

ANNEX A

TO CONTRACT



**Ministry
of Defence**



**SPECIFICATION FOR MK 4
INSULATION PANELS & ANCILLARY
EQUIPMENTS FOR GENERAL SERVICE TENTAGE
(ISSUE 4)**

**Operational Infrastructure (OI)
Defence Equipment & Support (DE&S)
Ministry of Defence**

Date of Approval:**Date of Original Issue: 13 January 2003****Supersedes ECI/0237 SPECIFICATION FOR MK 3****INSULATION PANELS & ANCILLARY EQUIPMENTS FOR GENERAL SERVICE TENTAGE V3****IPR STATEMENT**

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CROWN COPYRIGHT RESERVED**Performance Specification ECI/PS/8002 - Issue Table**

Issue	Comments	Date
0.1	Initial Issue	Oct 2011
0.2	Updates from DSTL Report	Mar 2012
0.3	ECI Stakeholder Review	June 2012
1.0	Formal Issue (frozen)	July 2012
2.0	Post ITT Revisions	Aug 2012
3.0	Pre Contract Award Update	Feb 2013
4.0	MK4, Version 4 Update	Mar 2017

1. SCOPE

- 1.1. This Specification details the requirement for the manufacture of Insulation Panels for the following range of General Service (GS) Shelters listed in Table 1 below. The shelters are used by all three services on Operations, Training and Exercises in climatic conditions ranging from arctic to desert environments. This requirement is to place a contract for the supply of GS Tentage insulation that meets or exceeds the requirements set in this specification.

Item No	Name
1.1	12'x 12' GS Shelter
1.2	18'x 24' GS Shelter
1.3	12' Passageway
1.4	4-Way Connector
1.5	Porch

Table 1 – General Service Tentage Shelters

- 1.2. The current In-Service insulation panels are fitted inside of the frame that supports the tent canvas/PVC panel on the outside of the appropriate shelter, and the insulation is currently secured by tensioners. However the Contractor may offer an alternative mechanism to secure the liners to the tent frame. The Contractor shall demonstrate any alternative to the satisfaction of the Authority, (see Section 5 below).
- 1.3. The list of current In-Service insulation panels and current In-Service ancillary equipments are listed in the Contract. The Contractor shall be responsible for obtaining NSN for the products if required.

2. ASSOCIATED ITEMS

- 2.1. A list of associated equipments (as listed in the Contract) form part of the whole insulation package. These items shall be available as part of this Contract.
- 2.2. If the proposed product utilises alternative mechanisms for attaching / securing the insulation then the contractor shall provide details of these alternatives.

A sample for each of the frames that the make-up Table 1 above are available upon request to the Authority for research purposes on a loan basis. This is only possible following the bidding company being formally invited to Tender after down-selection at the Pre-Qualification Questionnaire (PQQ) stage.

- 2.3. All items loaned must be returned to MOD Abbey Wood prior to the contract Tender return date. Failure to do so may result in the company being charged for the loss.

3. RELATED SPECIFICATIONS AND DOCUMENTS

- 3.1. The following British Standards shall apply to the insulation products to be supplied by the Contractor:
- 3.1.1. BS 476 Pt 12 : 1991 - Method of test for ignitability of products by direct flame impingement
- 3.1.2. BS EN ISO 13934 Part 1 :2013 – Determination of maximum force and elongation at maximum force using the strip method

- 3.1.3. BS EN ISO 13937 Part 2 : 2000 – Determination of tear force of trouser-shaped test specimens (Single tear method)
- 3.1.4. BS EN ISO 13937 Part 3: Textiles – Tear Properties of Fabrics
- 3.1.5. BS EN ISO 12947 Part 2: 2016 Textiles – Determination of the abrasion resistance of fabrics by the Martindale method.. Part 2 : Determination of specimen breakdown
- 3.1.6. BS EN ISO 9073 Part 5 :2009 – Determination of resistance to mechanical penetration (ball burst procedure)
- 3.1.7. BS EN 29073 Part 3 : 1992 – Determination of tensile strength and elongation
- 3.1.8. BS 4745 : 2005 – Determination of the thermal resistance of textiles – Two plate method: fixed pressure procedure, two plate method: fixed opening procedure, and single plate method
- 3.1.9. Def Stan 00-35 – Environmental Handbook for Defence Materiel: Part 4 (Issue 4) (Currently Under Review)
- 3.1.10. Def Stan 00-56 – Safety Management Requirements for Defence Systems. Requirements and Guidance: Part 1 (Issue 6)

3.2. Drawings

- 3.2.1. The MK1 insulation panel's drawings are available, as rough guidance to the dimensions of previous insulation panels, as listed in the Contract.
- 3.2.2. Drawings of the GS tent frames and canvas panels will also be made available to assist with development of the insulation panels.

4. MATERIAL CHARACTERISTICS

The material properties for the insulation products shall conform to the following characteristics:

4.1. Compatibility

- 4.1.1. The product shall be compatible with the existing GS Tentage frameworks and MK3 insulation. The different GS shelters used by MoD are listed in Table 1. The product shall be intuitive to install and require no specialist training to install.

4.2. Weight

- 4.2.1. In order to minimise the logistical burden of the product the weight shall be reduced as far as practical. The Contractor shall state the approximate all up weight of a complete GS tent insulation, including ancillaries, for each type (see Table 1 above). As a guide the insulation shall be capable of being easily installed by no more than 2 persons without the need for specialist or mechanised equipment.

4.3. Thickness

- 4.3.1. In order to maintain the internal space of the accommodation the insulation shall not exceed 200 mm. The Authority is looking to achieve insulation thickness of less than 100 mm. The Contractor shall state the thickness of his proposed product.

4.4. Fire Resistance

- 4.4.1. The insulation panels shall be fire retardant, compliant with British Standard 476 Part 12. The product supplied shall be compliant with both ignition source B and C.
- 4.4.2. Each component layer of the product as well as the product as a whole shall be compliant with the standard.
- 4.4.3. To be compliant the minimum performance expected by the material is to demonstrate evidence of:
 - a. There will be no Glowing Debris observed
 - b. There will be no Flaming Debris observed
 - c. There will be no Flame/Glow to edge within 10 seconds after removal of burner
- 4.4.4. The Contractor shall supply Certification from an accredited independent facility to BS 476 Part 12, ignition source B and C as evidence of compliance to the above.
- 4.4.5. The Authority reserves the right to conduct its own testing of sample panels using an independent UKAS accredited facility to verify/validate fire retardancy and any other performance claims made pre and post contract award.
- 4.4.6. If Samples tested under direction of the Authority fail to meet the performance specification(s) claimed pre contract award the contract bid will be deemed technically non-compliant. If following contract award a sample tested under direction of the Authority fails to meet performance specification(s) the Contractor is liable

4.5. Thermal Conductivity

- 4.5.1. The product must be capable of being deployed to any environmental conditions. The product shall be capable of effectively working in conditions that range from desert to arctic conditions in accordance with Category A1 to C3 as stated in Def Stan 00-35 part 4.
- 4.5.2. The product supplied by the Contractor in respect of thermal R_{SI} , k and U values shall be no worse than the values given below, for the existing insulation product. BS 4745 shall be the means against which tests are measured. These figures shall be taken as follows:
 - 4.5.2.1. R_{SI} value to be greater than 0.2485
 - 4.5.2.2. k value to be greater than 0.037
 - 4.5.2.3. U value to be less than 4.03
- 4.5.3. The Contractor shall supply Certification from an accredited independent facility to BS 4745 as evidence of compliance of the thermal conductivity.

4.6. Service Life

4.6.1. Products shall have a 5 year, continuous use, service life. The evidence to support this should be made up of spares usage data and documentation of the product being used in a similar application.

4.6.2. The product shall be capable of being deployed and recovered multiple times during the service life.

4.7. Storage Life

4.7.1. Products shall have a 10 year storage life. As a guide this shall be based on a storage depot warehouse or an ISO container but must be rugged enough to be transported and stored in the category A1 to C3 climatic conditions in Def Stan 00-35 Part 4. There are to be no specific storage conditions or maintenance required to the insulation while in storage.

4.8. Colour / Appearance

4.8.1. The interior appearance of the insulation shall be white to promote the best use of light within the tent. The exterior appearance of the insulation may be different and shall be advised by the Contractor.

4.9. Breaking Strength

4.9.1. The product supplied shall be strong enough to withstand the loads applied by the tensioning straps as well as the effect of weather and personnel interaction.

4.9.2. The Contractor shall supply Certification from an accredited independent facility as evidence of the products compliance with BS EN ISO 13934 Part 1 for woven materials and BS EN 29073 Part 3 for non-woven materials. The rate of extension used shall be included in the results.

4.10. Tear Strength

4.10.1. The product supplied shall be strong enough to withstand the loads applied by the tensioning straps as well as the effect of weather and personnel interaction.

4.10.2. The Contractor shall supply Certification from an accredited independent facility as evidence of the products compliance with BS EN ISO 13937 Part 3: Textiles - Tear Properties of Fabrics - Part 3.

4.11. Abrasion Resistance

4.11.1. The product supplied shall be strong enough to withstand abrasion caused by the movement of panels and handling by users. This applies to the surface layer only.

4.11.2. The Contractor shall supply Certification from an accredited independent facility as evidence of the products compliance with BS EN ISO 12947 Part 2, testing of the surface layer only using the higher loads stated in the standard.

4.12. Puncture Resistance

- 4.12.1. The product supplied shall be strong enough to withstand puncture caused by the movement of panels and handling by users. This applies to the surface layer only.
- 4.12.2. The Contractor shall supply Certification from an accredited independent facility as evidence of the products compliance with BS EN ISO 9073 Part 5, testing of the surface layer only.

4.13. Rot and Mould Resistance

- 4.13.1. The product supplied shall be resistant to rot and mould. The product shall be capable of being deployed into a high humidity environment without any detrimental effect to the materials.

4.14. Stain Resistance

- 4.14.1. The product shall be resistant to staining from either environmental factors or from normal personnel interactions.

5. PACKAGING

- 5.1 As a guide to maximum size of the insulation liners for one complete 18'x24' tent shall be capable of fitting into a single Thatcham (2120 mm x 1410 mm x 1100 mm) pallet. Evidence must be provided at tender return of the ability to fit within the above mentioned packaging. Evidence that the system can easily fit within a reduced area through the normal packing procedure (by hand). The total area needed to store the 18 x 24 GS tent insulation kit is to be submitted and evidenced at tender return and this will be used to score each submission against all other bidders. Individual liners shall be supplied to Depot in a non-returnable appropriate transport and storage bag (heavy duty polythene). The Contractor shall demonstrate this requirement to the satisfaction of the Authority.
- 5.2 The transport or storage bag shall prevent any degradation of the panels whilst in transport or storage. Panels shall be secured within the storage bag prior to delivery to the Authority, which may be employed as the outer exterior packaging provided they meet the requirement herein. Spare valise type carriers shall be available as separate items in order to cover an alternative transportation method outwards or when insulation is returned from deployment back to Units. These may be multi-purpose to fit more than one panel(s).
- 5.3 The Contractor shall comply with any specific packaging requirements stated in the Contract.

6 MANUFACTURE

- 6.1 The function of the doors, windows and port panels shall be maintained. The drawings supplied provide details of the mechanism previously used to achieve this.
- 6.2 The Contractor shall show how the insulation layer is to be manufactured to accommodate the openings. Alternative mechanisms to the existing toggle / eyelet system may be considered, provided that the usable internal space is maximised and the fixing is simple to undertake.

6.3 In order to ensure compatibility with the GS Tentage stipulated in Table 1 the Contractor shall be issued with these shelters in order to allow the production of "1st Offs" samples for approval by the Authority or Authority representative.

7 PRODUCT MARKING

7.1 Each item shall be clearly and indelibly marked with the following:

- 7.1.1 Designation,
 - 7.1.2 NATO Stock Number
 - 7.1.3 Contractors Name,
 - 7.1.4 Year of Manufacture,
 - 7.1.5 Contract number,
 - 7.1.6 "Compliant to BS476 Part 12"
 - 7.1.7 Material batch number (traceable back to time of manufacture)
- and,
- 7.1.8 Any other such marking in accordance with the contractor's Quality Assurance/Control procedures or Contract.

8 SUPPORT

8.1 Safety

- 8.1.1 The Contractor shall provide a suitable safety statement for the product in accordance with JSP 454 and DefStan 00-56. The statement shall cover the following headings; product details, manufacturing standard, operating envelope, conditions of use, applicable legislation and a simple disposal statement in accordance with the template provided.
- 8.1.2 In this process it is essential that the Contractor consults with the OIP team and also the users to ensure that any safety documentation is representative of their combined needs.

8.2 Publications

- 8.2.1 The Contractor shall provide instruction guides for the installation of the product and any maintenance requirements for the product, including disposal of the product. These shall be incorporated into an update of the Tentage Installation Manual.

8.3 Drawings

- 8.3.1 Following contract award the Contractor is to produce Technical drawings of each of the insulation components for the Authority. Following drawing production to the satisfaction of the Authority the drawings are to be handed over to the Authority who will own the drawings and Intellectual Property Rights.
- 8.3.2 The Technical drawings are to be produced and handed over to the Authority within 6 months of contract award accompanied with a comprehensive Bill of Materials for each component.

8.4 Training

- 8.4.1 Depending on the complexity of the proposed product the Contractor shall be prepared to provide a 1-day train the trainer package, to allow for the training of 15 personnel, at a suitable location within the UK.