



**Business School  
for the  
Creative Industries**



# **Final Report**

## **Refurbishing a ‘Right-hand’ Cricket Batting Glove using a ‘Vegan’ Chamois Leather**

Dr Lilian Sanchez Moreno & Professor Martin Charter

The Centre for Sustainable Design<sup>®</sup>,

Business School for the Creative Industries, UCA

**July 2023**

Funding provided for the Vegan Cricket Gear project was provided by UKRI via University for the Creative Arts, AHRC Impact Acceleration Account (IAA).

# 1. Introduction

The aim of this study was to assess the feasibility for refurbishing a pair of cricket batting gloves to extend the product's use phase using a 'vegan' leather to replace bovine leather. A caveat to this study, is that the 'vegan' or synthetic chamois leather selected for the refurbished prototype was completed for pragmatic reasons. As highlighted in the study conducted by the University of Cambridge on Leather Alternatives for Cricket Gear<sup>1</sup>, the vegan leather industry is at an early R&D stage, therefore, obtaining vegan leather samples represented a major challenge. As such, while the authors are aware that the composition<sup>2</sup> of the selected 'vegan' chamois leather is made from 80% polyester and 20% viscose<sup>3</sup>, and consequently, not deemed a sustainable plant-based alternative, the main goal was to produce and test a 'vegan' leather cricket batting glove as a proof of concept, within the project's limited time frame and budget constraints.

The refurbishment process involved firstly, identifying areas of wear and tear of the cricket gloves to assess the product parts that required refurbishment. This was followed by disassembling the gloves to remove the damaged parts/components and lastly, re-assembling the glove's components using the vegan chamois leather and player testing. As a result, insight into the most common product related faults that lead to the disposal of cricket batting gloves were identified. Additionally, the study provides an overview of the challenges faced when attempting to refurbish a pair of cricket batting gloves and provides initial recommendations for potential design improvements to enable the extension of the product's lifecycle. Cricket gloves have a right and a left hand. The batting gloves are designed for left-handed and right-handed players: the exercise was completed on a pair of right-handed gloves as this is the one that showed more signs of wear and tear due to the gloves being previously owned by a right-handed player. The report has therefore been divided into the following topics: 1) background to the product's use phase; 2) identified areas of wear and tear; 3) findings related to the disassembly process; 4) findings related to the refurbishment process; 5) testing and 6) key learnings and recommendations.

## 2. Background: Product in Use

A pair of used batting gloves was donated by a male recreational club cricket player who plays high standard league cricket based in Nottinghamshire in England. Prior to receiving the gloves, an informal interview was conducted with the player in which a series of questions related to the use phase of cricket gear were asked to understand the feasibility for refurbishing a pair of cricket gloves. The questions included the following: how many seasons the gloves were used, how they were looked after, and how they were stored. The

---

<sup>1</sup> <https://cfsd.org.uk/wp-content/uploads/2023/04/Final-Vegan-leather-alternatives-22-4-23.pdf>

<sup>2</sup> Identifying the material composition leather alternatives also represented a challenge within the research project. As mentioned within the University of Cambridge Vegan Leather Alternatives report, many firms are currently unwilling to share details about the material composition or the manufacturing process for IP reasons. Report available at: <https://cfsd.org.uk/wp-content/uploads/2023/04/Final-Vegan-leather-alternatives-22-4-23.pdf>

<sup>3</sup> Viscose is a semi-synthetic raw material. It is made from cellulose, a natural raw material found in wood and is extracted from beech or spruce wood, eucalyptus or bamboo in a chemical process and then pressed into fibre form under high pressure.

gloves were used for approximately 3 seasons, plus training e.g., ‘net practice’ once or twice a week. After use, if it was a particular hot day, the user indicated that gloves were left to dry due to excessive sweat. However, most of the time, the gloves were placed in the players cricket bag immediately after use, which was then stored in a garage. When asked if and how the gloves were cared for, the player indicated that they were *‘not really looked after as such. I would never throw them around, but they were just exposed to general wear and tear.’* Regarding the quality of the gloves, the player has described them as being perhaps *‘the best’* quality that he had owned as the gloves were gifted to him by a cousin who is a professional cricket player, sponsored by GM.<sup>4</sup> *‘So, I would assume the gloves were the highest quality that GM make.’* However, the player did indicate he felt that the gloves were not as durable as other pairs he had previously owned.

### 3. Identified Areas of Wear & Tear (Left & Right)

While the study focused mainly on the refurbishment of the right-hand glove (for a right-handed player), for comparative purposes, this section will briefly highlight areas of wear and tear for the left-hand glove. It is also pertinent to mention here that to the best of the author’s knowledge, no previous studies on the use and end-of-life phase of cricket gloves have been conducted to date. In turn, this positions the report as a first attempt in identifying the technical and functional requirements for extending the life span of cricket batting gloves through refurbishment. From the images below, Table 1 aims to describe the identified areas of wear and tear that are key to a product’s disposal. Note: due to the materials used for manufacturing the back of the palm (polyester) and the protective padding (high density foam-HDF), which come into direct contact with the player for extended period, odour resulting from repeated sweating/drying while in use (playing) – over time - is viewed as wear and tear.

**Table 1: Wear & Tear Analysis for Cricket Batting Gloves**

Image	Part/Material	Description	Wear and Tear
Image A (Right-hand)	Palm	The palms are primarily manufactured using Pittard leather. The main technical requirement for the palm is the following: softness, breathability, and grip.	<b>Image A</b> shows discolouring of the leather due to sweat. However, whilst the leather has lost some of its softness and flexibility, it was still flexible enough for its intended purpose.
Image B (Right-hand)	Thumb	The thumb is composed of Pittard leather for the front and polyurethane (PU) leather with high-density foam (HDF) for the protective padding at the back. The interior of the thumb contains a rubber	<b>Image B</b> indicates that the wear and tear of the thumb is significant with visible holes to the upper part of the thumb. However, the inner thumb protector is intact.

<sup>4</sup> <https://www.playwiththebest.com/cricket.html>

Image C (Right-hand)	Fingers	<p>“thumb protector’ with a soft HDF padding.</p> <p>The fingers are composed of Pittard leather for the palm facing section, while the back of the fingers includes PU leather and HDF for the protective padding. Furthermore, as shown in <b>Image C</b>, the fingers also contain further protection provided by</p>	<p><b>Image C</b> indicates significant wear and tear to the upper part of the fingers (fingertip area) where the stitches show significant tearing, and the internal padding has been exposed. However, the level of protection and use appears to not be affected by this.</p>
Image D & F (Right-hand)	Palm (sides)	<p>The side of the palms contain an elastic material the connects the Pittard leather used for the palm with the PU leather used for the back of the glove.</p>	<p>The sides appear to have some wear and tear primarily related to the leather and stitching. However, overall, this does not affect the level of protection or function of the product.</p>
Image F (Left-hand)	Palm	<p>Materials and composition are the same as the right-hand.</p>	<p>Level of wear and tear for the palm is similar to the right-hand.</p>
Image G (Left-hand)	Fingers	<p>Materials used for the fingers are the same as for the right-hand.</p>	<p><b>Image G</b> shows that deterioration for the fingertips of the left-hand is significantly reduced compared to <b>Image C</b> (right-hand).</p>
Image H (Left-hand)	Thumb	<p>The thumb section of the left-hand glove does not contain an internal rubber thumb protector.</p>	<p><b>Image H</b> indicated a significant level of wear and tear to the thumb, similar to the right-hand glove.</p>



Image 1: Wear and Tear Analysis



## 4. Disassembly Process

Based on the product related failures/signs of wear and tear identified in the section above, it was decided to refurbish the palm and thumb as indicated in the table; the tearing of the fingertips shown in Image C does not affect the level of protection or functionality of the product. Therefore, after closely analysing the composition<sup>5</sup> and potential assembly of the gloves and identifying the various parts and components, the sequence for disassembling the product was the following:

- 1) Disassembly of the palm and thumb as a single component.
  - A 'seam ripper'<sup>6</sup> was used for separating the palm from the glove. Initially, the picker was used to cut through individual stitches. However, due to significant thinning of the leather, after cutting through a couple of stitches, it was relatively easy to 'tear' the palm off almost in one piece (see **Image L**).
  - **Image K** shows the state of the textile lining on the back of the palm, which is stained due to sweat.
  - Another important factor worth mentioning in this section is hygiene and odour related considerations when attempting to refurbish personal protective gear. This was seen as a key area that needs to be addressed as it could hinder the refurbishment of the product.
- 2) Separating the thumb from the palm.
  - A 'seam ripper' was also used for this. The state of the leather in relation to the stitches for this section remained in good condition and therefore each stitch was manually 'unpicked'. See **Image L and M**
- 3) Separating the thumb into individual components
  - The thumb is composed of two leather sections to facilitate flexibility at the joint (see **Image N, n-1 and n-2**). **n-1** and **n-2** were separated as shown in the image as only **n-2** showed significant signs of wear and tear.
  - It was thus decided to only replace the leather of **n-1**.
  - As mentioned previously, the rubber thumb protector was intact and therefore was reutilised within the refurbished thumb.

---

<sup>5</sup> Further details regarding the composition of cricket batting gloves is available at: <https://cfsd.org.uk/wp-content/uploads/2023/06/Materials-in-cricket-balls-gloves-and-pads-and-their-sustainable-alternatives-June-2023.pdf>

<sup>6</sup> A seam ripper is a small sewing tool used for cutting and removing stitches.



Image 2: Disassembly Process



## 5. Refurbishment Process

The Centre for Sustainable Design® at UCA became aware of the existence of vegan chamois leather after a meeting with Gary Shacklady and Lewis Hart from Earley Cricket Club, who were doing R&D into 'vegan' cricket balls and had developed an early-stage prototype of batting gloves using this material. As mentioned in the introduction to this report, the author's recognised that selected vegan chamois leather was not sustainable alternative as such e.g. not plant-based, but was selected for pragmatic reasons due to lack of availability of samples, and budget and time constraints. However, the material was selected as it did possess relevant mechanical properties (e.g., absorbency and breathability) relevant for batting gloves. The pattern for the palm was produced using the silhouette of the existing palm, leaving a 0.5 cm seam allowance. Likewise, the pattern shown above in **Image n-2** was used for tracing the thumb section to be replaced with the synthetic chamois leather. The palm and thumb sections were sewn by hand, as using an industrial sewing machine was not

viable due to the limited space in between the fingers.<sup>7</sup> Initially the side of the palm was restitched, followed by the 'little finger' and 'ring finger'. It was then decided that to integrate the thumb, the 'middle' and 'index' fingers would have to be sewn at a later stage, finalising the refurbishment process with the integration of the wrist area. In hindsight, before attaching the palm to the overall glove structure, it would have been less time consuming to first attach the thumb to the palm, and then sew this as one component rather than 2 separate parts.

**Image 3: Refurbished Glove**



## 6. Testing

After refurbishing the batting glove, the pair was returned to its previous owner along with a questionnaire related to the refurbished gloves' performance (see annex 1), who tested the gloves twice in May 2023. The Gloves were tested for 1.5 hours and subsequently, for 15 minutes.

The following feedback was provided:

- The odour of the gloves remains problematic. The player indicated that this is potentially one of the main key issues related to refurbished gloves.
- The gloves are 'a little too thick', compared to other gloves worn. However, the player indicated that this may be due to personal preference.

---

<sup>7</sup> Cricket batting glove refurbishment services have been identified in India. For further details, see: <https://www.youtube.com/watch?v=Yf5G-7H2EH0>



- Furthermore, it was highlighted that thickness and breathability of the material may be an issue for the warmer months of the year.
- ultimately, the player concluded that the refurbished glove didn't 'feel quite right in the hand'.
- Towards the end of the batting session (about an hour and 10 mins of wear) the gloves started to fray as shown in the image below. Thus, concluding that the composition of the material selected (vegan chamois leather) is not appropriate for cricket batting gloves.

**Image 4: Testing**



## 7. Key Learnings and Recommendations

- Total time for producing the refurbished prototype of 1 right-hand glove was 3 hours. This included de-stitching, cutting the patterns and sewing the various components. The estimated time for refurbishing of the left-hand glove is similar.
- De-stitching/unpicking the palm was surprisingly easy due to the thinning of the material after use. Timewise, this process was relatively fast, as after a few cuts through the thread, the palm could be torn off. The exercise indicated that while the use of the synthetic vegan leather may not be appropriate for batting gloves, the refurbishment process (as a mechanism for product life extension) may be economically viable and worth further investigation, due to the speed at which one can disassemble the product.
- Regarding the level of wear and tear of the various components, the thumb protector remained intact. Therefore, it is recommended to explore further strategies for recovering and reusing this component, either for product refurbishment or for manufacturing new gloves. In this sense, further research into implementing a recovery/harvesting of components scheme

could be a potential first step. For example, based on the disassembly of cricket pads, plastic knee protectors were identified as a similar opportunity for the recovery of components.<sup>8</sup>

- The batting glove thumb was reconstructed partially, by replacing only the leather with holes. An initial concept proposal might be to design the cricket gloves for disassembly and make components available to users. For example, by enabling through design, the recovery of batting gloves thumb inserts, whereby rubber thumb components from previous batting gloves could be re-inserted into new gloves.
- Whilst removing the palm from the overall glove was straightforward and time efficient (3-5 minutes), sewing on the other hand, took approximately 2.5 hours. Therefore, for refurbishing to be viable, further research on alternatives to sewing or speeding up the sewing process is required.
- Currently cricket gear suppliers offer a range of products that are intended for different levels of play and protection which is reflected in the price. The ranges on offer are generally classified as youth costing anywhere between £22 and £67. For adult (recreational) the cost can be between £24 and £67. While adult (professional) gloves have a cost of approximately £157.<sup>9</sup> In this sense, refurbishment services are potentially best suited for the higher end products as saving costs would be more effective. A player survey revealed that there is interest in repair services, if cost savings can be achieved.<sup>10</sup>
- The protection on the back of the palm also showed significant deterioration. It is thus recommended for the textile (polyester) to be replaced and or identify a solution to avoid sweat related decolouration and odour. Nonetheless, it is pertinent to highlight that this deterioration does not affect the product's performance.
- A further suggestion for contending with sweat related stains and odour is to perhaps use Polygiene<sup>11</sup> technology and implement design solutions that facilitate product maintenance such as drying and washing the product. Additionally, further research into alternative textiles for the lining and backing of gloves that have deodorisation properties such as bamboo fibres is recommended.

---

<sup>8</sup> See report: Sanchez-Moreno & Charter (2023), "Streamlined Life cycle Assessment: Pair of Cricket Batting Pads". Available on CfSD website [www.cfsd.org.uk/research](http://www.cfsd.org.uk/research) in April 2023.

<sup>9</sup> For a more detailed breakdown of cost, see: <https://www.playwiththebest.com/cricket/protection/batting-gloves.html>.

<sup>10</sup> [https://cfsd.org.uk/wp-content/uploads/2023/04/Final\\_Players\\_Vegan\\_Cricket\\_Gear-27-04-23.pdf](https://cfsd.org.uk/wp-content/uploads/2023/04/Final_Players_Vegan_Cricket_Gear-27-04-23.pdf)

<sup>11</sup> <https://polygiene.com>

## Annex 1: Prototype Testing Questionnaire

The following questions were sent via email to a male recreational cricket club player to provide feedback related to the refurbished gloves using a vegan chamois leather:<sup>12</sup>

- Please indicate how long the gloves were tested for, and level of play. (e.g., 1-hour indoor training session, etc.)
- How does the flexibility of the refurbished batting gloves using the synthetic chamois leather, compare to the flexibility of the 1<sup>st</sup> life gloves using Pittard leather?
- How does the absorption properties of the synthetic chamois leather, compare to Pittard leather (bovine leather)?
- How does the grip afforded by the synthetic chamois leather, compare to Pittard leather?
- Is the weight of the refurbished glove comparable to the original 1<sup>st</sup> life batting glove?
- Please indicate any differences identified regarding the 'feel' of the refurbished gloves compared to the 1<sup>st</sup> life pair of gloves.
- Please indicate additional comments identified between the use of the original 1<sup>st</sup> life pair of batting gloves and the refurbished pair, specifically regarding performance.

---

<sup>12</sup> Further research is currently being conducted under the UKRI CE-HUB funded project entitled, Circular Cricket Gear. Further information about the projects can be found at: <https://cfsd.org.uk/projects/vlwg/> and <https://cfsd.org.uk/projects/ccg/>