TEST REPORT
Customer Solution Center Europe

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Customer	RS Group
Project name, project place (if applicable)	
Project number (if applicable)	
Specification (if applicable)	
Application	Air leakage test with tesa® 4600
Date of receipt of samples	Oct 2024
Report number(s)	2024-03532_4600 air leakage test
tesa product(s)	tesa® 4600, tesa® 60630, tesa® 60634
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29. November 2024
Date

Signature

Background

4600 has been developed for sealing leaks in water pipes. Now it needs to be tested to see if the product is also suitable for sealing leaks in compressed air lines at 7 bars.

Test Substrates

#	Description	Diameter	Leakage
1	Cupper tube	22 mm	Hole, D = 1 mm

Table 1: Test tube

Figure 1: Test tube wrapped with tesa® 4600

Figure 2: Tube with the hole (D=1mm) for leakage simulation

Test Program

Component test

Principle: A copper pipe with a hole of 1 mm diameter is sealed with the adhesive tape and subjected to a pressure of 7 bar for a defined period of time.

Objective: The aim is to test the sealing function of the adhesive tape(s) under defined conditions. The pipe should remain sealed for a period of at least 6 weeks.

Products

	tesa® 4600	**tesa® 60634**
Thickness w/o liner	500 µm	60 µm
Type of adhesive	Silicone rubber	Acrylic
Backing material	none	Alu-PET
Color	Black	Metal
Width	25 mm	50 mm

Table 2: Tested products

Recommendation

Based on the test results tesa® 4600 in combination with tesa® 60634 as reinforcement can be recommended for air leakage sealing under the conditions described in the test report.

Test Methods

Component test – Air leakage test

Test Conditions	
Number of test samples	2
Test temperature	23°C
Sealing length	100 mm (50 mm each in both directions of the leakage)
Leakage	1 mm hole
Pressure	7 bar
Test duration	6 weeks

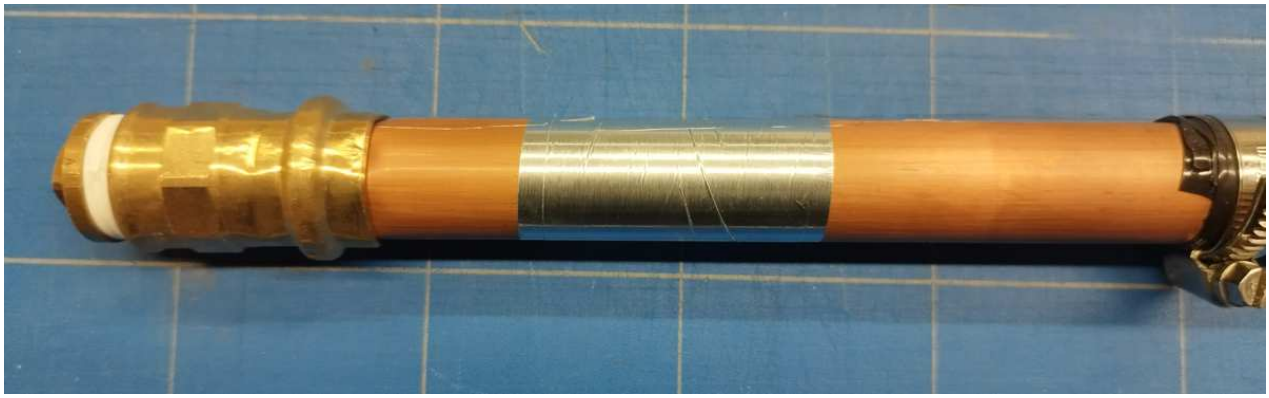
Table 3: Test conditions

Samples

#	Description		
1	Single tape solution tesa® 4600	tesa® 4600 three wrapped layers	
2	Single tape solution tesa® 4600	tesa® 4600 four wrapped layers	
3	Two-tape solution tesa® 60634 + tesa® 4600	tesa® 60634 one layer	tesa® 4600 three layers

Sample preparation

1) For two-tape solution sample #3, the hole in the tube is covered with one layer of tesa® 60634 in 50mm width (25 mm each on both sides of the leakage.



2) For all samples, the tube is wrapped with tesa® 4600 in 100 mm width (50 mm each on both sides of the hole).

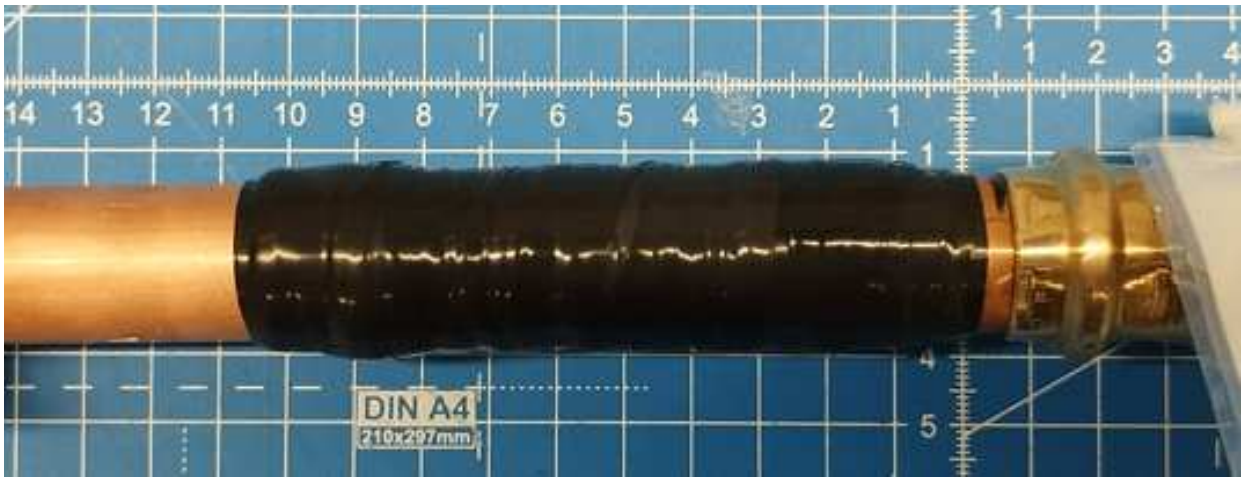


Figure 3: Application of Alu-tape tesa® 60634

Figure 4: Application of tesa® 4600

Results

#	Sample	Results	Comments
1	Single tape solution tesa® 4600	Failed after < 24 h	tesa® 4600 inflated, sealing torn at the hole
2	Single tape solution tesa® 4600	Failed after < 48 h	tesa® 4600 partially inflated, leakage at the edge of sealed area
3	Two-tape solution tesa® 60634 + tesa® 4600	Passed	No leakage, Leakage still sealed after 6 weeks

Figure 5: Failed sample #1 after removal from the tube

Figure 6: Sample #3 after test is completed after 6 weeks.