



# TEST CERTIFICATE



Version: 01	<b>Load unit stability of 4 x 220 l L-Ring PE drums on a CP 3/CP 9 pallet with Drumguard®Quattro System</b>			EUROSAFE Certificate no. 2017-10-001-3
EUROSAFE Certificate no. / long version	2017-10-001	Test location:	TU Darmstadt Airfield premises	Test date: 31/09/2017-Driving test 06/10/2017-Test bench
Client	Strauch GmbH Mr A. Strauch Mr H. Vetter	Persons present	Certified expert Neumann/EUROSAFE The client was present during the tests	

- 1. Inclination test according to DIN EN 12195-1**  
The load units were subjected to a static test with a sideways/lengthways inclination angle of at least 45 degrees
- 2. Dynamic horizontal test according to EUMOS 40509:2012**  
The load units were subjected to horizontal forces of 0.8 g in both directions (sideways/lengthways) several (3) consecutive times.
- 3. Dynamic driving test according to DIN EN 12642 Annex B and C**  
The load units, loaded onto a truck, were subjected to the test requirements listed in DIN EN 12642 according to Annex B.

**Test object:** 4 pcs x 220 l / L-Ring PE bung drums  
**LU formation:** Drumguard®Quattro System applied across the top, screwed on with a screw located in the middle of the pallet base. The tightening torque of the screw is at least 35 Nm. To be installed with a screwing device, torque to be tested with a torque wrench. Vertical force-lock connection via a pre-tensioned self-locking metal screw in accordance with ETA-12/019 and ETA-12/0114, or a comparable connection element belonging to the Strauch GmbH. The Drumguard®Quattro System is made of galvanised sheet steel, weight ca. 1170 grams, sheet thickness ca. 1.5 mm, strength verification via FEM analysis.  
**Pallet type:** CP 3/CP 9 pallet, 114 cm x 114 cm  
**Total pallet weight:** ca. 910 kg, gross weight per drum: 220 kg  
**Increase of friction value:** Underlays which increase the friction value to create a certified friction value ( $\mu$ ) of 0.6 should be inserted between the plastic packaging and the wooden pallet.

<b>Employed Standards:</b>	DIN EN 12195-1 Incl. test up to 45° /length Incl. test up to 45° /side	EUMOS 40509 2. Horizontal impact 3 times in 2 directions, offset by 90°	DIN EN 12642 Annex B Dynamic driving test 3xfull brake 0.8g, 3xcornering 0.6g, 3xreversing 0.6g
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**Result:** According to the evaluation criteria listed in the EN Standards and the EUMOS Standard, the load unit is to be described as sufficiently stable. The displacement of the load units after being exposed to force 3 times in 2 impact directions was < 6 cm and did not measure more than 2 cm maximum displacement at any time during the test. The load units can be loaded onto a vehicle with Code XL certification using a blocking method if there are bevelled sections of at least 15 mm in height at the side, or a board wall or other suitable certified side wall systems are employed. Empty spaces of > 8 cm are to be filled using suitable means. The maximum permitted vehicle width acc. to StVZO § 32 was not exceeded at any point in the test. When loading onto Code L and Code XL vehicles, materials that increase the friction value must be employed additionally, along with at least 1 lashing device per loading row for down lashing.

<b>Complete system tester:</b>	EUROSAFE GmbH, Wolfgang Neumann, certified expert according to DIN EN ISO/IEC 17024:2012 for road, rail and sea transport (incl. dangerous goods) for Load securing, packaging and load unit formation	<b>Tester certification number:</b>	ZN-20120507-0253 valid until 08/2022
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<b>Signature / stamp:</b>		<b>Location of issue:</b> Steinwingertstraße 27 63457 Hanau
		<b>Date of certificate issue:</b> 22/12/2017

<b>Creator</b>	Wolfgang Neumann
<b>File name:</b> 2017-10-001-3 Drumguard®Quattro Zertifikat L-Ring PE	
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# TEST CERTIFICATE



Version: 01	<b>Load unit formation of 4 x 220 l L-Ring PE drums on a CP 3/CP 9 pallet with Drumguard®Quattro System</b>			EUROSAFE Certificate no. 2017-10-001-3
EUROSAFE Certificate no. / long version	2017-10-001	Test location:	TU Darmstadt Airfield premises	Test date: 31/09/2017-Driving test 06/10/2017-Test bench
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<b>Static inclination test DIN EN 12195-1</b> Inclination angle: 45 degrees Inclination duration: 10 minutes <b>Result:</b> no displacement > 2 cm		<b>Dynamic horizontal test EUMOS 40509</b> Impact: 3 x 0.8g in 2 x 90 degrees offset. Gradient: 0.8g in 0.05 sec. Residence time: at least 0.5 sec. /0.8g <b>Result:</b> displacement < 2cm after 3 impacts each		<b>Dynamic driving test; EN 12642 Ann. B</b> 3 x cornering & dodging 0.5g > 1 s 3 x full brake 0.8g 3 x reversing: 0.5g <b>Result:</b> maximum permitted vehicle width was not exceeded, no damage to the goods or the vehicle.
Complete system tester:	EUROSAFE GmbH, Wolfgang Neumann, certified expert according to DIN EN ISO/IEC 17024:2012 for road, rail and sea transport (incl. dangerous goods) for Load securing, packaging and load unit formation			Tester certification number: ZN-20120507-0253 valid until 08/2022
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