material properties

- X-ray transparent
- Toxin & allergen free
- Remoldable up to 25 times

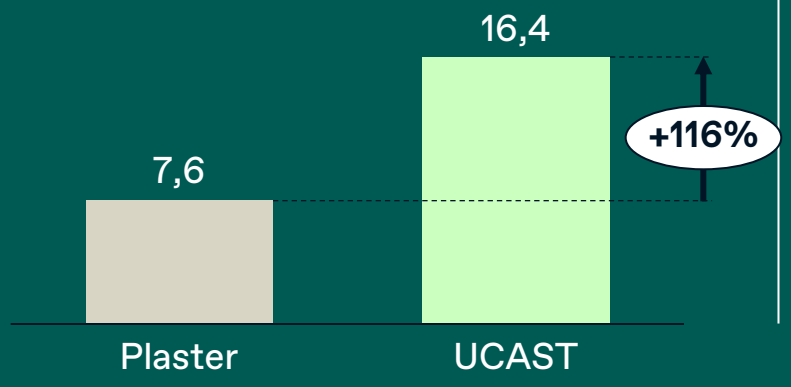
Sustainability

- ✓ Fully biodegradable splint
- ✓ Sourced from sustainably harvested forests
- ✓ Ethically produced with renewable energy

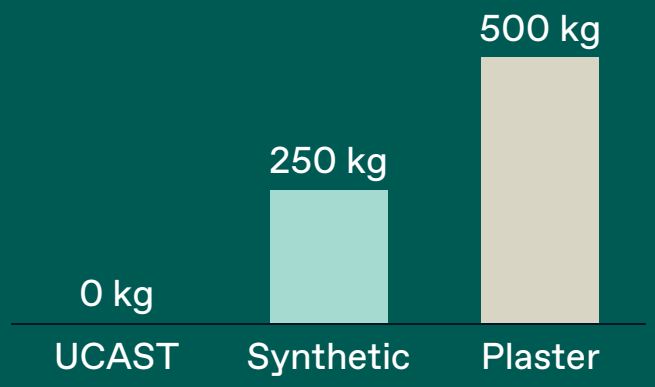
Time to make a cast



Maximum Strength (MPa)



Landfill waste per 1,000 patients



Comparison of casting materials

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Feature	UCAST®	Fiberglass/ Synthetic	Thermoplastics	Plaster-of-Paris
X-ray transparency	Excellent	Fair	Fair	Poor
Lightweight	✓	✓	✓	–
Shockproof	✓	✓	✓	–
Remoldable	✓	–	✓	–
Apply without water	✓	–	–	–
Apply without gloves	✓	–	✓	–
Biodegradable	✓	–	–	–
Non-toxic / Non-irritating	✓	–	–	–
Material waste %	0 %	30 %	10 %	30 %

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1. Clinical Benefits

UCAST is backed by clinical research

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- The splint in UCAST is made of Woodcast® material which has been deemed safe and effective both in laboratory tests and clinical trials.
- In the randomised trials, Woodcast has performed similarly to traditional materials
- UCAST combines the clinical effectiveness of Woodcast with a much faster and easier padding and fixation technique. New research is ongoing

Studies	Measured outcomes	Result
Woodcast® vs Fiberglass RCT, Woodcast® vs PoP RCT	Adverse events	No significant difference
	Patient comfort	No significant difference
	Satisfaction score	No significant difference
	Application and removal time	No significant difference
Woodcast® vs conventional materials	Stiffness	No significant difference
UCAST lab test	Mechanical stability of UCAST vs. PoP vs Synthetic casts	Research ongoing
UCAST pilot study	UCAST user satisfaction	Research ongoing
	UCAST application speed	Research ongoing

The Bone & Joint Journal
Over 70 years of orthopaedic excellence

Martynov et al. Bone Joint J 2020, Pirhonen et al. Orthot Int 2012, Singh et al. Bone Joint J 2020, Gwilym et al. Bone Joint J 2020

UCAST is designed for patient safety

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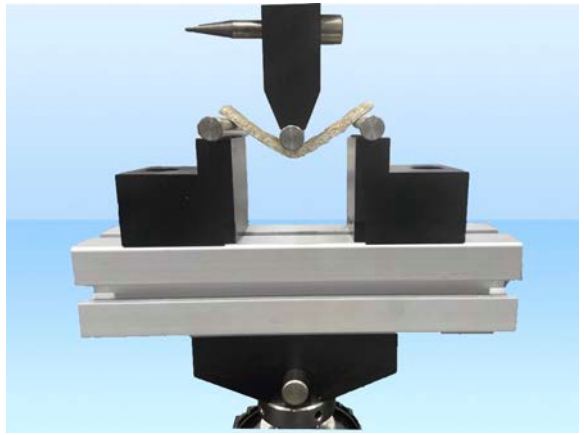
- A 2018 study found that 25% of cast-treated patients experience some complication.
- UCAST has been systematically designed to minimize complication risk
- The main risks for UCAST are using excess heat and wetting the cast, which can be mitigated with proper training.

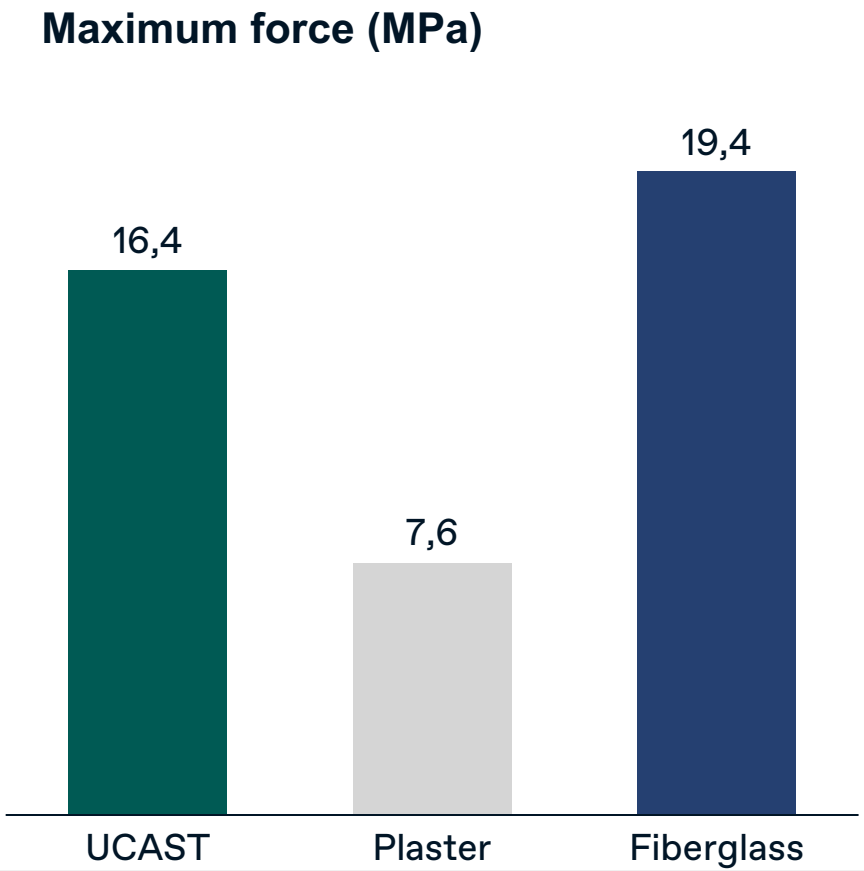
Common complications	Main causes	UCAST anti-complication features
Joint stiffness	Prolonged immobilization	**Only the necessary joints are immobilized**
Muscle atrophy and ligament weakening	Prolonged immobilization, rigid circumferential casts	**Splint allows more muscle activation**
Skin maceration	Poor ventilation of cast	**Built-in airholes and moisture-transporting fabric**
Contact dermatitis	Irritants (benzalkonium chloride, isocyanates)	**Non-toxic and non-allergenic materials tested for skin irritation**
Pressure ulcers, nerve palsy, pain & tightness	Improperly applied cast	**Shape designed by experts. Easy to get right and to adjust and remold.**
Burns	Chemical reactions, insufficient padding	**Thick padding with tested insulation properties**
Cast saw injuries	Inexperience, patient sedation, poor saw blade condition	**No cast saw needed**
Compartment syndrome	Rigid, tight circumferential casts	**UCAST is splint-based**

2. Material Benefits

UCAST is 2x stronger than Plaster

- In a ISO 178 bending test, the Woodcast splint used in UCAST withstood a two times stronger force than Plaster of Paris
- The strength of UCAST is slightly lower than fiberglass after 24h





UCAST is X-ray transparent

- Some casting material may cause blur to X-ray images. Because the UCAST splint comprises of wood and polymers, it is radiolucent and results in clear images.

Figure 4 *X-ray image of wrist with no cast.*

Material used in UCAST

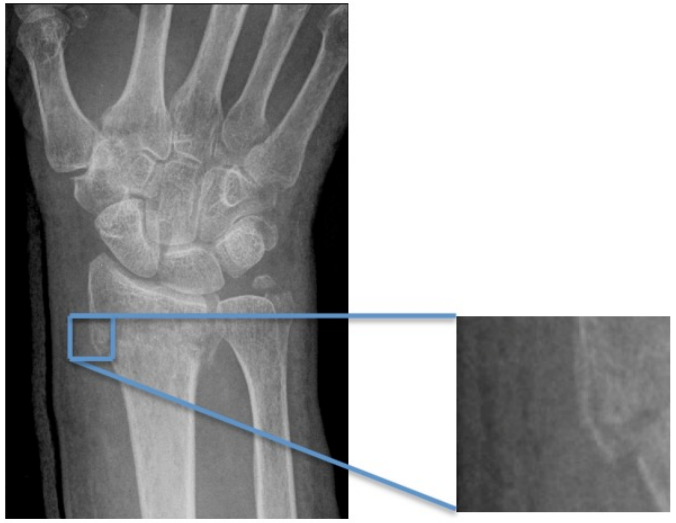


Figure 5 *X-ray image of WOODCAST.*

Figure 6 *Enlargement from Figure 5.*

Figure 7 *X-ray image of POP.*

Figure 8 *X-ray image of Fiberglass.*

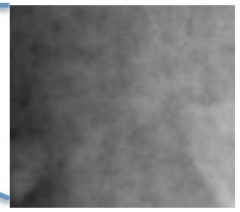


Figure 9 *Enlargement from Figure 8.*

UCAST does not contain toxins or allergens

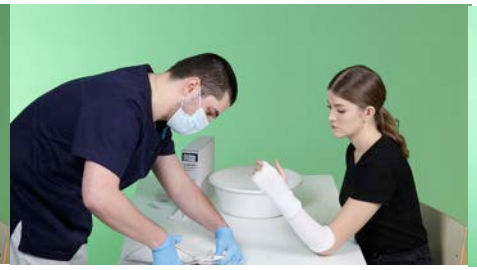
- Harmful chemicals and irritants are still common in the healthcare industry.
- With growing evidence and awareness of the health effects of these compounds, hospitals have set up policies for safety and use of protective equipment.
- UCAST does contain toxins, allergens or dusts, and can be handled without protective gloves or masks.

Common irritants	Present in	Potential health effects	UCAST
Isocyanates	Synthetic hardeners (e.g. fiberglass, polyester casts)	Contact dermatitis, skin and lung irritation, asthma, cancer, reproductive problems	**No isocyanates**
Phthalates	Softeners	Asthma, cancer, reproductive & development problems	**No phthalates**
Latex	Some bandages, protective gloves	Irritation, asthma	**No latex**
Dusts	Plaster-of-Paris, cast removal with saw	Irritation to respiratory organs, lung disease	**No dusts**

3. Operational Benefits

UCAST simplifies the casting process

Normal casting

Preparation	Cutting	Mold, cure	Clean-up	Removal
				
Fill bucket, take materials. Put on gloves and protection. Measure and cut stockinette.	Open package, take layers, fold. Measure and cut. Submerge PoP in water.	Apply to wrist, molding the material. Keep in place until hardened enough. Wrap with bandages.	Clean up the patient, table, hands and scissors. Empty the water container. Throw away excess material.	Carefully cut the cast open with scissors or a cast saw

UCAST

Heating	Molding	Clean-up	Removal
			
Open package. Place splint in heater, wait 100 sec.	Apply splint to fabric. Mold to wrist and let cool.	No clean-up required	Easy removal like a brace

Process improvement

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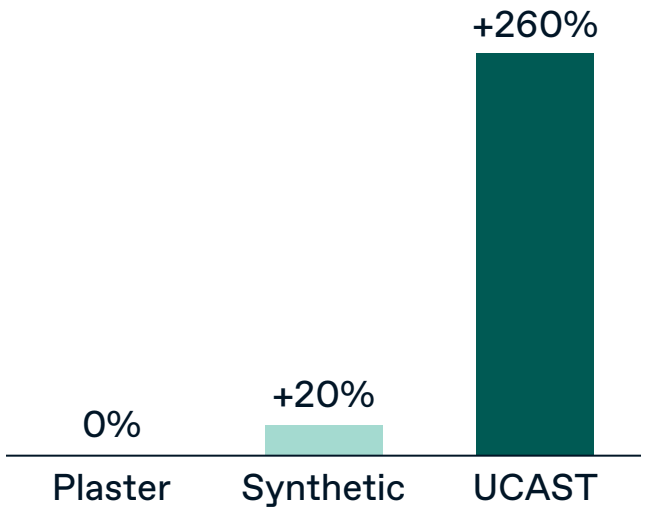
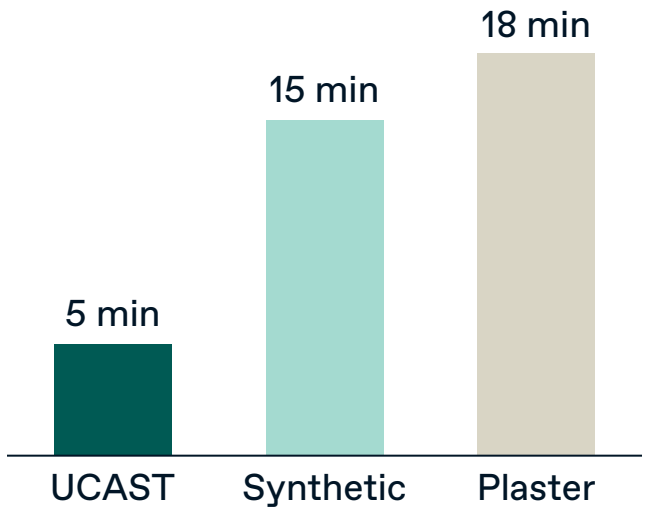
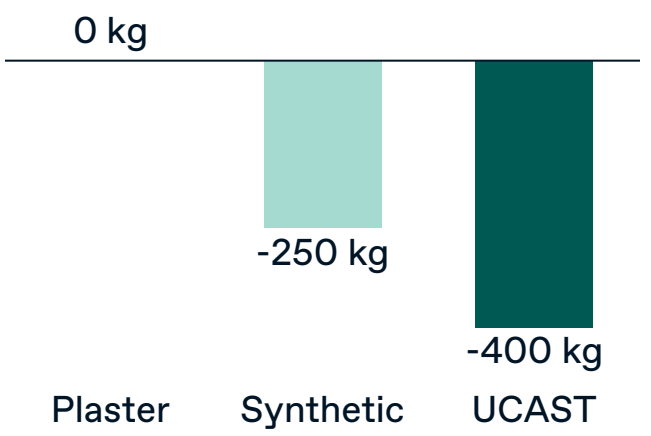
UCAST can improve patient flow +260% compared to plaster



Time to make one forearm cast



Landfill waste reduction per 1,000 patients, compared to Plaster



Removing extra steps

Every extra step has been reduced with UCAST, making it the fastest casting method available.

Easy control visits

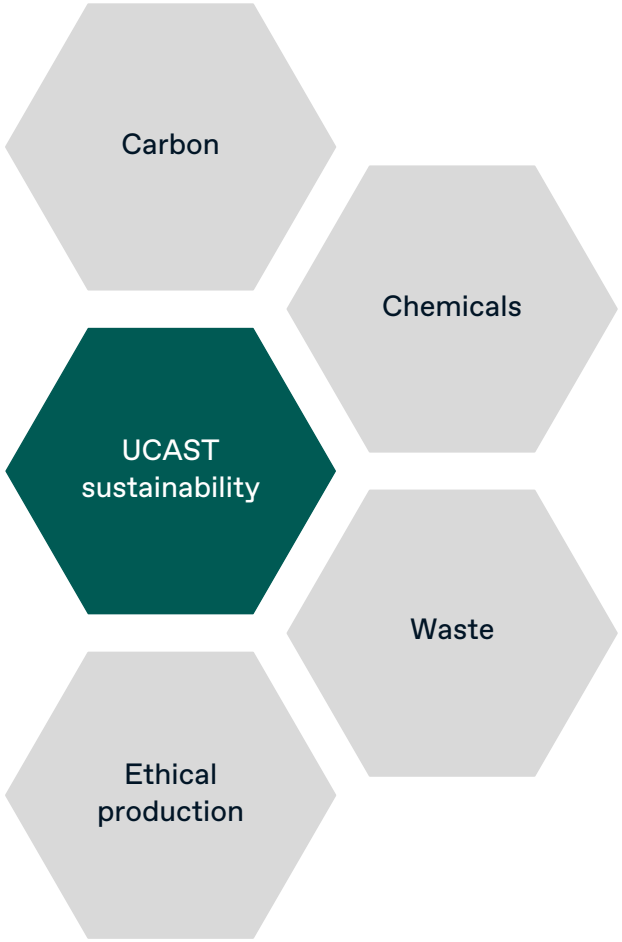
Cast inspection is easy with UCAST, as the cast

Lean management

UCAST is fully compatible with lean principles. One package contains everything needed for a cast.

4. Sustainability Benefits

UCAST is a step towards more sustainable care



Carbon
The carbon footprints of our products are lower because we use wood as a raw material.

Chemicals
UCAST does not contain or release toxic chemicals to the environment at any part of the manufacturing or recycling process.

Waste
UCAST reduces waste by its revolutionary application technique but also by consisting of recyclable and biodegradable materials.

Ethical production
UCAST is made in Finland. Our factory runs on renewable energy, and has ISO certificates for Quality, Environmental Management, and Occupational Health and Safety. Our wood is harvested from sustainably managed forests.

The splint in UCAST is biodegradable

Enzymes

Wood component starts breaking down

Polymers break down to monomers

Only biomass, water, carbon dioxide left behind

Raw materials	Enzymatic biodegradation	Hydrolysis	Fully biodegraded
▪ The Woodcast material consists of two ingredients: ▪ Aspen Wood chips ▪ Aliphatic polymers	▪ With the right temperature, moisture and micro-organisms, the splint will start to degrade.	▪ The materials are degraded to carbon dioxide, water and biomass without forming any toxic components	▪ During this process, no microplastics are left into the ecosystem

5. Questions and Answers

What is the procedure for applying UCAST?
Once heated for approximately two minutes in the recommended heater or thermal bath, the splint is applied on the fabric. The product is applied to the extremity. The closure system is loosely tightened, and the caregiver molds and shapes the product comfortably and precisely to the patent. After a few minutes, the material begins to cool and becomes rigid; tension is adjusted for final fit.

Is UCAST hard to handle?
No, it only contains two pieces that are easy to handle. The correct manuals on how to use and apply the UCAST correctly are on the package.

How long does it stay warm and pliable?
UCAST will remain pliable for approximately 2-4 minutes depending on the product. The total time it takes to apply is greatly reduced compared to other products. This leaves time to make adjustments as it hardens.

Is it waterproof?
UCAST is not waterproof and it is not recommended to bath or swim with it, only if the physician allows the patient to remove the brace. If not, the patient cannot get the brace and skin wet. It is imperative that the inside of the brace and patient's skin are completely dry after swimming or bathing.

If the patient goes swimming or takes a shower, how will the patient avoid skin issues?
If the patient has been given permission to remove the brace, wash the skin correctly and dry it up before applying the UCAST back.

Is there natural rubber latex or other potentially allergic or skin sensitive materials?
UCAST is a totally latex-free and allergen-free product. UCAST does not contain any toxins.

For what kinds of fractures are these useful?
The UCAST are useful for the same kinds of injuries for which similar devices made of plaster, fiberglass, or thermo-formable plastic are useful. The healthcare professional must make the decision.

What can I do for the very heat sensitive or fair skinned patient?
If a patient is very heat sensitive, apply a stockinette or double stockinette on the extremity before the warm brace. When used and heated correctly, UCAST does not cause a risk for burns.

How tight does the brace need to be for proper stabilization?
Ucast is meant to be worn under light pressure and not too tight to the skin. A little wiggle room inside the Ucast promotes air circulation and helps maintain dry healthy skin. An over-tightened brace creates "shear" or pressure on the skin during motion, and can result in irritation, rash, odor and skin issues. Be sure a finger can easily be inserted between the brace and skin.

How long does it take for the Ucast to get rigid?
It takes around 5 minutes for the splint to reach full rigidity.

What if I want to initially mold the Ucast in a little volar tilt or cock-up position?
Molding the Ucast in a little volar tilt (flexion) or a cock-up position is very common. The desired molding position is determined by the nature of the injury. After a period of time, the Ucast may be removed, re-heated, and re-molded in a neutral position.

Can Ucast be re-heated or re-molded?
Ucast products can be reheated multiple times. This allows for simple remolding, if the original application is not correct or if at a later date adjustments are required to account for anatomical changes, as healing progresses.

If the brace needs to be re-molded after a patient has worn it, should it be washed first? If so, can it be re-heated wet or does it need to be dry first?
The brace doesn't need to washed prior to re-heating, however if the physician has given the patient permission to remove the brace, it is recommended to have a wash on the extermity on a regular basis to maintain healthy skin and reduce odor and skin issues. The brace should be rigid prior to re-heating for proper application and molding.

Is Ucast Radiolucent?
Ucast is radiolucent allowing for visualization of new callus/bone formation or at the fracture site. Often plaster or fiberglass casts need to be removed in order to see the subtle signs of fracture healing. Removal and replacement is not necessary with Ucast.

Is Ucast trimmable and if so, how do you trim or cut it?
The Ucast splint and sheet material can be trimmed or cut with a scissors or shears. It is easier to cut while the material is warm but can be trimmed cold as well. The edges remain smooth and are not as abrasive or sharp as fiberglass and other materials.

If a patient looses or tears the sheet/padding on their brace how do I get a replacement?
There are replacement sheets/paddings available in packs of ten in the various sizes that accommodate the specific brace type./There is no replacement sheets/paddings, it is recommended for the patient to attend the closest health care unit using Ucast to apply a new one.

How can I prevent a non-compliant patient from removing the brace?
The pack includes two-sided, strong tape that you can apply to the brace ends.

Can the patient figure out how to remove the Ucast brace?
A non-compliant patient will remove almost any cast or brace that is applied. They typically remove the brace because it was uncomfortable, too tight, too warm, itchy, or any other annoying reason. With the Ucast, the removal typically does not destroy the brace. When the patient experiences pain, he simply re-applies the brace, and tightens it to a comfortable level.

How durable are the braces? Can athletes wear them?
The Ucast braces are durable enough to last at least eight weeks under normal wear and tear conditions. Fractures heal anywhere from four to eight weeks, depending on the type of fracture, and the age and condition of the patient. Note: normal conditions do not include manual labor, farming, or competitive sports.

Is Ucast hard to keep clean?
The braces are easy to keep clean and help maintain healthy skin and reduce odor and skin issues. Loosen or remove the brace as instructed by physician. Whipe inside and outside of the Ucast and and wash skin with antimicrobial soap and water.

Can Ucast burn the skin, especially of children and older patients?
No, the sheet/padding inner layer effectively insulates the skin from the Woodcast material. This sheet serves two purposes: it insulates the skin from the warmer Woodcast splin and allows the Woodcast to retain heat longer so that it cools gradually and has the proper working time. Ucast is dry and comfortable when applying to the patient.

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