

INCH-POUND

A-A-55266

February 23, 1995

## COMMERCIAL ITEM DESCRIPTION

## TENT: LIGHTWEIGHT EXTREME WEATHER

The General Services Administration has authorized the use of this commercial item description for all Federal agencies.

## 1. SCOPE

1.1 Scope. This commercial item description covers two lightweight extreme weather tents in the following classes and sizes:

Class 1 - 3-Person Tent, All Season

Class 2 - 4-Person Tent, All Season

2. SALIENT CHARACTERISTICS

2.1 Description. The lightweight extreme weather tents consist of two tents with rainflies, as specified below. The doors (entrance/exit openings) shall be a minimum of 30 inches in diameter, if circular, and a minimum of 29 inches by 34 inches if rectangular, to allow the 95 percentile soldier to ingress and egress. The openings shall be provided with both a closable netting and a waterproof door. The waterproof door shall be constructed of the material specified in 2.4.2. A method shall be provided for holding the netting and waterproof doors in an open position. The gear storage for each tent shall be provided with a detachable gear loft and interior pockets made from the

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AMSC N/A

FSC 8340

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screening specified in 2.6.3. The gear loft shall be attached to the tent's hanging loops and shall act as an overhead shelf for storing lightweight gear or as a drying rack for damp clothing. The gear stowage pockets shall be flat and envelope-shaped, approximately 6 inches wide by 12 inches long. The pockets shall be attached to the interior periphery of the tent where the floor is sewn to the main body. The class 1 tent shall be provided with three pockets, and the class 2 tent with nine pockets. In order to serve the soldier in each operational area--mountain, arctic, and desert--the tents shall be produced so that they are functional with gear worn by soldiers in those areas. For each procurement, the Government agency shall list any specific restrictions for items being worn by soldiers in each area that may be restrictive in the construction of the shelter.

## 2.2 Class 1 - 3-person tent, all season:

Floor area:	45 sq. ft. minimum. Tent shall be no less than 6'5" in length to allow a 95th percentile soldier adequate space to sleep.
Weight:	Less than 12 lbs. (tent, w/fly and poles)
Height:	43 inches minimum over 30 percent of tents interior floor space
Transport packing size:	Less than 1.1 cubic ft., tent, components, repair parts and one fly (approximately 10 inches in dia. by 22 inches long)
Vestibule:	10 sq. ft. minimum covered space
Shape:	Free standing (requires no stakes to hold erect)

NOTE: The vestibule is not required to be free-standing.

2.2.1 Operational environment. The class 1 tent, with rainfly installed, shall be operable in conditions from -25 to 120 degrees F as found in the arctic, mountain and desert. It shall withstand steady 50 mph winds with gusts to 65 mph. The tent shall provide protection from driving rain at a maximum of 20 mph with rain falling at the rate of 2 inches per hour. Under those conditions, the tent shall not have leakage to the extent that the user comfort is degraded. Comfort being degraded is defined as rain droplets hanging on the inside of the tent and dripping in to form puddles larger than 2 inches in diameter. The tent, with fly installed, shall also be able to withstand a snow load of four pounds per square foot. The tent shall have one front and one rear exit/entrance which allow the 95th percentile soldier in operational uniform to ingress/egress (see 2.6.14). The tent shall also have a full integral tub floor. The floor shall have a maximum of one seam.

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2.2.2 Rainfly. The class 1 tent shall be equipped with three full coverage flies that cover all openings in the tent. One fly shall be provided with a three color, desert camouflage pattern conforming to Drawing 2-1-2240, a second fly shall be provided with a woodland camouflage pattern conforming to the Drawing 2-1-1516B, and a third fly shall be provided with an arctic white camouflage color, Cable NO. 37875, per FED-STD-595. The flies shall be easily attached and detached from the tent using common fastening techniques. When installed, the fly shall form an integral vestibule at one end of the tent which provides a minimum additional ten square feet of usable floor area for storage of equipment. See Table III for fly fabric specifications and testing.

2.3 Class 2 - 4-person tent, all season:

Floor area:	60 sq. ft. minimum. Tent shall be no less than 6'5" in length to allow a 95th percentile soldier adequate space to sleep
Weight:	Less than 20 lbs. (tent, fly and poles)
Height:	60 inches minimum over 30 percent of tents interior floor space
Transport packing size:	Less than 1.6 cubic ft., tent, components, repair parts and one fly (approximately 12 inches in dia. by 22 inches long)
Vestibule area:	30 sq. ft. minimum covered space
Shape:	Free standing (requires no stakes to hold erect)

NOTE: The rainfly with integral vestibule is required to be self supporting so that it can be erected to provide temporary shelter.

2.3.1 Operational environment. The class 2 tent, with rainfly installed, shall be operable in conditions from -25 to 120 degrees F as found in the arctic, mountains, and desert. It shall withstand steady 50 mph winds with gusts to 55 mph. The tent shall provide protection from driving rain at a maximum of 20 mph and rain falling at the rate of 2 inches per hour for a minimum of 15 minutes on each side of the tent, front, back and sides. The tent shall not have leakage to the extent that the

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user comfort is degraded. Comfort being degraded is defined as rain droplets hanging on the inside of the tent and dripping in to form puddles larger than 2 inches in diameter. The tent, with fly installed, shall also be able to withstand a snow load of four pounds per square foot. The tent shall have one front exit/entrance which allows the 95th percentile soldier in operational uniform to ingress/egress (see 2.6.14). The tent shall also have two side openings, approximately 24" in diameter, with insect netting. These openings will be tunnels which allow the connection of two like shelters. The tunnel fabric will be that of the floor material. The fly shall have corresponding openings of sufficient size to allow the tunnel to pass through. In order to connect two tents together using the tunnels, each tunnel will have 2 sets of equally spaced elastic tie downs with the same number of corresponding elastic tie downs with line tighteners. The tent shall also have a full integral tub floor. The floor shall have a maximum of one seam. In addition, the floor shall have one closable debris opening approximately 16" in diameter. This opening shall be within 3 feet of the exit/entrance and set off from the door's center line. This opening is not required to have insect netting.

2.3.2 Rainfly. The class 2 tent shall be equipped with two full coverage flies that cover all openings in the tent. One fly shall be provided with a woodland camouflage pattern, conforming to Drawing 2-1-1516B, and a second fly shall be provided with an Arctic camouflage color Cable No. 37875 per FED-STD-595. The flies shall be easily attached and detached from the tent using common fastening techniques. When installed, the fly shall form an integral vestibule at one end of the tent which provides a minimum additional 30 square feet of usable floor area for storage of equipment. The fly shall also be self-supporting and capable of being erected by itself to provide temporary shelter. The design of the rainfly will permit alternate support, in the event of missing poles, by means of tying ropes to trees or skis and securing the ropes to double grommets or lashing points. See Table III for fly fabric specifications and testing.

## 2.4 Materials

2.4.1 Tent fabric. The body fabric, except for openings and floor for the class 1 and 2 tents, shall conform to the requirements specified in Table I. The color for the class 1 tent shall be brown shade Cable No. 30325 and, for the class 2, the color shall be woodland camouflage pattern conforming to drawing 2-1-1516B , Cable No. 30325 conforming to FED-STD-595.

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TABLE I. Physical requirements for tent fabric

Characteristics, Units	Test Method	Requirements
Class 1 Weight, oz/sq yd.	ASTM D3776 Option C	1.9 maximum
Class 2 Weight, oz/sq yd.	ASTM D3776 Option C	1.9 minimum
Breaking strength, lbs:		
Warp	ASTM D 5035	50 minimum
Filling	ASTM D 5035	50 minimum
Tearing strength, grams:		
Warp	ASTM D 1424	600 minimum
Filling	ASTM D 1424	600 minimum
Air permeability (Average value of cu ft/min/sq ft)	5450 <u>1</u> /	7 minimum
Flame resistance, initial:		
After flame, seconds:		
Warp	CPAI 84	per CPAI 84
Filling	CPAI 84	per CPAI 84
Char length, inches:		
Warp	CPAI 84	per CPAI 84
Filling	CPAI 84	per CPAI 84
Melt drip	CPAI 84 and <u>2</u> /	per CPAI 84
Flexibility (warp only), cm:		
Initial warp	ASTM D1388 Option A	10 maximum
-25 F	ASTM D1388 Option A and <u>4</u> /	15 maximum
Spray rating:		
Initial	AATCC 22	100, 100, 100
Blocking, scale rating	5872 <u>1</u> /	3 maximum
Mildew resistance	ASTM G 21 ASTM G 22	No growth No growth
Colorfastness after accelerated weathering	Xenon <u>3</u> /, and 5630 <u>1</u> /	good

1/ FED-STD-1912/ In addition to after-flame time and char length, any evidence of flaming melted or molten pieces dropping from the specimen at any time during the test shall be reported as a failure.3/ Accelerated weathering performed in accordance with MIL-C-44103C, paragraph 4.5.2.2, which cites AATCC method 169,

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Xenon lamp exposure. The coating side of the coated materials shall be exposed to 100 Kj energy. The coating shall not become stiff and brittle nor soft and tacky, and there shall be no evidence of cracking or crazing under visual examination.

4/ The specimen shall be placed between glass plates. The specimen/plate assembly and test instrument shall be conditioned at -25 deg F for minimum of 2 hours. The test shall be run at 25 deg F.

2.4.2 Floor. The fabric for all tent floors, doors and storage sacks shall be a slip-resistant, flexible, waterproof material conforming to the requirements specified in Table II below (see 6.3.1.2). The color for the class 1 tent floor, opening and storage sack shall be brown shade, Cable No. 30325 and for the class 2 shall be woodland camouflage pattern conforming to drawing 2-1-1516B and conforming to FED-STD-595.

TABLE II. Physical requirements for floor fabric

Characteristics, Units		Test Method	Requirements
Weight, oz/sq yd.	ASTM	D3776	Option C 2.2 minimum 3.0 maximum
Breaking strength, lbs:			
Warp		ASTM D 5035	50 minimum
Filling		ASTM D 5035	50 minimum
Tearing strength, grams:			
Warp		ASTM D 1424	500 minimum
Filling		ASTM D 1424	500 minimum
Adhesion of coating lb/2 inch width, dry		5970 1/	10 minimum
Hydrostatic resistance, psi:			
Initial		5512 1/4	60 minimum

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TABLE II. Physical requirements for floor fabric (Contd.)

Characteristics, Units	Test Method	Requirements
After gelbo flexing (100 cycles)	2017 <u>3/</u> and 5512 <u>1/4</u>	60 minimum
After abrasion	5302 <u>1/9</u> and 5512 <u>1/4</u>	35 minimum
After strength of coating	5972 <u>1/8</u> and 5512 <u>1/4</u>	35 minimum
After high humidity	<u>6/</u> and 5512 <u>1/4</u>	40 minimum
Flame resistance:		
After flame, seconds:		
Initial		per CPAI 84
Warp	CPAI 84	per CPAI 84
Filling	CPAI 84	per CPAI 84
After-weathering		
Warp	Xenon <u>5/</u> and CPAI 84	per CPAI 84
Filling	Xenon <u>5/</u> and CPAI 84	per CPAI 84
Char length, inches:		
Initial		per CPAI 84
Warp	CPAI 84	per CPAI 84
Filling	CPAI 84	per CPAI 84
After Weathering		
Warp	Xenon <u>5/</u> and CPAI 84	per CPAI 84
Filling	Xenon <u>5/</u> and CPAI 84	per CPAI 84
Melt drip		
Initial	CPAI 84 and <u>10/</u>	per CPAI 84
After-weathering	Xenon <u>5/</u> CPAI 84 and <u>10/</u>	per CPAI 84
Flexibility (warp only), cm:		
Initial warp	ASTM D1388 Option A and <u>12/</u>	10 maximum
-25 deg F	ASTM D1388 Option A <u>11/</u> and <u>12/</u>	15 maximum
Blocking, scale rating	5872 <u>1/</u>	3 maximum
Mildew resistance	ASTM G 21 ASTM G 22	No growth No growth
Colorfastness after accelerated weathering and high humidity	Xenon <u>5/</u> , <u>6/</u> , and 5630 <u>1/</u>	good
Water permeability		
Initial	5516 <u>1/7/</u>	pass
After cold crack, -25 deg F	5874 <u>1/</u> and 5516 <u>1/7/</u>	pass
After accelerated weathering	Xenon <u>5/</u> and 5516 <u>1/7/</u>	pass

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- 1/ FED-STD-191
- 2/ Hydrostatic head held at 50 cm for 5 minutes to face side
- 3/ FED-STD-101
- 4/ Tested with the uncoated side of fabric to the water
  
- 5/ Accelerated weathering performed in accordance with MIL-C-44103, paragraph 4.5.2.2 which cites AATCC method 169, xenon lamp exposure. The coating side of the coated materials shall be exposed to 100 KJ energy. The coating shall not become stiff and brittle nor soft and tacky and there shall be no evidence of cracking or crazing under visual examination.
  
- 6/ Three 4-inch by 4-inch specimens shall be laid flat, coated side up on supporting plate and the assembly placed in a desiccator containing water in the lower portion. The water level shall be approximately 1 inch below the specimens. The lid of the desiccator shall be put in place and the desiccator placed in a circulating air oven having a temperature of 180 deg +/-2 deg F for a period of 14 days. At the end of the aging period, each specimen shall be removed from the desiccator, visually examined for colorfastness and then tested immediately in accordance with Test method 5512 per FED-STD-191, with the water pressure being applied to the uncoated side. The coating shall not become stiff and brittle nor soft and tacky and there shall be no evidence of cracking or crazing under visual examination.
  
- 7/ Tested with the coated side to the water. Hydrostatic head held at 50 cm for 5 minutes. Leakage and failure defined as the appearance of water at three or more places within the 4-1/2 inch diameter test area.
  
- 8/ Except that the specimens are to be stressed at 20 pounds for 30 seconds.
  
- 9/ Coating side abraded 1,000 multi-directional cycles, self-fabric abradant (coating side).
  
- 10/ In addition to after-flame time and char length, any evidence of flaming melted or molten pieces dropping from the specimen at any time during the test shall be reported as a failure.
  
- 11/ The specimen shall be placed between glass plates. The specimen/plate assembly and the test instrument shall be conditioned at -25 deg F for a minimum of 2 hours. The test shall be run at -25 deg F.
  
- 12/ Specimens shall be tested in the warp direction only.
  
- 2.4.3 Rainfly. The fabric for all rain flies shall conform to the requirements specified in Table III below. The color for rainflies used with the class 1 tent shall be as specified in 2.2.2, class 1 tent shall be as specified in 2.2.2, and the



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class 2 tent shall be as specified in 2.3.2. (Class 2: one fly shall be provided with a woodland camouflage pattern, conforming to Drawing 2-1-1516B and a second fly shall be provided with an arctic camouflage color cable no. 37875, per FED-STD-595.)

TABLE III. Physical requirements for fly fabric

Characteristics, Units	Test Method	Requirements
Weight, oz/sq yd.	ASTM D3776 Option C	4.1 maximum
Breaking strength, lbs:		
Initial	ASTM D 5035	50 minimum
Warp		50 minimum
Filling		50 minimum
After-weathering	Xenon 5/ and ASTM D 5035	35 minimum
Warp		35 minimum
Filling		35 minimum
Tearing strength, gms:		
Initial	ASTM D 1424	600 minimum
Warp		600 minimum
Filling		600 minimum
After-weathering	Xenon 5/ and ASTM D 1424	400 minimum
Warp		400 minimum
Filling		400 minimum
Adhesion of coating 1b/2 inch width, dry	5970 1/	7.0 minimum
Spray rating	AATCC 22 4/	80 minimum
Hydrostatic resistance, psi:		
Initial	5512 1/4/	60 minimum
After gelbo flexing (100 cycles)	2017 3/ and 5512 1/4/	35 minimum
After abrasion	5302 1/2/ and 5512 1/4/	35 minimum
After strength of coating	5972 1/8/ and 5512 1/4/	35 minimum
After high humidity	6/ and 5512 1/4/	40 minimum
Water permeability		
Initial	5516 1/7/	Pass
After cold crack, -25 deg F	5874 1/ and 5516 1/7/	Pass
After accelerated weathering	Xenon 5/ and 5516 1/7/	Pass

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TABLE III. Physical requirements for fly fabric (Contd.)

Characteristics, Units	Test Method	Requirements
Flame resistance:		
After flame, seconds:		
Initial		
Warp	CPAI 84	per CPAI 84
Filling	CPAI 84	per CPAI 84
After-weathering		
Warp	Xenon <u>5</u> / and CPAI 84	per CPAI 84
Filling	Xenon <u>5</u> / and CPAI 84	per CPAI 84
Char length, inches:		
Initial		
Warp	CPAI 84	per CPAI 84
Filling	CPAI 84	per CPAI 84
After-weathering		
Warp	Xenon <u>5</u> / and CPAI 84	per CPAI 84
Filling	Xenon <u>5</u> / and CPAI 84	per CPAI 84
Melt drip		
Initial	CPAI 84 and <u>10</u> /	per CPAI 84
After-weathering	Xenon <u>5</u> /, CPAI 84 and <u>10</u> /	per CPAI 84
Flexibility (warp only), cm:		
Initial warp	ASTM D1388 Option A and <u>12</u> /	10 maximum
-25 deg F	ASTM D1388 Option A, <u>11</u> / and <u>12</u> /	15 maximum
Blocking, scale rating	5872 <u>1</u> /	3 maximum
Mildew resistance	ASTM G 21 ASTM G 22	No growth No growth
Opacity	5781 <u>1</u> /	.030 ft lambert max
Colorfastness after accelerated weathering and high humidity	Xenon <u>5</u> /, <u>6</u> /, and 5630 <u>1</u> /	good
Spectral reflectance		
3-color, desert camouflage	see paragraph 2.5.3.1 per Table V.	
4-color, woodland camouflage	see paragraph 2.5.3.1 per Table IV.	
Arctic white camouflage	see paragraph 2.5.3.1 per Table VI.	

1/ FED-STD-1912/ Small scale test3/ FED-STD-101

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- 4/ Tested with the uncoated side of fabric to the water.
- 5/ Accelerated weathering performed in accordance with MIL-C-44103C, paragraph 4.5.2.2 which cites AATCC method 169, Xenon lamp exposure. The coating side of the coated materials shall be exposed to 100 KJ energy. The coating shall not become stiff and brittle nor soft and tacky, and there shall be no evidence of cracking or crazing under visual examination.
- 6/ Three 4-inch by 4-inch specimens shall be laid flat, coated side up on supporting plate, and the assembly placed in a desiccator containing water in the lower portion. The water level shall be approximately 1 inch below the specimens. The lid of the desiccator shall be put in place and the desiccator placed in a circulating air oven having a temperature of 180 deg +/- 2 deg F for a period of 14 days. At the end of the aging period, each specimen shall be removed from the desiccator, visually examined for colorfastness and then tested immediately in accordance with Test method 5512 per FED-STD-191, with the water pressure being applied to the uncoated side. The coating shall not become stiff and brittle nor soft and tacky, and there shall be no evidence of cracking or crazing under visual examination.
- 7/ Tested with the coated side to the water. Hydrostatic head held at 50 cm for 5 minutes. Leakage and failure defined as the appearance of water at three or more places within the 4-1/2 inch diameter test area.
- 8/ Except that the specimens are to be stressed at 20 pounds for 30 seconds
- 9/ Coating side abraded 1,000 multi-directional cycles, self-fabric abradant (coating side)
- 10/ In addition to after-flame time and char length, any evidence of flaming melted or molten pieces dropping from the specimen at any time during the test shall be reported as a failure.
- 11/ The specimen shall be placed between glass plates. The specimen/plate assembly and the test instrument shall be conditioned at -25 deg F for a minimum of 2 hours. The test shall be run at -25 deg F.
- 12/ Specimens shall be tested in warp direction only.

2.4.3.1 Spectral reflectance. The infrared reflectance of the colors in the 4-color Woodland Camouflage printed finished cloth shall conform to the requirements specified in Table IV when tested as specified in 2.5.3.2. The infrared reflectance of the colors in the 3-color desert camouflage printed finished cloth shall conform to the requirements specified in Table V when tested as specified in 2.5.3.2. The infrared reflectance of the Arctic White finished cloth shall conform to the requirements specified in Table VI when tested as specified in 2.5.3.2.

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2.4.3.2. Spectral reflectance data for Arctic White and 4-color Woodland Camouflage. The pattern for the arctic white shall be obtained from 600 to 860 nanometers (nm) while data for 3-color Desert Camouflage pattern shall be obtained from 700 to 860 nm, at 20 nm intervals on a spectrophotometer (see 6.3.1.8) relative to a barium sulfate standard, the preferred white reference standard. Other white reference materials may be used, provided they are calibrated to absolute white; e.g., Halon, magnesium oxide, or vitrolite tiles see (6.3.1.9). The spectral bandwidth at 860 nm shall be less than 26 nm. Reflectance measurements shall be made by either the monochromatic or polychromatic mode of operation. When the polychromatic mode is used, the spectrophotometer shall operate with the specimen diffusely illuminated with the full emission of a continuous source that simulates in the visible spectrum either CIE Source A or CIE Source D65. The specimen shall be measured as a single layer backed with two layers of the same fabric and shade. Readings shall be taken on a minimum of two different areas, and the data averaged. The specimen shall be viewed at an angle no greater than 10 degrees from normal, with the specular component included. Photometric accuracy of the spectrophotometer shall be within 1 percent and wavelength accuracy within 2 nm. Any color having spectral reflectance values outside the limits at four or more of the wavelengths specified in their respective tables shall be considered a test failure.

Table IV. Infrared requirements for 4-color woodland camouflage printed finished cloth

Reflectance Values (percent)						
Wavelength nanometers	Black 357		Light Green 354		Dark Green 355 & Dark Brown 356	
	min.	max.	min.	max.	min.	max.
600	-	10	8	20	3	13
620	-	10	8	20	3	13
640	-	10	8	20	3	13
660	-	10	8	22	3	13
680	-	10	8	20	3	22
700	-	20	14	60	8	46
720	-	30	26	78	8	66
740	-	33	40	90	12	80
760	-	33	50	92	17	88
780	-	34	55	92	20	90
800	-	34	55	92	21	90
820	-	35	55	92	22	90
840	-	35	55	92	22	90
860	-	35	55	92	22	90

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Table V. Infrared requirements for 3-color desert camouflage printed finished cloth

Reflectance Values (percent)						
Wavelength manometers	Light Tan 492		Light Brown 493		Light Khaki 494	
	min.	max.	min.	max.	min.	max.
700	38	53	19	41	25	44
720	38	54	20	41	25	45
740	39	55	20	42	25	46
760	40	56	21	42	26	47
780	41	57	21	42	27	48
800	43	58	22	43	28	50
820	45	59	23	45	30	52
840	48	62	24	46	33	55
860	50	65	25	48	36	58

Table VI. Infrared requirements for camouflage arctic white

Reflectance Values (percent)		
Wavelength manometers	arctic white	
	min.	max.
600	60	87
620	60	87
640	60	87
660	60	87
680	60	87
700	61	87
720	64	87
740	67	87
760	70	87
780	71	87
800	71	87
820	71	87
840	71	87
860	71	87

2.4.4 Stuff/transport bag. The fabric for all stuff/transport bags shall be a plain weave, back coated, water-repellant, textured nylon duck conforming to the requirements specified in Table VII below (see 6.3.1.2). The color for all stuff/transport bags shall be a woodland camouflage pattern conforming to Drawing 2-1-1516B.

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TABLE VII. Physical requirements for stuff/transport bag fabric

Characteristics, Units	Test Method	Requirements
Weight, oz/sq yd.	5041 <u>1</u> /	8.0 maximum
Yarns per inch:		
Warp	5050 <u>1</u> /	48 minimum
Filling	5050 <u>1</u> /	35 minimum
Breaking strength, lbs:		
Warp	5100 <u>1</u> /	325 minimum
Filling	5100 <u>1</u> /	250 minimum
Adhesion of coating lb/2 inch width, dry	5970 <u>1</u> /	10 minimum
Hydrostatic resistance, psi:		
Initial	5512 <u>1</u> / <u>3</u> /	60 minimum
After weathering (xenon) side exposed	5512 <u>1</u> / <u>3</u> /	35 minimum
After cold crack, -40 F	5512 <u>1</u> / <u>3</u> /	35 minimum
Spray rating:		
Initial	5526 <u>1</u> /	100, 100, 90
After one laundering	5556 <u>1</u> / <u>2</u> /	90, 90, 80
Dynamic absorption:		
Initial	5500 <u>1</u> /	20% maximum
After one laundering	5556 <u>1</u> / <u>2</u> /	20% maximum
Blocking, scale rating at 180 F	5872 <u>1</u> /	2 maximum

- 1/ FED-STD-191 - Water to coating.  
2/ The wool laundering method should be used.  
3/ Water to coating

2.4.5 Netting. The material for covering all openings shall be a netting "No-see-um". The content shall be 100% Nylon, continuous filament, type 66 warp and fill, knit conforming to the requirements specified in Table VIII below. It shall be a 1 ply wale & fill, 20 denier wale and course warp knit. The color shall be dark green (323). The material must not be too soft or crispy. The material shall be fire retardant per CPAI-84.

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TABLE VIII. Physical requirements for netting

Characteristics, Units	Test Method	Requirements
Weight, oz/sq yd.	ASTM D-3776-85	1.0 +/- .3
Thread count, per inch:		
-Wale:	ASTM D-3775-85	140 +/-4
-Course:	ASTM D-3775-85	64 +/-4
Bursting strength:	5120 <u>1</u> /	20 lbs minimum
Colorfastness to:		
Bleeding:	AATCC 61-1986	4 minimum
Crocking:	AATCC 8-1983	4 minimum
Water transfer:	AATCC 107-86	4 minimum
Perspiration:	AATCC 15-1985	4 minimum
Must pass a minimal rating of 4 with a color chromatic scale rejecting a 1, 2&3.		
Shrinkage (%):		
Warp	ASTM D-2102	3% maximum
Fill	ASTM D-2102	3% maximum

1/ FED-STD-191

2.5 Components

2.5.1 Frame poles. The frame poles for all tents should be Easton Aluminum .355 7075 T9 (see 6.3.1.4) or equal. Poles shall be connected together by means of cold weather shock cording as specified in 2.6.2. Pole segments shall not exceed 19.5 inches in length. The assembled poles shall be equal in length with the exception of the fly pole for class 1 and class 2 tent. A storage sack made from the material specified in 2.5.2 shall be provided for containing the disassembled/folded poles.

2.5.2 Shock cord. The shock cording shall lose no more than one percent of its elasticity in any of the environmental conditions described. Shock cording shall consist of Quality 16448 cold weather rubber, with an inner braid covering of 100% cotton, an outer braid covering of Nylon 66, a finished cord diameter of .155+/- .005, and a stretch of 120-125 percent (see 6.3.1.3). Alternate cord may be substituted if it can be shown to meet or exceed the physical and performance requirements stated.

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2.5.3 Mesh, screening. The Dark Green (323) screening mesh shall be a Tulle Tricot, screening cloth made from a resin treated, monofilament, semi-dull nylon. It shall show "Good" colorfastness to laundering, bleaching and perspiration when tested according to commercial standards. The cloth screening shall weight 3.0 oz.(min.) per sq. yd. and shall have bursting strength of 14 lbs. (min.), and a mesh repeat per inch width of 19 inches (min.), and a length of 27 inches (min.).

2.5.4 Hardware. All hardware components shall be made from corrosion-resistant materials or be corrosion resistant finished. Color of all hardware shall be black. On all hardware there shall be no burrs or sharp edges.

2.5.5 Slide fasteners. Slide fasteners shall be continuous element monofilament polyester chain, non-separating type, commercial size 9 with a crosswise breaking strength of 270 pounds (min) and a closed chain width of 0.320 inches (min). Tape shall be polyester with water-repellent finish at 1.0 +/- 1/16 inch width. Use 3/4 +/- 1/16 inch if slide fastener is single stitched; otherwise, use 1 +/- 1/16 inch if equipped with polyester tape thongs (see 6.3.1.6). The color of slide fasteners and polyester tape shall conform to the corresponding material it is being attached to. Alternate closure may be substituted if it can be shown to meet or exceed the performance of the specified slide fastener.

2.5.6 Anchoring. The tents shall be provided with guying and anchoring systems to completely secure them in high winds. The stakes shall be Easton Aluminum Ultimate Stakes (Part No. 864074, 8 inch) (see 6.3.1.4) or equal (see 6.3.2).

2.5.7 Attachment devices. Each of the tents shall be provided with no less than four attachment devices (loops, hooks, etc.) on the inside of the tent for hanging clothes and equipment. The devices shall be capable of supporting a minimum load of 10 pounds each. The Class 2 tent will have three polyethylene disc made of reticulated urethane, 15 ppi, 1.4 lbs./cu.ft. density, and will be charcoal-colored. This polyethylene disc will be at the center of each upper tent body panel. The disc will be attached to the tent body by using a standard snap fastener.

2.5.8 Ventilation. The tents shall provide for proper ventilation for cooking in the vestibule as well as ventilation for use in desert/arid environments.

2.5.9 Floor. The tents shall have a full, integral, waterproof, tub floor that extends a minimum of 4 inches above the bottom edge of the tent around the entire periphery. The material and all seams shall be waterproof below the 4 inch boundary. The main panels for the floor shall be no more than two major pieces resulting in not more than one joining seam. The panel shall be cut on an evenly tensioned curve so that the floor seam is elevated off the ground to prevent leaking.



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### 2.5.10 Transport/storage bag

2.5.10.1 Class 1 and 2 tents. Each tent shall be provided with one oversized storage bag that will contain a complete tent with all accessories. The contents of the bag will be provided with individual storage bags. The individual storage bags will be provided for the following items: individual flies, tent body, poles, maintenance kit, stakes and guy lines. The storage bags will be provided with a weather seal flap, a cinching cord with locking closure and will be constructed from the floor material specified in Table II. In addition the Class 1 tent shall be provided with a single stuff/transport bag to contain the tent body, one fly, poles, stakes/guy lines and repair kit. The stuff/transport bag will be provided with a weather seal flap, a cinching cord with locking closure and compression straps. The stuff/transport bag shall be constructed of the material specified in 2.4.4. Labels stating the contents shall be permanently attached to the exterior of each bag.

### 2.5.11 Maintenance kit

2.5.11.1 Class 1 and 2 tents. Each tent shall be provided with a repair kit. The repair kit shall be capable of maintaining one tent for a period of 30 erection/striking cycles. Each repair kit shall contain the components listed below in order to assemble one complete pole, temporarily repair broken poles, repair up to 4 inch tears in the fabric and replace damaged shock cord, buckles, snaps, grommets or other fasteners:

Pole repair sleeves (4) (Easton Aluminum Part No. 411916 (see 5.2.4.5) or equal (see 6.3.2))  
 Ripstop repair tape (1 yard of each color)  
 Fabric (1 yard of each color)  
 Netting (1 yard)  
 Seam sealer (3 - 1 oz. squeeze tubes) Seam Grip by McNett Corp. (see 6.3.1.1) or equal (see 6.3.2)  
 1 - 3 inch needle  
 100 yards of thread  
 Thimble  
 Shock loks (4) (see 6.3.1.3)  
 Grip clips (4) (see 6.3.1.5)  
 Webbing - 12 inches  
 Fasteners 1½ (rings, pins, grommets, etc.)  
 18 feet of shock cording

2.5.12 Fastenings. Zipper pull tabs, vents, openings, buckles and other fasteners in the tents shall be functional with the use of standard arctic handwear. When arcing the poles to fit into various locations, provisions shall be made to firmly grip and hold the tent body in order to insert the poles in place. The minimum size for loops is 12 inches long, in order for a gloved hand to be placed inside and obtain leverage. When buckles are used as fasteners, they shall be no smaller than the 1 inch twin

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side release buckles by I.T.W. Waterbury, Part No. 123-0100-5614 (see 6.3.1) or equal (see 6.3.2) spare parts. The contractor shall provide spare parts as listed below:

<u>Item</u>	<u>Quantity</u>
Complete tent poles	1 per tent
Complete vestibule	1 per tent
Rain fly	1 of each color per 10 tents
Shock cord	2 sets
Zipper slides	2 per tent
Seam grip	2 - 1 oz. squeeze tubes
Guy line	1 set per tent (color as designated)
Repair kits	1 per 10 tents

2.5.13 Maintenance. The tents shall be easy to clean and maintain. Maintenance will consist of cleaning and simple repair or replacement of components. Organizational maintenance will consist of replacement of poles, fasteners and application of small patches.

2.5.14 Service life. The tents shall have a service life of at least 30 sequential erection/striking cycles in any of the operational conditions. The tents shall be habitable for the complete cycle. Failure shall result if the tent is no longer able to provide protection from wind blown snow, sleet, rain, dust and sand.

2.5.15 Shelf life. The tents shall have a depot storage life of 5 years minimum.

2.5.16 Instructions. Each tent will be furnished with a "Use and Care" instruction pamphlet or sheet containing the procedures to properly strike, erect, pack, repair and care for the tent. Information will also be provided for ordering spare/repair parts from the manufacturer. Additional instruction sheets shall be included that are permanently affixed to the inside of the storage bag as well as on the interior of the tent itself. All sets of instructions shall be printed on waterproof material. The "Use and Care" instructions shall be provided to the Government prior to delivery for review and approval.

2.5.17 Labels/markings. A label shall be attached to the inside of the vestibule stating the hazards of cooking within the tent and vestibule area.

2.5.17.1 Label/tag. Each item shall be individually bar-coded with a paper tag for personal clothing items. The paper tag shall be standard bleached sulfate having a basis weight of 100 pounds. The paper used for the tags shall have a smooth finish to accept thermal transfer and direct printing. The tags shall have a hole and shall be attached to each item by a fastener, clearly legible and readable by a scanner. The bar coding

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element shall be a 13 digit national stock number (NSN). The bar code type shall be a medium to high code density and shall be located so that it is completely visible on the item when it is folded and/or packaged as specified and so that it causes no damage to the item.

2.5.18 Construction. Tape sealed seams shall not be provided unless the contractor can demonstrate that the seal shall not degrade at temperature extremes and after prolonged use. The erect/strike for each tent shall be capable of being erected or struck and packed by two soldiers in ten minutes or less under conditions of extreme weather. The capability of erecting the tent by one soldier is desired.

2.5.19 Bid sample. When required, offerers shall submit samples of their intended production. The bid sample will consist of units independently developed. The bid sample will be analyzed and evaluated by the Government. Evaluation criteria and basis for award are contained in the solicitation. The bid sample will be retained by the Government. One (1) bid sample approved by DPSC under the resultant contract will serve as a manufacturing standard for the corresponding production items delivered under this contract. Offerers are advised that the bid sample does not relieve the successful offerer of his responsibility to perform in accordance with the commercial item description specified above.

2.5.20 Workmanship. The finished tent shall conform to the quality of product established by this document. The occurrence of defects shall not exceed the contractor's own quality assurance standards and the quality assurance standards defined by the technical data in the bid package.

2.5.21 Labels. A commercial-type label is acceptable, provided that an additional printed cloth label containing the contractor's name, contract number, size and National Stock Number (NSN) is caught on the stitching of the commercial label. The commercial label shall include fiber and laundering information.

2.5.22 Label/tag. Each item shall be individually bar-coded with the type VIII, class 17 label/tag of DDD-L-20. This label/tag shall be located so that it is completely visible on the item when it is folded and/or packaged as specified and so that it causes no damage to the item.

### 3. REGULATORY REQUIREMENTS

3.1 Regulatory requirements. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

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#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this commercial item description, and that the product conforms to the producer's own drawings, specifications, standards, and quality assurance practices, and is the same product offered for sale in the commercial marketplace. The Government reserves the right to require proof of such conformance prior to the first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

#### 4.2 Examination

4.2.1 Examination. Each of the class 1 and 2 tents shall be visually examined to determine conformance with all requirements of this document.

4.2.1.1 Visual examination. Each item shall be examined for the defects listed below.

4.2.1.2 Defects. Any hole, cut, or tear; color not as specified; any part shaded; any spot or stain (outside); raw edges, open seams, thread ends not removed, or loose tension resulting in loose seams; any material defects, distorted parts or poor workmanship; any component part omitted; label missing, incorrect, or illegible; measurement of item not as specified; bar code omitted or not readable by scanner; human-readable interpretation (HRI) omitted or illegible; bar code not visible on folded, packaged item; bar code causes damage to the item; any items not packaged in accordance with the contract or purchase order.

4.3 Responsibility of inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection, examination, and test requirements specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections, examinations, or tests set forth in this description where such inspections, examinations, and tests are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.4 Testing. The Government reserves the right to subject the tent or its materials/components to testing prior to contract award to determine adherences to the requirements listed herein.

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4.5 Metric product. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using the inch-pound units, provided they fall within specified tolerances using conversion tables contained in the latest revision of Federal Standard No. 376 and all other requirements of this commercial item description are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified in the inch-pound units, a request should be made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

4.6 Operation test. Each of the class 1 and 2 tents with their rainflies shall be assembled, erected, struck, disassembled and packed to ensure operation of all moving parts and adjusting mechanisms.

4.7 Packaging examination. The fully packaged shipping containers shall be examined in accordance with the defects listed below. The lot size shall be the number of shipping containers in the inspection lot.

EXAMINE	DEFECT
Marking (exterior and interior)	Omitted, incorrect, illegible; of improper size, location, or method of application
Materials	Any component missing, damaged, or not as specified
Workmanship	Inadequate application of components, such as: incomplete closure of container flaps, loose strapping, improper taping, or inadequate stapling
Content	Number of items in container is more or less than required NSN shown on one or more items is not as specified on shipping container
Palletization	Length, width, or height exceeds specified maximum requirements Pallet type not as specified Load not bonded as specified

## 5. PACKAGING

5.1 Preservation, packing, and marking. The preservation, packing, and marking shall be as specified in the contract or order.

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6. NOTES

6.1 Source of Government documents. Copies of military and Federal documents are available from:

Standardization Documents Order Desk  
Bldg. 4D  
700 Robbins Avenue  
Philadelphia, PA 19111-5094

6.2 Source of non-Government documents

ANSI Z1.4 - Sampling Procedures and Tables for Inspection  
by Attributes

(Application for copies should be addressed to the  
American National Standards Institute, 1430 Broadway, New York,  
NY 10018-3308.)

- ASTM G 21 - Plate Test for Fungal Growth
- ASTM G 22 - Plate Test for Bacterial Growth
- ASTM D 1424 - Fabric, Woven, Tear Resistance of by  
Falling Pendulum (Elmendorf) Apparatus
- ASTM D 3951 - Standard Practices for Commercial  
Packaging

(Applications for copies should be addressed to American  
Society For Testing and Materials, 1916 Race Street,  
Philadelphia, PA 19103-1187.)

AATCC Test Method

(Applications for copies should be addressed to American  
Association of Textile Chemists and Colorists (AATCC), P.O. Box  
12215, Triangle Park, NC 27709-2215.)

CANVAS PRODUCTS ASSOCIATION INTERNATIONAL

CPAI-84 - Specification for flame resistant materials used  
in camping tentage.

(Application for copies should be addressed to the Camping  
Products Manufacturers' Division, Canvas Products Association  
International, 350 Endicott Bldg., St. Paul, Minnesota 55101  
telephone number (612)-222-2508.)

6.2.1 Sources of drawings. Copies of drawings are available  
from:

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US Army Natick Research, Development  
and Engineering Center  
ATTN: SATNC-MI  
Kansas Street  
Natick, MA 01760-5002

6.3 Sources of supply. Competition is not limited to those manufacturers and products listed below:

6.3.1 Twin slide release buckles. The twin slide release buckles (see 2.6.16) are available from I.T.W. Waterbury, 952 South Main Street, Waterbury, CT 06721, telephone number (203) 753-1161.

6.3.1.1 Seam sealant. The seam sealant (see 2.6.13.1 and 2.6.13.2) is available from McNett Corp., 1405 Fraser Street, P.O. Box 996, Bellingham, WA 98227, telephone number (206) 671-2227.

6.3.1.2 Fabric. The fabric for the tent (see 2.5.1), floor (see 2.5.2), rainfly (see 2.5.3) and stuff/transport bag (see 2.5.4) is available from Brookwood Companies Inc., 10 East 39th Street, New York, NY 10016, telephone number (212) 725-7311.

6.3.1.3 Shock cord and shok loks. The shock cord (see 2.6.2) and shok loks (see 2.6.13.2) are available from Frank Tehan Corporation, 1801 Eastshore Highway, Berkeley, CA 94701, telephone number (510) 849-4887.

6.3.1.4 Frame pole, pole repair sleeves and ground stakes. The frame poles (see 2.6.1), pole repair sleeves (see 2.6.13.1 and 2.6.13.2) and ground stakes (see 2.6.8) are available from Easton Aluminum, 5040 West Herold Gatty Drive, Salt Lake City, UT 84116, telephone number (801) 539-1400.

6.3.1.5 Grip clips. The grip clips are available from Sierra Designs, 2039 Fourth Street, Berkeley, CA 94710, telephone number (510) 843-0923.

6.3.1.6 Slide fasteners. The slide fasteners are available from Diversified Market Growth, 230 Windsor Avenue, Suite 207, Narberith, PA 19072, telephone number (215) 667-5589.

6.3.1.7 Tent manufacturers. Companies manufacturing commercial tents that have the capability to meet this commercial item description's requirements are: Eureka/Johnson Camping, Inc., P.O. Box 966, Binghamton, NY 13902, telephone number (607) 779-2200; and The North Face, 999 Harrison Street, Berkeley, CA 94709, telephone number (510) 527-9700; Adventure Tech, Inc., E. 11802 Mansfield, Suite 1, Spokane, WA 99206, telephone number (509)-927-2100.

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6.3.1.8 Spectrophotometers. Suitable spectrophotometers for measuring spectral reflectance in the visible/near infrared include the Diano Hardy, Diano Match Scan, Milton Roy Match Scan 2, Hunter D54P-IR, Applied Color Systems Spectro Sensor I & II and CS-8, Hunter VIS/NIR Spectrophotometer, and Macbeth 1500 with IR option.

6.3.1.9 White Standard. Barium Sulfate or suitable quality for use as a white reference standard is available from the Eastman Kodak Company. The same source has available magnesium reagent (ribbon) and Halon. Suitable tiles can be obtained from the National Institute of Standards and Tolerances or the instrument manufacturers.

6.3.2 Equal item. Prior to the use of an "or equal" item, the supplier shall submit the item, with supporting data to the contracting officer for subsequent approval or disapproval by the responsible military agency.

6.3.3 Ordering data.

- a. Title, number and date of this document
- b. Class and size required (see 1.1)

Custodians:

Army - GL  
Navy - MC

CIVIL AGENCY COORDINATING  
ACTIVITY:  
GSA - FSS

PREPARING ACTIVITY:  
DLA - CT

(Project No. 8340-0563)