

Treatment Report

Owner: Beamish Museum	Acc. No. 1978.960	Conservator: S. Goel
Date: 12/08/21	Lab no: 3792	
Object: Be-Ro Rubber Mat	Material: Vulcanised Rubber (White and Carbon Black)	

Description:

This mat advertises Be-Ro Self-Rising flour and is 97 cm by 53.7 cm. It is made of vulcanised rubber with carbon black and white vulcanised rubber for the lettering. Stamped into the reverse of the mat is the manufacturer's mark of Redfern's rubber (fig. 1). Also on the reverse is the accession number, written in black ink. This mat was donated to Beamish Museum from the Post Office in New Grange, Crook as a part of a larger collection. Based on the style of lettering on this mat and was used as a form of advertisement as well as a doormat in high traffic areas within shops (Hudachek, pers. Comms). It likely dates from the 1950s (Cormack, 2019).

Condition:

Initially, the mat was rolled up, with a stiff and dry surface that made it difficult to unroll without damaging. There is cracking throughout the mat's surface, likely both from strain and general deterioration over time. The edges of the mat were extremely fragile and had torn in several areas. Heavy soiling from disuse and potentially some organic materials cover the entire surface. Furthermore, there is tearing around some of the lettering, as well as crease and indentations in the surface of the rubber that further folds the body of the mat. There is also an area of unknown metallic foil adhered to one side of the mat. The mat is also off-gassing, demonstrating the extent of the deterioration.

Conservation Treatment:

First and foremost, the mat had to be unrolled so as to fully assess its condition. After this, the aims in conservation included the cleaning and stabilisation of the mat to prepare it for possible display. A storage container was also designed in order to protect the mat from further soiling and deterioration from light and ultraviolet whilst in storage.

Loose soiling was first brushed off the surface using a large, soft bristle brush, allowing the object to be easier to handle. Then, in order to unroll the mat, metal trays filled with sand were heated in an oven to 80°C and set on manually unrolled areas of the mat. This would help the rubber to become more malleable and keep pressure on the deformed areas of the mat, allowing the mat to be unrolled without serious damage. A heated spatula was also used for the creased areas of the mat, however 80°C was deemed to be too hot for these areas and the temperature was lessened to 60 °C. This was not entirely successful, but no further methods were attempted for fear of further damaging the object.

Following this, the mat was once again cleaned using a large soft brush in order to remove loose surface soiling. This did not remove the majority of the soiling as it had become deeply ingrained into the rubber. A smokesponge, akapad, and a crepeline eraser were trialled, however they did not successfully remove soiling. Thus, wet cleaning was deemed appropriate. Deionised water was applied to the surface of the mat in small areas and scrubbed using a hard bristled toothbrush. The water was then dabbed away using soft blue tissue, so it did not soak into the rubber, thus limiting the interaction between the liquid and the material, hopefully limiting possible deterioration. This proved to be extremely successful, and the majority of soiling was removed. Some small foreign objects have been incorporated into the body of the mat and could not be removed easily and were

thus left. The metal foil that was adhered to the surface of the mat was carefully removed with a scalpel and can be found in the sample bag provided with the mat.

Then, areas that had torn around the lettering and edges of the mat were re-adhered using “Black Witch” Neoprene adhesive. This was left to set using masking tape to hold areas together. This adhesive allows the mat to remain flexible without further straining these deteriorated areas. The edges of the mat were also consolidated with Black Witch Neoprene Adhesive in order to limit further tearing or fraying.

Whilst the original plan for the mat suggested a consolidating layer and a coating layer on the surface of the mat, they were deemed unnecessary and possibly damaging. This is due to the evident off-gassing of the rubber mat, which suggests active deterioration. Unfortunately, there is no way to stop this deterioration and coating the surface would only trap the gases within the body of the mat and likely cause further decay. Furthermore, the addition of a coating would be difficult to remove in the future, if necessary, without severely damaging the mat.

Finally, a clam shell style folder was designed for the storage of the mat. This allows support for handling the mat, as well as will protect the mat from light and ultraviolet as well as limit the further accumulation of soiling or dust on the surface, which would cause damage to the mat. This folder was built in blue museum cardboard with fabric ties to hold it closed.

Storage Recommendations:

Ideally, the rubber mat should be kept in the bespoke storage folder provided. It has been designed so as the contents can be opened and displayed for short periods of time without having to remove it from the box. The folder should be kept flat so as to not further strain the mat and cause folding and slumping. This folder will also limit light and UV deterioration of the surfaces, as well as protect from dust accumulation. Furthermore, it is highly recommended that all plastic and rubber objects be stored separately from metal objects, due to possible contamination that causes increased deterioration of metals (Blank, 1990).

Storage environments should be anoxic and at a low temperature (Williams, 1997). Temperatures below 10°C and 50% RH are considered best for manufactured plastics. Ageless and other oxygen scavengers have been used in the storage of plastics (rubbers in particular) in order to create an anoxic environment which aids in their preservation.

Handling Requirements:

Wherever possible, carry the rubber mat inside the folder, as it is easier to manoeuvre this way. If the mat itself must be handled, gloves should be worn in order to protect against the oils and salts on one's skin. The mat should be handled with at least two hands on either side of the mat. The mat should not be pulled with one hand as this may cause stretching in the rubber.

Bibliography

- Blank, S. (1990) An Introduction to Plastics and Rubbers in Collections. *Studies in Conservation*. [Online] 35 (2), 53. Available at: doi:10.2307/1506193 (Accessed: 11 August 2020).
- Cormack, K. (2019) *Conservation of a Be-Ro Rubber Mat from Beamish Museum*. Conservation Practice Treatment Report. Durham University Department of Archaeology.

Williams, S. (1997) *Care of Objects Made from Rubber and Plastic*. [Online]. 1997. Canadian Conservation Institute. Available at: <https://www.canada.ca/en/conservation-institute/services/conservation-preservation-publications/canadian-conservation-institute-notes/care-rubber-plastic.html>.



Figure 1: The Redfern's stamp on the reverse of the rubber mat

Before Treatment:





After Treatment:

