QSE WORKING GROUP

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About: The QSE Working Group

The Quality, Social, and Environmental (QSE) inter-agency working group was created on November 26th, 2010 in UNHCR Budapest. Originally named "Quality Assurance and Product Development" it was recently renamed QSE as it includes all social and environmental concerns related to supply. The QSE working group is a joint initiative of the Red Cross/Red Crescent Emergency Items Catalogue Project and of the UNHCR Quality Department.

Extended to MSF, IOM, UNICEF, IFRC, ICRC, and UNHCR, the group meets every six months. It exchanges experiences, reviews technical specifications of the major relief items, as well as improving quality and reducing negative social and environmental impacts of humanitarian non-food item (NFI) procurement.

The QSE Group aims to procure appropriate goods for crisis affected populations and reduce negative impacts of the global supply system.

The development of Tarpaulin

This document highlights perhaps the most far-reaching product innovation in humanitarian shelter assistance - the **tarpaulin**. With hard work and technical development, plastic tarpaulins have been used in the field for the **past 30 years**. Through ongoing research, specifications for tarpaulins have been developed and refined using existing commercial sector production. **Nonetheless, constant and ongoing work is required** to ensure compliance, extend production, reduce lead times in response, and increase the availability of tarpaulins for local and regional procurement. The inter-agency QSE group remains committed to this effort.

Shelter made from tarpaulins

1. Humanitarian Impact of Tarpaulin and the Need for Quality

Plastic sheeting is one of the most widely distributed non–food relief items used in humanitarian operations. Each year, tens of millions of square meters of polyethylene sheets are distributed by international and national humanitarian organizations, government agencies and the private sector. For crisis-affected people, plastic sheeting can be a useful temporary building material for repairs, or can be used to help make emergency shelters. It can also be used for emergency fencing, latrine coverings and walling, cholera beds or even clean space to dry rice.

Ensuring that displaced families and communities receive the appropriate types of humanitarian assistance in a timely manner is a key objective of all relief agencies and donors. The versatility and low cost of plastic sheeting

have made it a default choice for emergency shelter interventions by agencies. Yet in recent disaster responses, challenges have surfaced as a result of the limited durability of some versions of tarpaulin, as well as confusion between response agencies.

2. Timeline of Tarpaulin Development

In the 1970s, Oxfam was providing emergency shelter made of agricultural plastic sheeting. Traditional canvas tarpaulins had been used for hundreds of years, but were more expensive, much heavier, and prone to rotting. Such plastic sheeting designed for agricultural use was not reinforced and was fragile, but the only type available at the time. As plastic sheeting was proving to be useful in emergency shelter, Oxfam moved towards using reinforced tarpaulin.

In the 1980s, a version of plastic sheeting - mostly being used for scaffolding in European construction markets - was adopted for emergency shelters. Only a few suppliers in Europe were supplying this product to Oxfam, and it was mostly used by MSF and UNHCR.

At the end of the 1980s, plastic sheeting was very expensive. As a matter of fact, as a result of a patent on a specific plastic eyelet, the sheet was sourced from only one manufacturer. For some organizations, the high cost of plastic sheeting was accepted as a result of quality constraints. For others, having only one supplier meant that tendering processes could not be followed, as a price comparison was not possible. Organizations that could not afford this began to use basic plastic tarpaulin, which is very cheap in price and quality (USD 1.5 per square metre versus USD 0.20).

In the beginning of the 1990s, organizations were distributing different types of tarpaulin at different qualities. In particular, a few large providers of plastic sheeting were still distributing the low quality sheeting, which resulted in poor shelters of a very limited life span (only about two months due to UV). This led to shelter needs not being met and additional health concerns. The key players got together to discuss how the quality and cost of plastic sheeting could be improved. All together this represented a yearly turnover of 10 million USD.

In 1993, UNHCR and MSF started a research project to design and tailor plastic sheeting specifications for use in emergency shelter. This specification would have no copyright and be available for any manufacturer in the world. The project, with UNHCR as a funder and MSF as a technical partner, utilized thorough laboratory and field-testing. A network of field logisticians identified pieces of plastic sheeting from the field, noted conditions, length of use, and sent back samples for testing.

The R&D project aimed at producing specifications for a plastic sheeting that would be strong, durable (minimum two years in the toughest conditions), easy to use, easy to store and transport, and efficient in sheltering people, e.g. providing shade and being waterproof. The

Poor quality tarpaulin in the field

cost and production capacities were also carefully looked at.

In 1996 the three-year research project was completed, and resulted in a model of tarpaulin with specifications that are still used today. It was approved during a meeting with all of the key players, including OXFAM, CONCERN, MSF, UNHCR, ICRC, UNICEF, later joined by Care and IFRC.

The experiences in supply of the tarpaulins have shown a lack of detailed specification for the white coating colour, and for the black inner fabric. Specifications were revised in 2013, with an ISO standard for the definition of the minimum white colour to reach on the surface of the tarpaulins, and a minimum opacity for the black inner fabric. With these revisions, the technical specifications allow quality control to assure the efficiency of the tarpaulins in creating the highest level of shade under hot climate.

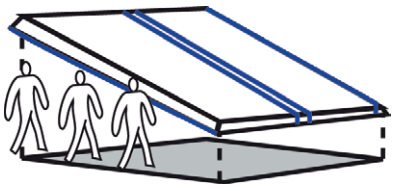
3. Current Discussions in Tarpaulin Development

Organizations have now been supplying this new type of tarpaulin for specific use as emergency shelter for over 18 years. For organizations using low cost tarpaulins before, this represented a huge jump in quality, with tarpaulins being able to last ten times longer than before, for just double the cost (USD 0.20 to USD 0.45 per square metre). For the organizations that provide the high-grade tarpaulins, this has represented an immense cost saving by dividing the cost by three (USD 0.45 instead of USD 1.5 per square metre), plus a more adapted product. Needless to say, the new product was a success.

Organizations that took longer to implement the new plastic sheeting specification ended up not adopting all of the specifications, such as the attachment system and the minimum size. A version of tarpaulin with aluminium eyelets instead of reinforcement bands is being distributed by some organizations. International tarpaulin specialists urge these organizations to use the band system.

The band system is just as strong as the eyelet system, if not stronger. In addition to having a more stable manufacturing process, the band system is consistently high quality and produced faster. In contrast, the manufacturing process for the aluminium eyelets system is inconsistent and slow – it is made either by machines in high cost factories or by hand in low cost factories with variable working conditions.

The minimum size for plastic sheeting, as concluded in the 1993 study, was 4m x 6m, providing around 16m^2 covered area when built into a simple structure. However, some



4m x 5m sheet:
13.5 m^2 effective covered area

4m x 6m sheet:
16.5 m^2 effective covered area

4m x 7m sheet:
19.5 m^2 effective covered area

These examples are based on 30° pitched roof allowing 25cm on each side for fixings (Source: Oxfam, IFRC)

organizations purchase smaller sheets, such as a 4m x 5m sheet to reduce purchase costs (17% cheaper) and transportation costs. It is hoped that the change to the band system could absorb a large part of the cost difference, and encourage all organizations to adopt the appropriate size of tarpaulin.

4. Challenges and Successes of Tarpaulin Development

Doubling the cost of a product that lasts ten times longer or dividing the cost by three for a high-grade tarpaulin, for a period of 18 years, results in an immense cost saving and efficiency increase. A quick calculation based on 10 million USD spent per year, with a cost/efficiency multiplied by three or even five, shows a total saving of tens or hundreds of millions USD, as well as the needs of some of the most vulnerable people on earth being more effectively met. One major challenge is maintaining the quality to the defined standard. Some manufacturers have shown a decrease in quality over the years. Purchasers worked hard to re-activate the proper level of supply quality. In other cases, the quality directly depends on the expected quality control, where manufacturers adjust the amount of essential plastic components (colorants, UV absorbers, etc.) to the level of quality control that they estimate that the customer will demand.

Products using only some of the standard specifications are also used in large quantities. As an example, some tarpaulins distributed by agencies are using interwoven black and translucent yarns. As a result, these tarpaulins are torn apart after just a few months of UV exposure, due to the very low UV resistance of the translucent yarns. The black yarns instead remain in very good conditions.

With such experiences, it appears paramount to set up quality control based on the technical specifications, the harmonization of specifications simplifying the reproduction of the quality control set-ups in the world. Most of the specifications can be verified with simple equipment. However, UV tests require time and laboratory equipment. Quality control set-ups should be installed in as many places as possible, with proper training for the quality control staff. This would dramatically reduce the amount of "bad" tarpaulins, especially during large-scale crises.

Needless to say, locally sourced tarpaulins will rarely be at the desired standard and as a result will have limited lifetimes. The increasing usage of the standard specification should incite manufacturers to invest in the proper facilities to produce according to standard. Overall concerted activities on sourcing and work to promote private sector tarpaulin production of suitable quality at regional and national levels will enable quicker and more effective responses. This has been the case in East Africa, and could be replicated in other regions and countries.

Resources:

- ICRC and IFRC, Emergency items catalogue [Available at http://procurement.ifrc.org/catalogue]
- Oxfam and IFRC (2007), Plastic Sheeting Booklet [Available at http://bit.ly/1LaDTzq]

Contact:
QSE Working Group
Email: **information@q-s-e.org**