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Sefar AG

Frau Cornelia Sand  
Hinterbissaustrasse 12

9410 Heiden  
Schweiz

Berlin, 2013-11-06  
Customer no.: D002788  
Vendor no.  
Order no.: persönlich  
Order of: 2013-11-01  
Date of del.: 2013-11-04  
Report no.: A130375

Dieser Bericht umfasst Seiten: 6 / This report comprises pages: 6  
Alle Blätter sind einseitig beschrieben / The text is on the front side only.

## Untersuchungsbericht / Investigation Report A130375

<b>Auftraggeber/ Customer:</b>	Sefar AG Frau Cornelia Sand Hinterbissaustrasse 12 9410 Heiden, Schweiz
<b>Bearbeiter / Person/s in charge:</b>	Carsten Krüger, Stefan Goronzy
<b>Eingangsdatum der Proben / Date of arrival of sample/s:</b>	2013-09-09 Return of samples: 2013-11-04 The samples were tested from 2013-11-01 to 2013-11-04
<b>Probenbeschreibung / Description of sample/s:</b>	2 pieces Sefar Architecture TENARA Fabric 4T40 HF 2 pieces Sefar Architecture TENARA Fabric 4T20 HF
<b>Prüfspezifikation / Test specification:</b>	Blowing sand test based on AECTP 300-3, method 313, procedure II
<b>Ergebnis / Result:</b>	for details see following pages
<b>Anlagen / Encl:</b>	Bildseiten 0 / Photo pages 0

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Untersuchungsbericht / Test Report 130375

1. Untersuchungsgegenstände / Test Objects

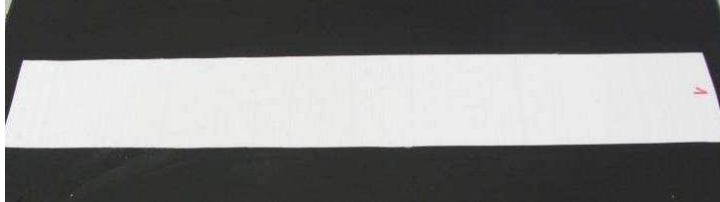



customer's denomination/description of sample/s	Technolab's sample number	samples
Sefar Architecture TENARA Fabric 4T40 HF (PTFE / Flourpolymer)	130375-1 130375-2	 <p><b>Photo 1</b></p>  <p><b>Photo 2</b></p>
Sefar Architecture TENARA Fabric 4T20 HF (PTFE / Flourpolymer)	130375-3 130375-4	 <p><b>Photo 3</b></p>  <p><b>Photo 4</b></p>

Table 1

## 2. Untersuchungsauftrag / Test issue

Visual inspection of the samples before, during (30, 90 and 180 min) and after the test.

The sand test was started with samples 130375-1 and 130375-3.

After 90 minutes these two samples were cut in half by scissors, the test was continued with one half of either sample. Samples 130375-2 and 130375-4 were then equally exposed to the sand test.

Adhesive tape was applied on the samples (see photos on page 4) for an improved evaluation of the sand impact.

Blowing sand test based on AECTP 300-3, method 313, procedure II:

Test Parameters Blowing Sand:	
test temperature	(50 ±2)°C
humidity	<30%
dust concentration	(2.2 ±0.3) g/m <sup>3</sup>
dust composition	95% SiO <sub>2</sub>
wind velocity	20 m/s
test duration	4.5 hours (samples 130375-1 und 130375-3) (3 hours samples 130375-2 und 130375-4)
number of sides	1
total test duration	4.5 hours

Table 2

## 3. Umweltsimulation / Environmental Simulation

### 3.1 Blowing Sand Test

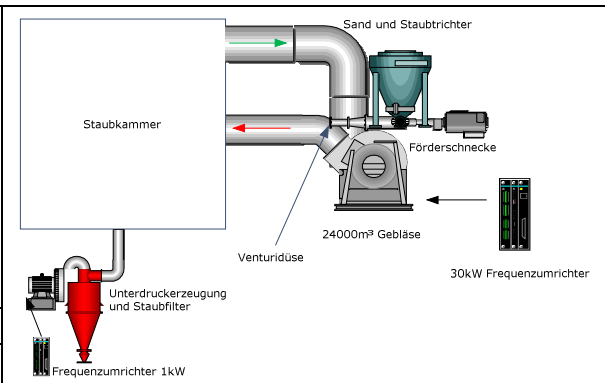




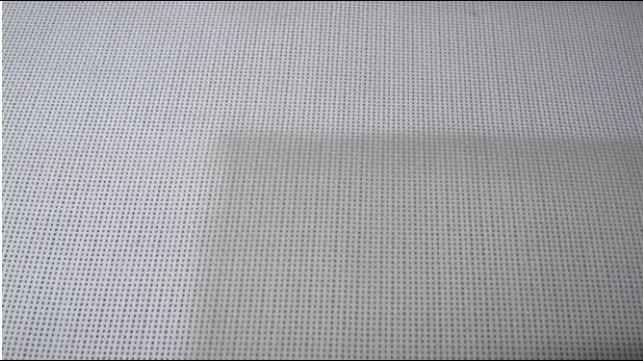




Test Equipment "Blowing Sand BSBD 1550"	
<p>Test Equipment "Blowing Sand" for leak tests and for testing the abrasive effects of various test media under varying test conditions. Control of temperature (20-95°C), humidity (20-50%) , wind velocity (0.5-60 m/s) and sand concentration (0.1-20 g/m<sup>3</sup>).</p> <p>Internal dimensions (HxWxD): 2500x2500x2500mm</p>	
<b>Sensors and measuring equipment</b>	
temperature + humidity sensor #KKC2/5 Manufacturer: Galltec+mela S/N 103645	Measuring range: -25°C...+125°C +_0.2°C 0...100% rF ±2% rF Calibration: 2013-06-25 Calibrated until: 2014-06-25
Reference wind sensor Type: FV A915-S140 Manufacturer: Schiltknecht/Ahlborn S/N: 76749	Tolerance: 1.5% v. MW. 2m/s +/- 0.3m/s, 10m/s +/- 0.35m/s 25m/s +/- 0.575m/s, 38m/s +/- 0.800m/s Calibration: 2012-10-01 Next calibration: 2014-03-31
	
	

Table 3

3.2 Illustrated Documentation of the Test

<p><b>Description of Photo Documentation</b></p> <p>The red arrow shows the direction from which the dust/sand-loaded air horizontally hit the sample.</p>	
	
<p><b>Photo 6</b> – Samples 130375-1 and 130375-3 in the sand chamber before the sand test (position 1 at 50°C).</p>	<p><b>Photo 7</b> – Samples 130375-1 and 130375-3 in the sand chamber before the sand test (position 1 at 50°C).</p>
	
<p><b>Photo 8</b> – Samples 130375-1 and 130375-3 in the sand chamber after 30 min. sand test (position 1 at 50°C).</p>	<p><b>Photo 9</b> – Samples 130375-1 and 130375-3 in the sand chamber after 90 min. sand test (detail, position 1 at 50°C).</p>
	
<p><b>Photo 10</b> – All samples in the sand chamber after 180 min. sand test (detail, position 1 at 50°C).</p>	<p><b>Photo 11</b> – All Samples in the sand chamber after 270 min. the sand test (position 1 at 50°C)</p>



	
<p><b>Photo 12</b> – Sample 130375-1 after the sand test</p>	<p><b>Photo 13</b> - Sample 130375-1 after the sand test (detail)</p>
	
<p><b>Photo 14</b> - Sample 130375-2 after the sand test</p>	<p><b>Photo 15</b> - Sample 130375-2 after the sand test (detail)</p>
	
<p><b>Photo 16</b> - Sample 130375-3 after the sand test</p>	<p><b>Photo 17</b> - Sample 130375-3 after the sand test (detail)</p>
	
<p><b>Photo 18</b> - Sample 130375-4 after the sand test</p>	<p><b>Photo 19</b> - Sample 130375-4 after the sand test (detail)</p>

**Table 4**

## 4. Optische Inspektion / Optical / Visual Inspection

Visual inspection was carried out on the parts accessible from outside without dismantling the samples.

The inspection was executed before and after the tests.

Inspection and documentation were carried out in artificial light (fluorescent tubes cool white).

Optical / Visual inspection was done with the bare eye and with a Canon PowerShot G12 digitalcamera.

## 5. Ergebnisse / Results

The test was carried out as described under 2.

After the sand test no damage to any of the samples could be ascertained. Only soiling could be ascertained on the sand-loaded surfaces of the samples. (see photos 12 – 19).

Special function tests will be carried out at the customer's.

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