Southampton Solent University

Oxfam

# Plastic Sheeting

## 150gsm V 170gsm

Gordon Browne / Megan Dilloway

# Background

Oxfam currently use **170g**.

Is a lighter weight **150g.** significantly different?

Field and Laboratory testing

**Field tests** are located in:

- **South Sudan**
- Zimbabwe
- Bristol UK
- Oxford UK


**Laboratory tests** conducted at Southampton Solent University.

# Aim of Project

To produce comparative results of **150gsm** plastic sheeting compared with**170gsm**, as a basis for Oxfam procuring a less expensive and lighter weight plastic sheet

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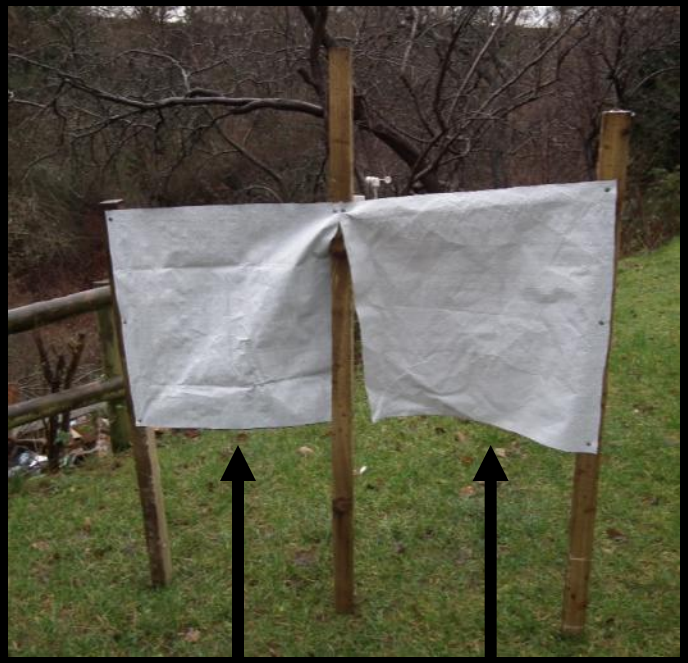
# Objectives

1. Instigate four month exposure field tests.
2. Conduct laboratory tests (ISO13934-1) to determine the tensile strength of **150g** and **170g** plastic sheet
3. Determine the tensile strength with exposure to high temperatures.
4. Tensile test exposure field samples
5. Test fixings with 150g and 170g plastic sheet.

# Exposure Testing

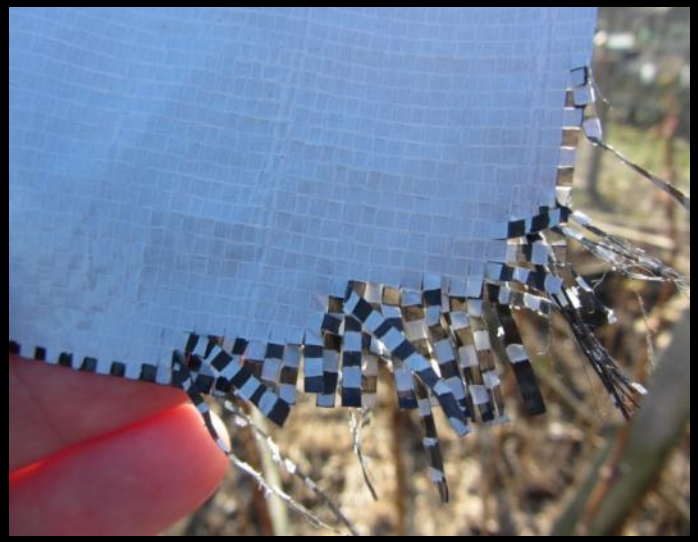
Field Tests Started.




**150gsm 170gsm**

# Exposure Testing

Four months



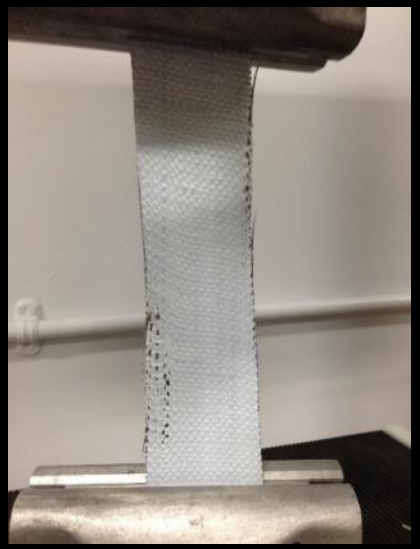
**150gsm**

**170gsm**

# Testing Standards

Samples were tested in accordance with:

BS EN ISO 13934-1:1999

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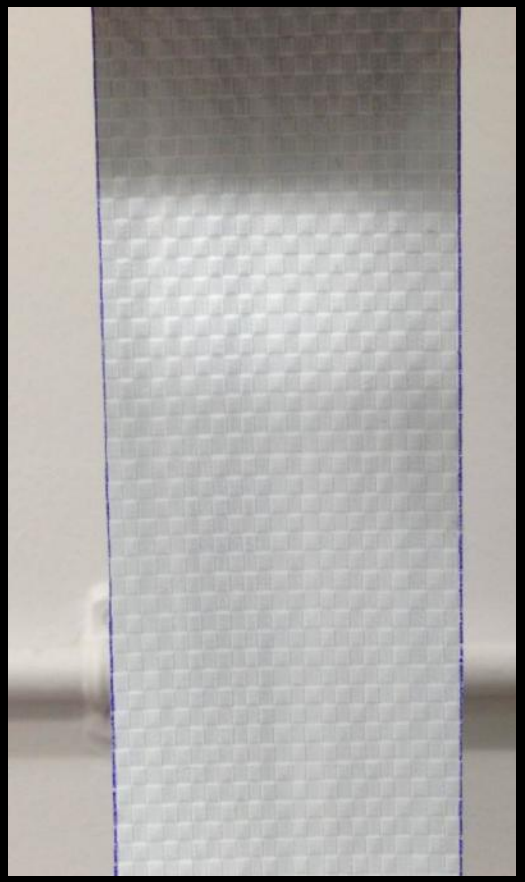
# 150gsm V 170gsm

## 150gsm



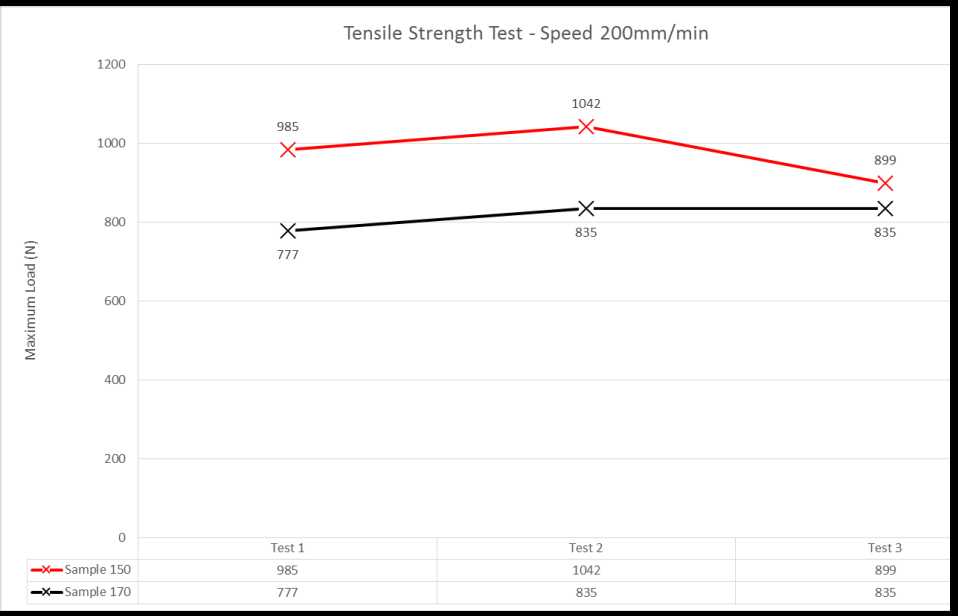
## 170gsm

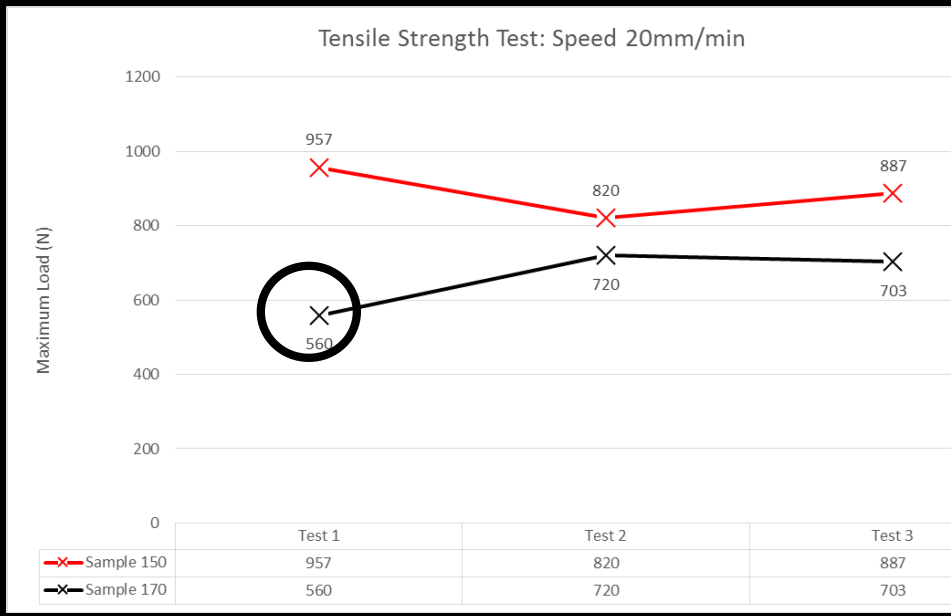
# Pilot Testing

The results from a pilot test established the rate of tensile loading:

- 20mm/min
- 200mm/min *

# Tensile Strength




The results obtained indicated that for both rates of testing the **150gsm performed better** than the **170gsm**.

# Exposure to Heat

Emergencies: Syria and South-Sudan

Maximum temperatures:

Syria 46°C

South-Sudan 42°C

Plastic Sheeting was heated to a temperature between 45-50°C and tested.

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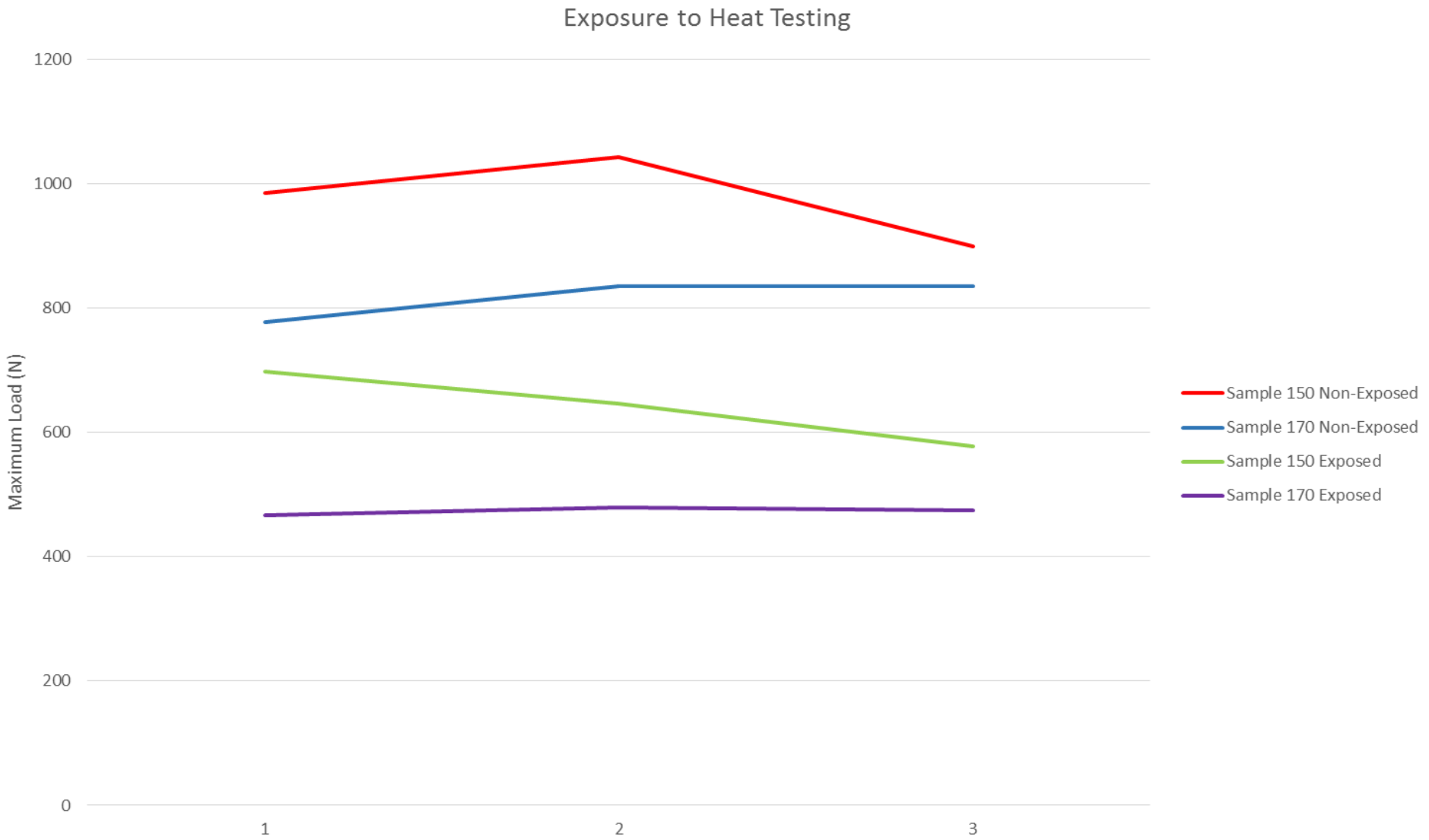
# Exposure to Heat



# Exposure to Heat

**Conclusion:**

The plastic tensile strength is **significantly lower** when subject to higher temperatures.

**150g out performed 170g**

# Fixing Methods

- Previous research at Solent University / Oxfam 2007 into the different types of fixings.
- The results obtained can be found at: http://www.plastic-sheeting.org/

- Tests were repeated with 150g V 170g.





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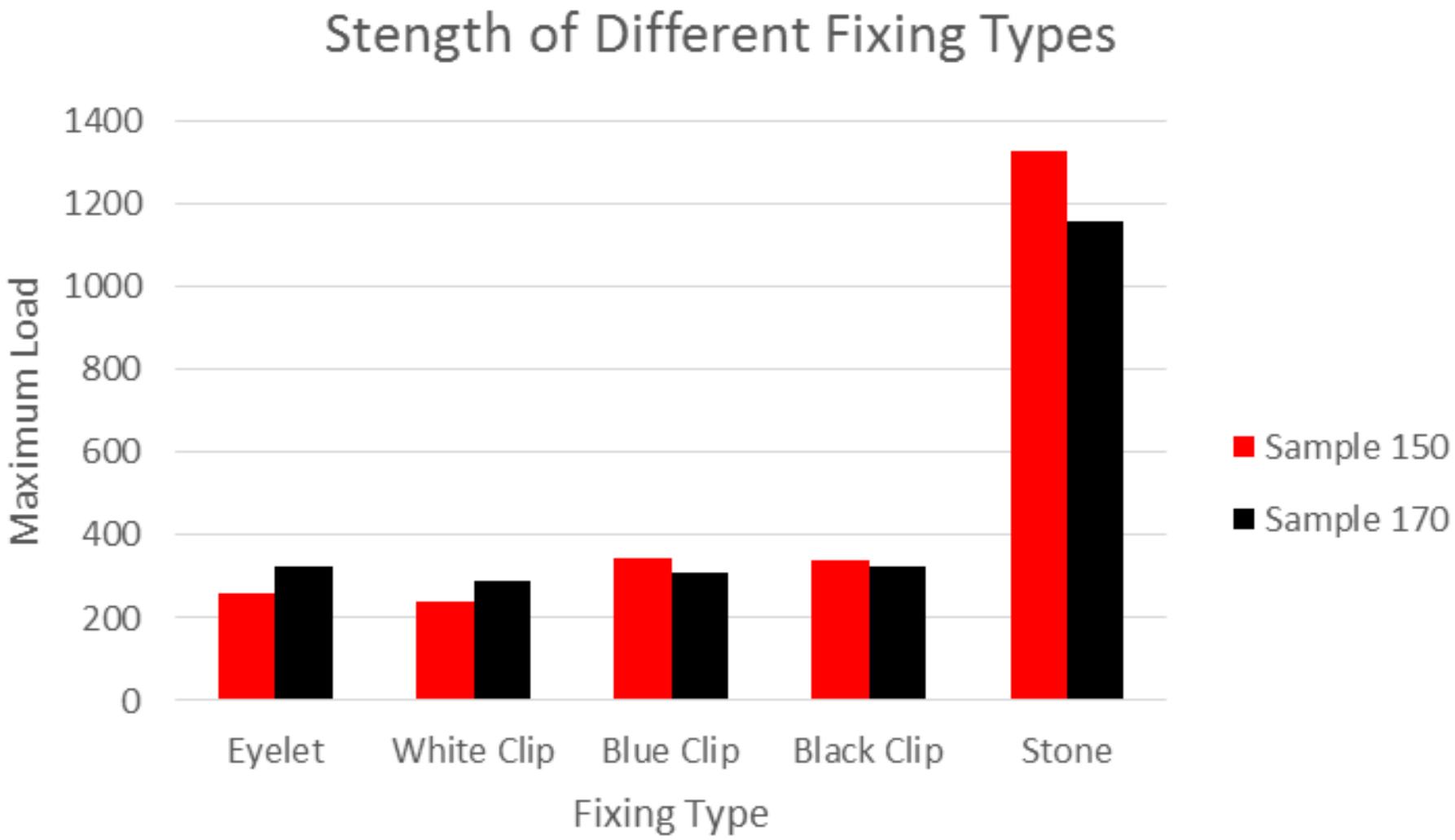
# Fixing Methods



# Conclusion

The **150gsm** plastic sheeting out performed the **170gsm** in all tests.

Further research is needed on the effects of heat on the plastic sheeting.

**Comments from other research?**