

QSE Working Group



Unified Technical Specifications: Tarpaulin 60x4 m

Nonconformities classification: Critical: **C**; Major: **M**; Minor: **m**

Items	Characteristics	Non conformities classification	QC type and where	AQL	Requirements
Primary packing in bales	Bales length	m	Measurement	6,5	1400mm +/-20% (Minimum 1120mm; Maximum 1680mm)
	Bales width	m	Measurement	6,5	900mm +/-20% (Minimum 720mm; Maximum 1080mm)
	Bales height	m	Measurement	6,5	110mm +/-20% (Minimum 88mm; Maximum 132mm)
	Marking on the bales	m	Ok/Nok	6,5	"Tarpaulin 4x60m" Marking must be readable and strong enough to resist to several handlings. All other marking as per requested in contract.
	Bales strapping	m	Ok/Nok	6,5	The bale must be strapped with 2 heat-sealed plastic straps for the length and 2 for the cross (strong enough to resist to several handlings)
	Bales quality	m	Ok/Nok	6,5	The bale must be wrapped with a piece of similar material as the one of the tarpaulins. The wrapping must be properly folded, closely tight to the bale content, making a well-shaped cubic bale. Items to not be wrapped in single use plastics.
	Content	m	Ok/Nok	6,5	There must be 1 tarpaulin per bale.
Technical Specifications	Material for the plain sheet	C	Ok/Nok	0	Woven high-density polyethylene (HDPE) black fibbers fabric laminated on both sides with white low density polyethylene (LDPE) coating.
	Material for the reinforcement bands	C	Ok/Nok	0	Woven black HDPE fibers fabric and coated with grey LDPE on the outside.
	Use of recycled material	n/a			Depending on the terms of the contract, using material from recycled origin can be either mandatory or preferred. As described by the Circular Plastic Alliance of the EU commission in EN 45557 and the US Federal Trade Commission Green Guides in accordance with ISO14021 principles, recycled plastic includes post-industrial recycled (PIR) and post-consumer recycled (PCR), it excludes reworked material. In this last case, even though using waste from the same production is accepted, it does not count as material from recycled origin. Note that PCR is preferred to PIR.
	Reinforced attachment points	M	Ok/Nok	4,0	Two bands of 75mm +/-4mm width made of woven black HDPE fibers, fabric and coated with grey LDPE on the outside. Seventy holes of 8mm+/-1mm on each bands at 1m +/-5% intervals, positioned in the center of the bands, punched through the band and the tarpaulin. Position of the two bands and the holes as per drawing below. Sidebands can be positioned at maximum 10mm from the edge.
	Temporary authorization for 2 additional bands valid till the next review.	n/a			For easiness of production for tarpaulins made with two parts of 2m assembled with a central weld, it is permitted to add two extra bands on either side of the central weld. That makes a total of 4 bands on the tarpaulin. These 2 extra bands should be white coated so that there are not visible. These 2 extra bands should be 50mm wide only to reduce the extra plastic consumption.
	Manufacturing quality	M	Ok/Nok	4,0	The woven base as well as the coating must be homogeneous. The black fibres must cover the entire surface of the tarpaulin. Maximum one fibre missing or one space between fibres equal or above 5mm width on one tarpaulin. TEST PROCEDURE CURRENTLY UNDER REVISION
	Test pieces for tensile and tear tests.	n/a			Cut all test pieces parallel to the direction of the fibres, in warp and in weft. The fibres should run from one end to the other end of each test piece.
	Tear strength in plain sheet at state of origin	M	Measurement	4,0	Minimum 150N under ISO 4674-1B 2003, with a test piece of 200x200mm as described in ISO 4674 annex B.
	Tensile strength in plain sheet at state of origin	M	Measurement	4,0	Minimum 750N and 15% to 35% elongation in warp and weft under ISO 1421-1.
	UV resistance of the plain sheet, measured as remaining tensile strength after UV exposure	M	Measurement	4,0	Apply 1500 hours UV under ASTM G154/94 (UVB 313 nm peak).Maximum 5% loss of strength compared to the original tensile strength of the actual product.
	Tensile strength in the reinforcement bands at state of origin	M	Measurement	4,0	Minimum 900N when pulling inside the fixation points as per ISO 1421-1, pulling perpendicular to the tarpaulin edge with a hook of 8mm wire diameter in a punched hole of 8mm. Test 3 pieces of 200mm wide by 500mm long from each side of the tarpaulin. See the test piece description on attached drawing. Distance between the hole (for the hook) and the opposite clamp: 400mm. The pulling force applies on the whole 200mm width.
	UV resistance of the reinforcement bands measured as remaining tensile strength after UV exposure	M	Measurement	4,0	Apply 1500 hours UV under ASTM G154/94 (UVB 313 nm peak).Maximum 5% loss of strength compared to the original tensile strength of the actual product.
	Cut resistance EN 388-6.2	M	Measurement	4,0	Minimum index 2.5 as per EN 388-6.2 - Test 2 test pieces from one sample.
	Welding number and strength at state of origin	M	Measurement	6,5	Only one welding allowed, in the middle of the sheet, lengthwise. The tarpaulin tensile strength crosswise at the place of the welding under ISO 1421-1 must be minimum 50% of the original value of the actual product.

Technical Specifications	Width	m	Measurement	6,5	4000 mm ± 1% net width (Minimum 3960mm. Maximum 4040mm). If edges are not straight, measurement is done on the shortest side.
	Length	m	Measurement	6,5	Minimum 60m. If edges are not straight, measurement is done on the shortest side.
	Weight, plain sheet only, excluding the bands weight	m	Measurement	6,5	170g/m ² ± 10g under ISO 3801 (equivalent to 160g/m ² minimum to 180g/m ² maximum)
	Weight, complete sheet including bands weight	m	Measurement	6,5	Total weight of the 60x4 m Plastic sheet: 39.6kg min to 45.12kg max . Specific weight of the bands from 150g/ m ² to 200g/m ²
	Flame retardant EN13823+A1	C	Ok/Nok	0	Minimum class D, s2, d2. Minimum time to reach large wing external edge: 4minutes (LFS) . Presence of FR additives (bromine, antimony) is not permitted
	Coating colour	M	Measurement	4,0	White sun reflective on both sides of the sheet without fluctuation in colour. Grey coating on the outside of the bands. White Coating colour definition: L.a.b Coordinates under ISO 105J01 Minimum L : 82; "a" value between -1.7 and +1.5; "b" value between -4.5 and 0.
	Opacity measured in the range of visible light and near infrareds under ISO 13468-1.	M	Measurement	4,0	Measure 4 test pieces in the range from 350 to 750nm, and 4 test pieces in the range from 750 to 2500nm wavelength. Calculate the result from the 8 test pieces. Reflection: 35%≤results≤55% Transmission: 0%≤results≤5% Absorption: balance to 100% How to calculate the result: A is the average of the 4 test pieces (80 measurements) in the range from 350 to 750nm B is the average of the 4 test pieces (350 measurements) in the range from 750 to 2500nm Result = (A+B)/2
	Printing	m	Ok/Nok	6,5	Long lasting indelible printing in black or white colour, continuous at least one every meter, on one band or on the tarp, of: - the manufacturer name, the month and year of production (Letters of 2.5cm high +/-10%) - the recycling signs for LDPE and HDPE, the user's guide, and the "do not burn" sign. The signs size is between 50mm to 70mm. provided skeatch below Other printing as per required in contract.
Inhouse Testing	Edges	m	Ok/Nok	6,5	Edges are straight and neat cut, and square.
	General quality	M	Ok/Nok	4,0	Tarpaulin not torn, does not have any hole and must be clean.
	Yarn colour (plain sheet and bands)	M	Ok/Nok	4,0	Inhouse test: Test protocol; removing the coating with a cutter, the yarns of the base fabric must be black in both the warp and the weft directions. Light grey is not acceptable. (in case of lab testing for opacity then no need)
	Missing yarns	M	Ok/Nok	4,0	In house test: Test protocol; The woven base as well as the coating must be homogeneous. The black fibers must cover the entire surface of the tarpaulin. Maximum one fiber missing or one space between fibers equal or above 5mm width every 6m on one tarpaulin..
	Peeling of the coating	M	Ok/Nok	4,0	Inhouse test: Test protocol; try to pull the white coating from the base fabric. It should be impossible to pull pieces bigger than 1cm ² .
	Reinforcement bands welding	M	Ok/Nok	4,0	Inhouse test: Test protocol: The bands must be well sealed to the tarpaulin. Nevertheless, it must be possible to pull the band off without tearing neither parts. Also, It should leave white and black spots on the sheet and on the band.
	Central welding	M	Ok/Nok	4,0	Inhouse test: Test protocol: The welding must be well sealed. Nevertheless, it must be possible to pull the 2 parts off without tearing neither parts. Also, It should leave white and black spots on both parts.
Inhouse Testing	Tear test in the plain tarpaulin (two legs test)	M	Measurement	4,0	Inhouse test : Test protocol; Cut 4 pieces measuring 6cm x 20cm (2 lengthwise & 2 crosswise, outside the reinforcement bands). Make a very net cut of 8cm long with a scissor in the test pieces, making two equal legs. Clamp one leg of the test piece with the vice. Clamp the second leg with a clamp. Add weights in step of 1 kg so that the weight total is 20 Kg. Let it hang for 30 seconds. The average breaking point of the tested pieces should be equal or above 15 kg. The average value is the average of the 4 tested pieces. If the average breaking point is below 15 kg the tarpaulin is nonconforming. If one of the tested pieces breaks when applying less than 10 kg the tarpaulin is nonconforming.
	Tear test in the bands (hook test)	M	Measurement	4,0	Inhouse test: Test protocol; Cut 4 pieces of 20cm x 60cm as per drawing below, 2 samples from each side. Use the ready made holes of 8mm in the bands. The hole should be located at 100mm from either side of the sample. Clamp the test piece from the side oposite to the band on the whole width with 400mm distance between the hook and the clamp. Place the hook of 8mm diameter in the hole and add weights so that the total weight is 100kg. The direction of traction should be perpendicular to the band. Let it hang for 30 seconds. The average breaking point of the tested pieces should be equal or above 90 kg. The average value is the average of the 4 tested pieces. If the average breaking point is below 90 kg the tarpaulin is nonconforming. If one of the tested pieces breaks when applying less than 80 kg the tarpaulin is nonconforming.

