

## Geodesic Family Tent

### Overview

#### Self-standing Geodesic Family Tent

Item code	3500000058
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This new type of tent for a family of five persons conforms to the recommended minimum standard living area (3.5m<sup>2</sup> per person). It will provide:

- Longer life span and better stability, in particular to wind
- Safer to fire risk
- Better insulation to reduce the inner temperature in hot climates
- 100% synthetic to guarantee a 5 years shelf life under normal warehousing conditions and not prone to rotting in tropical climate
- Re-usability of the tent materials in the second life of the product

### Key Points

- AQL document is considered "live". IOM staff Users of this AQL document must check SharePoint that they have the latest version.

### Description

One complete tent must be sent as a sample to the laboratory. Additionally, 2m<sup>2</sup> of PVC-coated polyester canvas (as per point **1.7**) must be sent to the laboratory. The tent will first be used for the rain test (as per point **1.2-3**). The test pieces will then be cut from the same tent. The test pieces for FR and UV will be cut from places exposed to rain.

*A product is deemed acceptable only if the same sample passes all criteria.*

## 1. Material Specifications

### 1.1 Specifications for all tent components made of PE sheet

(Roof, walls, mud-flaps, ground sheet, shade-fly, and other PE sheet components)	
1. Material for the base fabric	Woven high-density polyethylene (HDPE) black fibres
2. Material for the coating	White low density polyethylene (LDPE) coating on both sides
3. Tear strength at state of origin under ISO4674-1B 2003, with a test piece of 200x200mm as described in ISO4674 Annex B	Minimum 100N

### 1.1 Specifications for all tent components made of PE sheet

4. Tensile strength at state of origin under ISO1421-1_1998	Minimum 500N and 15% to 25% elongation in warp and weft
5. UV resistance measured as remaining tensile strength after UV exposure. Tested with ISO1421-1 after 1500 hours UV under ASTM G53/94 (UVB 313 nm peak)	Minimum 80% of the original value of the actual product, <b>AND</b> not less than 475N
6. Weight under ISO3801	190g/m <sup>2</sup> ± 20g net weight
7. Flame retardant EN13823+A1	Minimum class D, s2, d2. Minimum time to reach large wing external edge: 4 minutes (LFS)
8. L.a.b Coordinates under ISO105J01 for the white coating colour	Minimum L : 82 "a" value between -1.7 and +1.5 "b" value between -4.5 and 0
9. Opacity measured as minimum reflection and maximum transmission, in the range of visible light and near infra reds	Measured under ISO 13468-1. Values should be measured respectively from 350 to 750nm, and from 750 to 2500nm wavelength. The final result is the average of the averages in each range. Minimum total reflection: 35% Maximum total reflection: 50% Maximum total transmission : 5%

### 1.2 Specifications for the waterproofing of the main tent

<p><b>1. Water-penetration resistance ISO811</b></p> <p>The test pieces include seams. Seams tapes are positioned on the inner face of the tent (opposite to the water)</p>	30hPa minimum, increasing speed at 100mm per minute.
<p><b>2. Efficiency of water proofing tape after UV and moisturizing.</b></p> <p>Exposure in a climatic chamber underISO4892-2, type A, 360 hours. Expose the outer side of the tent to the UV.</p> <p>The test pieces include seams. Seams tapes are positioned on the inner face of the tent (opposite to the UV and to the water)</p>	30hPa minimum, increasing speed at 100 mm per minute.

### 1.2 Specifications for the waterproofing of the main tent

#### 3. Rain-penetration resistance ISO5912:2003

The test piece is the complete tent with the shade-fly in place.(attention: ISO5912:2011 does not apply)

*Main tent: There should be no water penetrating inside the tent, including through capillarity action. Inner tent: There should be no water penetrating inside the inner tent, or wetting the inner tent canvas.*

Apply procedure as per point 4.2.11 in ISO5912:2003 and point 5.6plus following:  
A visual control from the inside of the tent, while the artificial rain is on, must be done after 2h and 5h, with the complete tent.

The test operator should ensure that the set-up of the test will not create condensation inside the tent that could be interpreted as leakages.

### 1.3 Specifications for the pipe sleeves material

Type and norms	Required minimum values
1. Material ISO1833, colour	Polyester canvas, red or blue.
2. Weight ISO3801	110 g/m <sup>2</sup> +/- 15%
3. Tear strength ISO13937-2	Minimum 70N
4. Tensile strength ISO13934-1	Minimum warp: 900N Minimum weft: 500N
5. Tensile strength after exposure to UV and moisturizing. Exposure in a climatic chamber under ISO4892-2, type A, 360 hours, followed by tensile test under ISO13934-1.	50% maximum strength-loss on original value of the same product and not less than: Warp: 630N Weft: 350N Number of test pieces: 3 test pieces in warp direction, and 3 test pieces in weft.

### 1.4 Specifications for the inner tent canvas

Type and norms	Required minimum values
1. Composition ISO1833	Polyester fabric 100%
2. Specific weight (g/m <sup>2</sup> ) ISO3801	110g/m <sup>2</sup> ±15% in finished state. net weight

*1.4 Specifications for the inner tent canvas*

3. Colour	White or whitish
4. Finishing	Soft-touch and pleasant feel (similar to cotton fabric)
5. Water-vapour permeability ISO17229	Minimum 2000g/m <sup>2</sup> /24h.
6. Tensile strength (N) ISO13934-1	Warp and weft 300N minimum.
7. Tear-resistance, started (N) ISO13937-2	Warp and weft 20N minimum.
8. Flame retardant under CPAI84	Pass CPAI84 section 6. Ageing under ISO4892-2, type A, 360 hours.

*1.5 Specifications for the mosquito nets, inner tent and outer tent*

Type and norms	Required minimum values
1. Material ISO1833	Polyester or Fiber glass, can be plastic coated.
2. Fabrication ISO8388	Warp knitted or woven fabric
3. Mesh size	20 to 25 holes/cm <sup>2</sup> for inner tent nets 7 to 9 holes/cm <sup>2</sup> for outer tent nets
4. Openness	Minimum 55%
5. Shrinkage ISO5077	5% maximum
6. Bursting strength ISO13938	600kPa minimum for the inner tent nets 800kPa minimum for the outer tent nets
7. Bursting strength after exposure to UV and moisturizing (climatic simulation). Exposure in a climatic chamber under ISO 4892-2, type A, 180 hours, followed by bursting test under ISO13938	50% maximum strength-loss on original value of the same product, and not less than 560kPa for the outer tent nets, 420kPa for the inner tent nets Number of test pieces: 3 test pieces of each type.

*1.6 Specifications for the outer-tent guy points*

Types and norms	Required minimum values
1. Material composition	Polyethylene, polypropylene or polyester ropes, Polyester straps, steel rings, elastic device.

### 1.6 Specifications for the outer-tent guy points

<p>2. Tensile strength ISO13934 on the 6 guy point lower parts. Includes: Rope loop 8mm, elastic device, metallic ring, snap-hook, one rope section of 8mm. The test pieces should be submitted to 2 blank extensions to 3000N before doing the measurement test itself.</p>	<p>3000N minimum resistance for the complete guy point. Number of test pieces: 2 Extension of the elastic to the maximum of the limiter should be reached under a traction force between 700N and 1000N</p>
<p>3. UV resistance in percentage of tensile strength-loss ISO13934 after exposure in a climatic chamber under ISO4892-2, type A, 360 hours, on the bottom part of the guy points. Includes: Rope loop, elastic device, metallic ring, snap hook, one rope section.</p>	<p>50% maximum strength-loss on original value of the same product <b>and</b> not less than 2000N. Number of test pieces: 1 Extension of the elastic to the maximum of the limiter should be reached under a traction force between 500N and 1000N</p>
<p>4. Tensile strength ISO13934 on the 16 tent guy point attachments to the tent and on the 10 tent guy point attachments to the shade-fly. Includes: The entire PVC reinforcement, strap, buckle, eyelet, runner, one rope section of 6mm.</p>	<p>1400N minimum Number of test pieces: 3</p>
<p>5. Colour</p>	<p>Black ropes and straps, galvanized steel, red plastic tensioning runners, or hard wood runners.</p>

### 1.7 Specifications for the outer-tent guy point reinforcements

Type and norms	Required minimum values
1. Material	White PVC coated polyester 540g/m <sup>2</sup> +/-15%, with PES 175g/m <sup>2</sup> +/-15%
2. Tensile strength ISO1421-1	2000N minimum warp and weft
3. Tear strength ISO 4674-1 (method B)	300N minimum warp and weft
4. Tensile strength ISO1421-1 after UV exposure in a climatic chamber under ISO 4892-2, type A, 360 hours	50% maximum strength-loss on original value of the same product and not less than 1000N in warp and weft.
5. Tear strength ISO 4674-1 (method B) after UV exposure in a climatic chamber under ISO 4892-2, type A, 360 hours	50% maximum strength-loss on original value of the same product and not less than 150N in warp and weft.

### 1.8 Specifications for the outer-tent secondary attachment points

Type and norms	Required minimum values
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### 1.8 Specifications for the outer-tent secondary attachment points

<p>1. Tensile strength ISO13934 of the 20 secondary brackets for attachments points to pipes, Velcro system or hook system.          Test piece includes: The entire PVC reinforcement, strap with Velcro or hooks. The traction must be applied with an 18 mm diameter hook simulating the tent pipe (This can be a short pipe of 18 mm with a rope passing through).          The attachment point is closed around the 18 mm hook as it is when in use.</p>	Minimum 250N
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### 1.9 Specifications for the frame components

1. Type of aluminium	6061 T6 or higher strength alloy
2. Tensile strength	Minimum 310 N/mm <sup>2</sup>
3. Yield strength	Minimum 280N/mm <sup>2</sup>
4. Young's Modulus	69000 N/mm <sup>2</sup> +/-5%
5. Pipe dimensions for the main pipes	Outer diameter: 18.50mm +/-0.5mm Thickness: 1.2 mm (+/-1%)
6. Pipe dimensions for the 100mm connectors	Outer diameter adapted to mainpipe Thickness:1.5mm (+/-1%)
7. Pipe dimensions for the tent pole repair splint	Inner diameter adapted to main pipe Thickness: 1.2mm (+/1%) Length: 200mm
8. Elastic rope dimension	Diameter: 3.3mm Length: 6.1m, +/-15%
9. Elastic rope recovery factor Tensile strength Type	60% ± 5% Minimum 100N 10 strands cold weather resistant

### 1.10 Specifications for hammer

1. Type	Sledge hammer, 1kg head, 30cm total length, wooden handle. In accordance with ISO 15601 and the specification listed below
2. Handle	No chips, rough surfaces, holes or knots. Smooth surface. Strong dry flexible wood. Handle to have a counter-conical shape (like a hoe) that retains the handle without added parts. Moisture minimum 10% and maximum 15%, under ISO 3130.
3. Pull apart test	Clamp head in a vice jaw after two series of 25 vigorous blows from varying delivery angles. Apply traction of 500N while trying to pull out the handle; there should be no damage to the hammer's head or handle, and the handle should remain firmly attached to the head.

### 1.11 Specifications for other accessories

1. Zip fasteners	Minimum 700N lateral traction under ISO 5912
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### 1.11 Specifications for other accessories

#### 2. T pegs

The peg being clamped vertically in its middle in a vice jaw, it must resist 25 vigorous hammer blows delivered straight vertically on its top, without breaking or bending.

## 2. Specifications: General points for finished product

### Performances

The final product must be able to withstand a 100km/h wind without any damage and remain securely attached to the ground. When closed, the tent must provide good protection against dust, wind, rain, insects and small crawling fauna.

Packed-tent weight of the standard version: 50kg maximum, 45kg is preferable.

### Fire resistance

The final product must be fire retardant to a level that allows users to evacuate the tent within 4 minutes in case of fire.

### Seams and stitching

All seams that are subject to possible tension must be double lock stitched and waterproofed. The stitches can be waterproofed with tape on the inner side where required. Stitching produces strong, long-lasting, neat and professional looking seams. The stitch count as well as UV and rot-proof sewing threads must be appropriate and suited to the fabric. Stitching must provide strong, waterproof seams with at least the same lifespan as the tent. The seams must be oriented to facilitate the unimpeded runoff of rain: avoid creating water lines or water pockets. Wherever possible, the colour of the sewing thread should be compatible with the fabric colour.

### Ropes, webbing bands, toggles, loops, reinforcement nettings and all other accessories

All ropes and webbing bands must be heat cut. All ropes are knotted to the tent at the factory. All of the above-mentioned items must be rot-proof and UV-proof (to the same degree as the tent canvas to which they are sewn). To avoid water penetration through capillarity action, no webbing or rope can be sewn using a stitch that goes from the outside to the inside of the tent; alternatively, they must be made of waterproof materials. Laces or loops of the main tent and shade-fly can be made of the same PE material or PES material of the tent.

### Eyelets

All metal eyelets must be rustproof and correctly placed, with an inner diameter adapted to the intended use.

### Metal rings

All metal rings and snap-hooks must be rustproof galvanized, and the rings must be closed with strong welding.

### Dimensional tolerance

Unless otherwise specified, a maximum tolerance of +/- 1% is accepted on all dimensions.

### Long-term storage

The tent must be treated and packed in such a way that the tent can be stored for a 5-year minimum under proper storage conditions without any damage or reduction in performance, including in tropical countries with high level of moisture.

The tent must be manufactured and packed in clean and appropriate conditions to avoid contamination from soil, dust and other contaminants. Storage on pallets allowing air circulation is recommended.

### 3. Specifications: Characteristics of the outer tent

Pictures **1 - 8**

#### 3.1 Specifications: General description of the main tent-fly

The tent has a hexagonal footprint. The tent must be comprised of several PE cloth sections, forming the general shape of the tent. The seams must run from the top centre, down to the floor level, avoiding horizontal lines when possible.

The outer tent must be supported by 5 identical cross arches. It is secured with 10 guy line systems attached on 16 reinforced attachment points.

On the six sides, the bottom of the wall is extended with mud-flaps lying horizontally on the ground with 250mm horizontal part. On the horizontal part of the mud flaps, there is a continuous pocket of 150mm width, all around, except before the doors, made with the same PE material stitched on top of the flap. There are holes of 20mm every 0.5m at the pleat to allow water to run off from these pockets. The pockets sides are stitched every 0.5m.

At the ground level, three belts are running from corner to opposite corner to keep the proper foot print size of the tent. These belts are also carrying a tensioner in each corner to connect to the inner tent groundsheet for tensioning the groundsheet (black in the 4 corners, red in the 2 side corners, colours to match with the inner tent corresponding components).

Pictures **9 - 12**

#### 3.2 Erecting system

Outer dimensions

Centre height: 2.40m

Width: 4.33m

Length: 5.58m

Doors height: 1.8m

The tent is suspended to the pipes and maintained in position by 100mm high sleeves to insert the pipes. There are two continuous sleeves for the cross arches pipes. The ends of the sleeves are located at 1800 mm above the ground.

There is one median sleeve, interrupted at the centre of the tent. The ends of the sleeve are located at 1800 mm above the ground.

At both ends of each pipe sleeve, there is a 100mm Velcro all around to attach the shade-fly. The two sloped pipes are attached to the tent with eight sleeve sections of 100mm each, positioned every approx.300mm for the upper part.

These sleeve sections are carrying a 50mm Velcro all around to attach the shade-fly.

Pictures **13 - 14**

The pipe-ends are inserted into eyelets on each side or into 4 foot plates in the corners. Foot plates with a webbing loop large enough to insert one man-foot (easy for setup).

Picture **15**

The 2 reinforcements carrying the 3 side eyelets for connecting the pipes are made of PVC as per 1.7 with minimum 300mm long stitched to the tent.

Pictures **16-17**

The section of pipes corresponding to the walls are attached to the tent with straps, and secured with Velcro. The attachment points to the tent are reinforced with PVC coated Polyester pieces to enable the proper tensile strength as per part 1.7, and distribute the stress on the stitching of the guy point to the tent. Main points with minimum 200mm insertion length in the seams. Secondary points with minimum 100mm insertion length in the seams.

Picture **18**

There are 16 main Velcro brackets supporting the 16 guy ropes. There are 20 secondary Velcro bracket systems. The 4 straps



where the pipes are crossing are longer to enable attaching the pipes together.

Pictures **19 - 27**

### 3.3 Anchoring system, outer guy lines

Tolerance for guy points position: +/-5%, the dimensions are measured from the pipe end to the centre of the guy point component.

Ten guy lines attached to 6 metal pegs, including:

- Six main guy lines positioned in the six corners of the tent. They split each into two attachment points to the tent, 4 on the corners are located at 1.4m and at 0.6m from the pipe ends; and 2 on the sides are located at 0.85m and 1.55m from the pipe end.
- Four secondary guy lines attached to the sloped pipes located at 1.4m from the pipe ends. These 10 guy lines are attached to the tent with sixteen 40mm webbing, forming the 16 main Velcro brackets.

Picture **28**

### 3.4 Anchoring system, inner central

In addition to the outside anchoring points, there is an inner central anchoring point. This is made with a webbing loop passing around the three pipes crossing at the top of the tent. This loop is accessible from inside the tent, to attach to a heavy weight placed in the centre of the tent floor.

This heavy weight can be made with the tent bag filled with stones, gravels, sand, earth, etc. The loop is made of 40mm webbing that hangs freely around the 3 pipe-sleeves, and is accessible from inside the tent through a slot-opening in the roof centre. This loop must withstand minimum 2000N traction. This loop is also connecting to the centre attachment point of the inner tent.

Picture **29 - 30**

### 3.5 Guy point elastic system description

The guy points must be reinforced in such way to pass the tensile test as per *part 1.6*. On the bottom end of the six guy lines there are elastic shock absorbers, with extension limiters and rope loops to connect to the pegs. The elastic buckle length is 100mm minimum to 120mm maximum. The extension limiter dimension allows 100mm extension to the elastic.

Each elastic shock absorber is providing with one snap-hook to connect the secondary guy lines and the shade-fly ropes.

All guy ropes should be rolled and placed under the nearest window flap for packing, to facilitate the setting up of the tent.

Picture **31 - 32**

### 3.6 Windows

The tent has six windows. Two are located on each side of the tent, and one next to each door. The inside dimensions of the side wall windows must be 500mm wide by 500mm high.

- The lower edge of the windows must be situated 500mm above the ground.
- The windows are made with a fixed large holes mosquito net as per *1.5*.
- These windows are protected outside with a 700mm x 700mm shutter rolling upwards. The window flaps are made of PE sheet as per *1.1*. Loops and plastic hooks or toggles are provided to keep the flap open when rolled up, and closed with Velcro on three sides.
- Ropes are available at the flap lower corners for connection to pegs when opened.
- The inside dimensions of the windows next to the doors must be 500mm wide by 500mm high. The lower edge of the windows must be situated 1050mm above the ground. These windows are made of fixed clear translucent UV proof plastic film, without external shutters.

Picture 33

### 3.7 Ventilation

The tent has two ventilation openings, at the top of the tent roof, in the roof sections above the doors. These vents are made in the form of a triangle that can open and close from inside, with an inner flap. The length x height dimensions of each vent is 850mm x 550mm.

- The flap closes with a 25mm-wide Velcro on the two sides that open.
- The top corner of each vent is located at 200mm from the roof centre.
- A 100mm diameter foam roll is positioned at the bottom edge of the vent to keep the shade fly at a distance from the tent roof.
- The ventilation closes with fixed large holes mosquito net as per 1.5.

Picture 34

### 3.8 Doors

The two doors are located on the centre of both tent gables. Size: 0.9m width x 1.70m high. The door flaps of 1.15m are made with same material as the tent.

Each door closes with 2 vertically oriented zippers, one on each side. The bottom of the door flap is extended with a 200mm flap lying horizontally on the ground.

A loop and hook system is provided at the top of the door to maintain it rolled up. The flap is secured with 6 Velcro systems of 50mm each, equally spaced on each door side. At the bottom of the doors, on each lower corner of each door, on the inside, loops are available to attach to the short T-pegs (same pegs are attaching the inner tent doors, and the main-fly tent door). The loops have the exact length to reach the ground level. The loops are made of 25mm webbing. The door zippers can be locked with small padlocks to eyelets provided at the bottom of the doors, on the mud flap.

Picture 35 - 38

### 3.9 Other accessories

Sufficient number of attachment points are provided inside the tent to attach the inner tent, as described in inner tent description chapter.

### 3.10 Chimney reinforcement

One chimney reinforcement (non-perforated) must be located on one side of the tent, between the tent corner and the door, at 500mm from the tent corner. It is positioned on the side of the door where there is no window. It must be made of heat-resistant fabric (minimum 900°C) with fibres that do not loosen and do not tear when cut.

The lower edge of the heat-resistant fabric must be 500mm above the ground. Net inner dimensions of the fireproof part: 250mm width x 600mm height. The fire proof patch is located on the inner side of the tent. The tent fabric must not be cut away at the chimney opening. It will be cut away by users only if the chimney patch is used.

Picture 39

### 3.11 Plastic pouch for document - integrated in the front and rear window

On the inner side of the front and rear window, there must be a document pocket of 200mm high x full width of 10 the window. This pocket also provides the possibility to expose a solar panel safely.

Picture 40

### 3.12 Manufacturer identification

Made with a strong textile tag of 10x10cm with durable print, and stitched inside the tent, in the vertical seam of one tent corner. The tag should include the manufacturer's name, the batch number and the production's date.

## 4. Specifications: Inner tent with ground sheet

### 4.1 General description

The inner tent is hexagonal-shaped and hangs inside the outer tent.

The inner tent has 6 windows and 2 doors corresponding to the outer tent windows and doors; and 2 ventilation openings that allow accessing the vents of the main tent. The bathtub groundsheet (floor) is made of woven PE fabric, and sewn to the inner tent extending up on all the four sides to ensure the inside remains waterproof. Any stitching on the lower part of the groundsheet should be avoided or must be taped to ensure 100% waterproofing.

### 4.2 Inner tent dimensions

The inner tent, when hooked to the outer tent, must have a centre height of 220 cm. All dimensions are designed to ensure a 10cm air gap between the outer tent and the inner tent. The inner floor surface is 18.3m<sup>2</sup>.

### 4.3 Inner doors

Each door opening is 0,9m wide and 1.7m high.

The doors (each includes 1 netting outside layer + 1 polyester flap inside layer) are closing with 2 vertical zippers, with 10cm overlapping on each side. Loop and hooks system must be provided to keep the door opened when rolled up.

The bottom of the door flaps and door netting close with 25mm Velcro strips on the flap and on the netting, matching with 50mm Velcro strip on the groundsheet side.

The nettings are given several pleats to avoid tension on the zippers.

Pictures **41 - 44**

### 4.4 Inner Tent Suspension System

The inner tent is attached to the main tent with sufficient number of Velcro brackets, plastic hooks or clip-buckles, located along each pipe, and at the ground sheet level. There are 13 clip buckles and 22 Velcro straps or hooks.

The top centre A and bottom centre clips C are identified with red colour. The other attachments are buckles with straps and Velcro or hooks.

A - 1x 40mm top centre buckle – RED webbing – male part on the tent and female part on inner tent.

B - 6x 25mm top wall plastic buckles or hooks – female part on the tent and male part on inner tent.

C - 6x 40mm bottom wall plastic buckles or hooks – RED webbing – female part on the tent and male part on inner tent D - 22x secondary Velcro brackets or hooks.

Pictures **45 - 51**

### 4.5 Inner tent ventilation system

The inner tent has 2 triangular vents of 850mm length x 550mm height, made of mosquito netting. The vents are located on both sides of the tent matching with the outer tent vents. They can be opened and closed with zippers on two sides. These vents have shutters made of the same material as the inner tent, closing with zippers.

Pictures **52 - 53**

## 4.6 Inner tent windows

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The inner tent has 6 windows of equal size and location with the outer tent windows. These windows have a fixed mosquito net. The windows can be closed with flaps, made of the same material as the inner tent, opening downwards and closing with a 25mm Velcro strip on three sides.

Pictures **54 - 57**

## 4.7 Accessories inside the inner tent

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To hang light-weight items, four 20mm-hooks (mounted on 20mm webbing) are available. These hooks are located under the two diagonal cross arches, where the highest inner tent hook connecting to the main tent is located.

Six pouches, made of inner liner material, of 250 x 300mm inner dimension, are available inside the inner tent under each window. Four A5 pouches made of net are available under the transversal arch, at 500mm from either side of the centre of the roof.

The 10 pouches are stitched on their upper edge and hang freely.

Four pockets (15x20cm – netting) at the roof level + six pockets (30x25cm – Polyester FR fabric) under the windows.

Pictures **58 - 60**

## 4.8 Groundsheet

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The integrated groundsheet must be made of PE woven fabric. The seam, attaching the groundsheet to the sides of the inner tent, must be 200mm above the floor.

To avoid water infiltration all stitched seams must be waterproofed, or welded (heat sealed). To provide a proper tension of the groundsheet, six tensioning points must be located at the tent corners. They are made with 40mm webbing, sawn vertically in the corners of the ground sheet. These tensioning points are connected to the main tent with clip buckles and can be tensioned by sliding the belt in the buckle. At the bottom of each door, the groundsheet can be open to form a flat threshold. These thresholds have two folds that can open to allow flattening them on the ground. These folds can be locked in vertical position with 2 toggles and 2 loops or clip buckles.

At the bottom of the doors, on each lower corner of each door, on the outside, loops are available to attach to the T-pegs (same short T-pegs for the inner tent doors, and for main-fly tent door). The loops have the exact length to reach the ground level. The loops are made of 25mm webbing.

Pictures **61 - 64**

## 4.9 Inner partition

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One partition divides the inner tent into two equal spaces. It runs from either side to the opposite side. The partition is stitched to the inner tent along the roof line that goes from the left corner to the right corner (laying on the floor with 20cm). They can open in the centre (overlapping of 30cm). Each half-partition can be maintained open with a pair of laces or loop and hook system.

Picture **65 - 69**

## 4.10 Chimney reinforcement

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A chimney reinforcement (non-perforated) must be located on one side of the tent, matching with the chimney patch of the outer tent, with same material and same dimensions.

The tent fabric must not be cut away at the chimney opening. It will be cut away by users only if the chimney patch is used.

Picture **70**

## 4.11 Fire safety information

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Fire safety information must be available inside the tent. This must be printed with durable print on a piece of canvas stitched inside the inner tent next to the chimney protection.

Picture **71**

#### 4.12 Shade-fly description

One shade-fly made of 5 sections, stitched together, 100% made of PE sheet as per 1.1. Dimensions: centre part to cover the roof up to the end of the pipe sleeves. Front and rear side flaps of 1.4m width. Left and right side flaps of 1.4m width, and 1.6m in the centre (triangle shape). Ventilation: The shade-fly has 6 vents permanently opened, with fixed sticks to keep the vents opened all time. Top vents is located at 900mm from the roof centre (with overlapping of 200 mm).

Picture **72 - 74**

#### 4.13 Shade-fly attachment points

The shade-fly is provided with 10 guy points, made of a 25mm webbing band strongly stitched at each corner. There are 10 ropes provided for the shade-fly, connecting to the snap-hooks on the main tent elastic system. The shade-fly is connected to the tent with 6 Velcro systems at each end of the tent pipe sleeves, and 16 Velcro systems to the pipe sleeve sections on sloped pipes.

Picture **75 - 78**

### 5. Specifications: poles and accessories

#### 5.1 Poles

Five pre-shaped aluminium pipes, materials described in part 1.

Each arch is made in maximum 15 pieces, linked with an inner elastic system. Length: 8340mm. Colour: natural anodized aluminium grey.

Each section should fit together with a male and female 50mm joint, made with a 100mm long inserted pipe crimped into one of the pipes. The sections forming one complete pipe are pre-assembled with an elastic rope. Elastic quality: see part 1.

The ends of the pipe must be closed with a threaded plug, with a 13mm diameter pin that fits into the foot plates and the eyelets, and that offer attachment for the inner elastic system. The pin to fit into the foot plates and eyelets has a reduced diameter to avoid coming out.

Picture **79 - 81**

#### 5.2 Ropes/loops/guy runners

The ropes for the 6 loops of the guying points are black, UV treated, diameter 8mm with a minimum tensile strength of 3000 N. The 26 guy ropes are black, UV treated, diameter is 6mm, with a minimum tensile strength of 1400N.

All guy ropes lengths are appropriate to attach to pegs located at 1.5m ground distance from each tent corner, plus half of the length for tensioning.

Other ropes are black, UV treated, of appropriate length, with a diameter of 4mm.

- All ropes must be attached to the tent or the shade-fly at the factory.
- All ropes must have a securely-knotted loop at one end, to place over the peg or in the snap hook.
- All ropes are tensioned by sliding on the tent side, or the shade-fly side, not on the peg side.
- Tensioning with hard-wood guy runners, natural wood colour or UV treated red plastic runners, pre-mounted on the ropes.
- The grain of the wooden runners must run lengthwise in the runner.
- Size of the runners: 100 x 35 x 12mm for the wood type, 100 x 35 x 15mm for the plastic type. The holes must be adapted to the good running and blocking of the ropes.
- The ropes must be threaded through the runners in the position that represents the maximum blocking position on the ropes as per picture **82**.

### 5.3 Pegs

- Six 400mm-pegs, made of T-shaped iron 25 x 25mm and 3mm thick, class 6.8 or above, with a 75mm iron rod of 8mm in diameter welded on top. At the other end, the peg must be cut to form a pointed end. The corner next to the top rod must be cut at 60° and smoothed to avoid injuries. The rod produces a 25mm prominence on each side of the peg. The welding ensures strong resistance of the rod to hammering. Pegs are galvanized.
- Four T-pegs 250mm x 20 x 20mm

Picture **83 - 85**

### 5.4 Accessories

One 1kg metal hammer with 300mm wooden handle. (see specifications in part 1). One repair kit including: 2 curved needles, 50m stitching thread, 1 spare aluminium pipe section 200mm that fits on the tent pipes by sliding over.

Four door padlocks with minimum 3 digits combination.

### 5.5 Set-up instructions

One set-up instruction sheet in English, showing step by step set-up information drawings and item content list and information, printed on durable laminated paper or durable fabric (see part 7/1). These instructions should be accessible immediately after opening the tent package.

Picture **86**

## 6. Specifications: Packaging

### 6.1 Primary pack

One tent with all its accessories must come packed in one bundle only. The inner tent and the outer tent are folded so that the plastic part protects the inner tent and accessories from dirt and moisture. The tent bag is made of the same PE material as the one used for the tent. The bag is round in shape with one end opening. It is closed by stitching at factory for transport, and has two laces for closing back after opening.

Picture **87 - 90**

Total length must not exceed 1.2m.

The package must be secured with 2 webbing straps on the outside; each strap must have a strong self-locking buckle that will not slide during transport. Each self-locking buckle can be made either with two rectangular buckles of 4mm wire, welded-closed, or with one rectangular buckle and one sliding middle bar, of 4mm steel rod, welded-closed.

The straps are not sewn to the bag. Each strap is secured with 2 loops sewn to the bag to avoid loosing the straps. Each strap is forming one handle on each side of the bag.

The aluminium poles must be packed without bag in a way to avoid damaging/staining other items inside the bundle.

The pegs must be packed in a separate PE bag to avoid damaging other items inside the bundle. The bag must have a closure system that ensures the pegs remain safely inside during transport and handling. Particular care must be taken when packing the pegs to ensure they will not pierce the bag. There should not be any extra plastic packing material in the package.

Markings on the primary pack:

- The buyer's markings must be printed on the outside in indelible ink.
- The standard international warning sign "protect from water" must be printed on the outside of the package.

### 6.2 Secondary pack and transport/storage pack

The bags are packed in stackable metallic pallets.

## Specifications Part 7: Annexes

### 7.1 Instruction sheet

As per document available [here](#).

The new instruction sheet will be available on the EIC.

### 7.2 Safety instruction tag

Should include the text in Arabic, English, French, Spanish, and the fire risk sign: Picture **91**.


All IOM Non-Food Items (NFIs) have been designed, manufactured, and packaged for distribution ensuring minimal impacts on the environment. Through rigorous Quality Assurance processes along with risk and life cycle assessments, the NFIs are evaluated holistically throughout its entire life cycle on its impact on the environment and for improved durability to enable reaching beyond its intended service life. Hence, reducing the need for frequent replacements. IOM NFIs can be recycled and further re-purposed or upcycled to suit multiple uses such as converting to different usage like handbags, car covers, recycled wastewater collection etc.

All unnecessary sub-packaging made of single-use plastics are avoided. When sub-packaging is exceedingly necessary, IOM prefers 100% compostable bio-plastic packaging made from biomass or unbleached, natural-coloured-recycled paper or using paper with FSC forest management certification.

## Key Considerations

### Self-standing Geodesic Family Tent

<b>Printing of IOM Logo</b>	IOM Logo should be printed on both sides of the roof using CMYK. C = 100%, M = 82%, Y = 10%, K = 2%.
<b>Packing Information</b>	<p>Marking on the package must include the following details:</p> <ol style="list-style-type: none"> <li>1. Indicate IOM Logo</li> <li>2. Item name and material code, IOM Geodesic Tents - 3500000058</li> <li>3. PO number and Quantity</li> <li>4. Batch number and Manufacturing date</li> <li>5. Packing units: To be marked with consecutive numbers (i.e 1/20, 2/20...)</li> <li>6. Indicate Gross Weight and Dimension</li> </ol> <p>Do NOT include logo of the vendor. Marking must remain readable and well fixed on the box after minimum 10 handlings.</p>
<b>Packaging Details</b>	The items to be packed in Wooden EURO pallet (EUR 1) and treated as per ISPM 15 standard. Items must be shrink-wrapped, securely strapped and sealed. The packaged goods must not exceed the length and width of the pallet and clearly marked with IOM standard markings (packing details above) in both front and back.

 <p>International Organization for Migration (IOM) The UN Migration Agency</p>	<b>AQL</b> <b>Definitions, penalties, Corrective Action</b> <b>Plan and Quality Control rules.</b>	IOMQC-AQLS00V8 Ver8.0 04.02.2022
<b>Nonconformities classification: Critical: C; Major: M; Minor: m</b>		
<b>Definitions:</b>		
<p><b>Critical nonconformity</b> : Any discrepancy which might harm an user or makes it impossible to use the product properly is considered to be critical. Lots with Critical discrepancy are subject to refusal.</p>		
<p><b>Major nonconformity</b> : Any discrepancy which makes the use of the product less efficient than expected is considered to be major. Lots with Major discrepancies can be accepted.</p>		
<p><b>Minor nonconformity</b> : Any discrepancy which does not have an influence on the performance of the product is considered to be minor. Lots with Minor discrepancies can be accepted.</p>		
<b>Non-Conformities classification and related penalties:</b>		
<p><b><u>Corrective action plan must be implemented by the vendor on its processes, addressing root causes of occurrence (production) and of non-detection of the nonconformity (QC).</u></b></p>		
<b>Critical: (AQL 0)</b>		
<p>Nonconforming characteristic (number of nonconforming items <math>\geq</math> Rejection number. ISO-2859-1) implies a penalty of 10% of the value of the total PO per each critical non-conformity to be charged to the supplier. Determination of lot acceptability is to be decided by IOM.</p>		
<b>Major: (AQL 4.0)</b>		
<p>Nonconforming characteristic (number of nonconforming items <math>\geq</math> Rejection number. ISO-2859-1) implies 0.5% penalty of the value of the total PO per each major non-conformity to be charged to the supplier. Determination of lot acceptability is to be decided by IOM.</p>		
<b>Minor: (AQL 6.5)</b>		
<p>Nonconforming characteristic (number of nonconforming items <math>\geq</math> Rejection number. ISO-2859-1) implies implies 0.25% penalty of the value of the total PO per each minor non-conformity to be charged to the supplier. Determination of lot acceptability is to be decided by IOM.</p>		
<b>Quality Control and Acceptance Quality Level</b>		
<p><b>- The AQLs herein are after IFRC/ICRC with additional parameters on IOM markings and required packaging.</b></p>		
<p>- The Method of testing is drawn from ISO-2859-1 International Standards (table1: Sample size code letters, and table 2-A: Single sampling plans for normal inspection). The samples will be taken randomly by the buyer from the delivered items and then inspected.</p>		
<p>- The buyer can decide either to inspect the lot at IOM QC laboratory or to use an inspection company for analysis, or <u>both</u>. Transport to laboratory and analysis cost for lab testing are at expense of IOM.</p>		
<p>- The vendor can contest the results of the Quality Control done at IOM warehouses by requesting a lab testing. In this case transport to laboratory and analysis cost for lab testing are at expense of the seller.</p>		
<p>- <b>Nonconformity</b>: non-fulfilment of a specified characteristic requirement.</p>		
<p>- <b>Nonconforming item</b>: item with one or more nonconformities.</p>		
<p>- <b>Lot</b>: definite amount of some product, material or service, collected together.</p>		
<p>- <b>Sample</b>: set of one or more items taken from a lot and intended to provide information on the lot.</p>		



## Links

- [AQL on SharePoint](#)

## References and Tools

- [Geodesic Family Tent AQL](#)

## Other Entries in this Topic

- [Emergency Relief Items Catalogue](#)

## Contacts

For more information and guidance contact the Shelter Support Team: [ShelterSupport@iom.int](mailto:ShelterSupport@iom.int).

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