Test Report
No. 5499/04

Testing of the water vapour absorption of different desiccant products

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Client

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Content of the order

Samples of different desiccant products were supplied to the BFSV on November 25 and 26, 2004 (Description of the products see page 2).

It was intendet to examine the water vapour absorption of all products under the condition of daily climate changes which can occur during container transport.
The climate changes were simulated by using a climatic chamber.

Test duration: November 26, 2004 – December 27, 2004 (31 days)

Summarizing result

The total water vapour absorption of the different desiccant products after 31 days is shown in the table on page 4.

The curves showing the absolute and the relative water vapour absorption of the desiccant products during the entire test period are shown in the diagrams in Appendix 1.

Date	**:**	January 10, 2005
Pages	**:**	4
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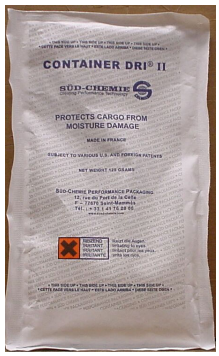
Official in Charge	**:**	Dipl.-Ing. W. Reimers

1. Description of the desiccant products

Product	Media	Design	Gross weight *)	Media weight *)
Absorpole Standard	Calcium Chloride	Pole (rigid plastic)	1441/1447/1529 mean: 1472 g	1056/1062/1144 mean: 1087 g
Absorpole Super	Calcium Chloride	Pole (rigid plastic)	1473/1537/1496 mean: 1502 g	1088/1152/1112 mean: 1117 g
Absortop Experimental	Calcium Chloride	Pole (rigid plastic)	2427/2495/2583 mean: 2502 g	1912/1980/12068 mean: 1987 g
Container Dri II (H)	Calcium Chloride and starch	Bag Top side: Tyvek Back side: plastic film	132/134/134 mean: 133 g	125/127/127 mean: 126 g
Container Dri II (L)	Calcium Chloride and starch	Bag Top side: Tyvek Back side: plastic film	121/134/133 mean: 129 g	114/127/126 mean: 122 g

Container Dri II: *) delivery state
(H) = bags hanging during test
(L) = bags lying during test (print on the top side: „This side up“)

Absorpole Standard	Absorpole Super	Absortop Experimental	Container Dri II
			

2. Performed test

Three samples of each dessiccant product were placed in a climatic chamber:
- Absorpole: standing upright close to the wall
- Absortop: standing upright close to the wall
- Container Dri II (H): 3 bags hanging
- Container Dri II (L): 3 bags lying with the top side upwards

The water vapour absorption was determined by daily weighing and by calculating the mean value of three single measurements.
From the fifteenth day to the end of test the figures for the weekends were interpolated.

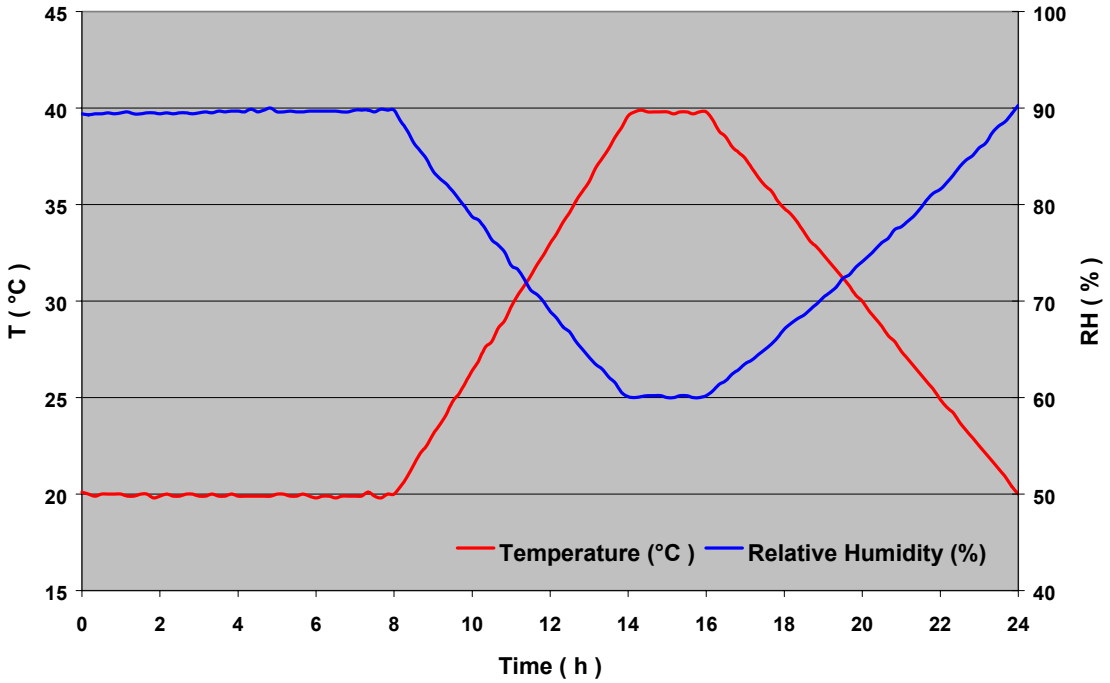
Climatic test chamber according to DIN 50 011 – 13 with continuous air circulation:
- Dimensions: 3,9 m x 3,3 m x 2,0 m
- Mean air speed: ca. 0,5 m/s
- Test climate: Simulation of daily climatic changes during container-transport:

  Climate cycle: (24 h):

20 °C / 90 % RH	8 h
Changing to 40 °C / 60 % RH	6 h
40 °C / 60 % RH	2 h
Changing to 20 °C / 90 % RH	8 h

- Test duration: November 26, 2004 – December 27, 2004 (31 days)

The following picture shows a climatic cycle (24 h) in the climatic chamber, (recorded with a temperature / humidity datarecorder).



3. Test results

Total water vapour absorption of the desiccant products after 31 days:

Products	Absolute (g)		Relative (%) (applied to the media weight)	
	Single measurements	Mean values	Single measurements	Mean values
Absorpole Standard	657	676	62,2	62,2
	655		61,7	
	717		62,7	
Absorpole Super	1000	1019	91,9	91,2
	1045		90,7	
	1012		91,0	
Absortop Experimental	1210	1222	63,3	61,5
	1176		59,4	
	1281		61,9	
Container Dri II (H)	232	239	185,6	189,4
	243		191,3	
	241		189,8	
Container Dri II (L)	256	254	224,5	207,9
	253		199,2	
	252		200	

The curves showing the absolute and the relative water vapour absorption of the desiccant products during the entire test period are shown in the diagrams in Appendix 1.

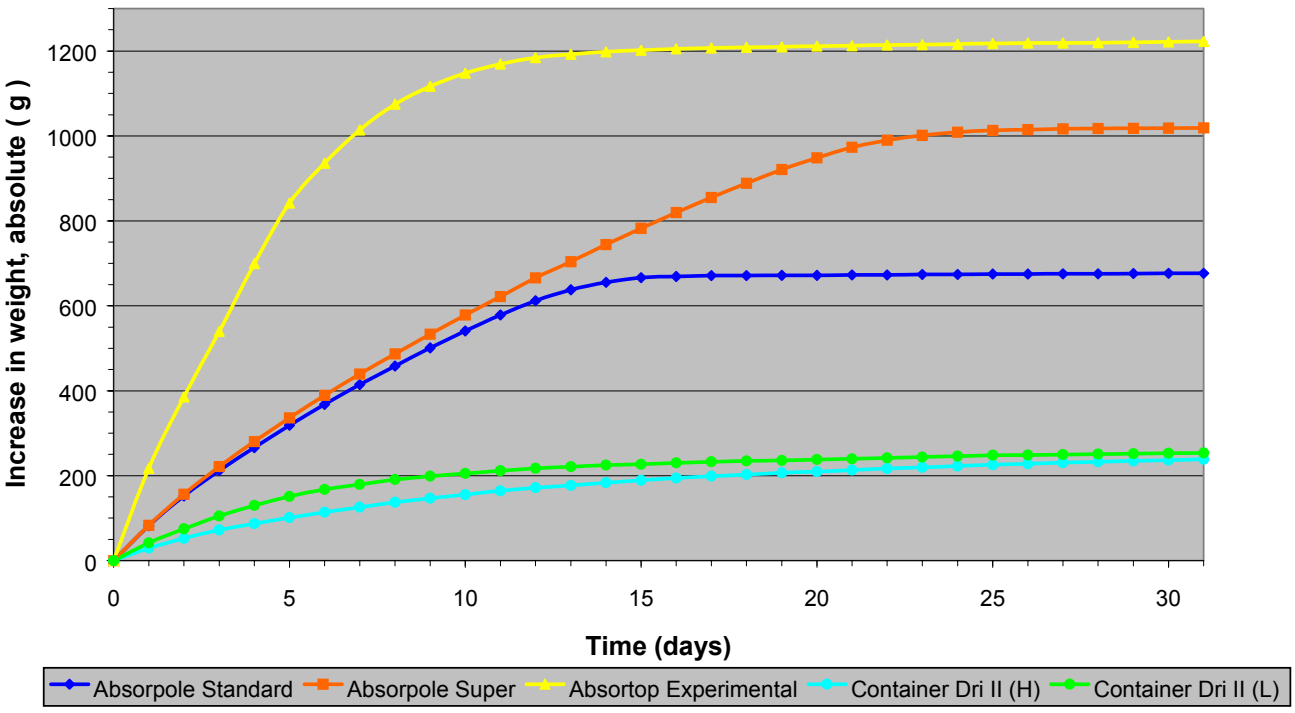
Director of the Institute — Official in Charge

Prof. K.-R. Eschke — Dipl.-Ing. W. Reimers

Appendix 1 to Test Report No. 5499/04

Testing of the water vapour absorption of different desiccant products

Water vapour absorption (absolute)



Water vapour absorption (relative)