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# REPORT

## dust binding capacity of Cyber Clean® as a function of temperature

Ihr Zeichen/ Your Code:  
Ihre Nachricht vom/ Your letter Date:

Mein Zeichen/ My Code:  
Datum/ Date: 2010-05-26

Report number: **100329-01 - Part 2**  
Customer: Joker AG/SA  
Industriezone 27  
CH-3210 Kerzers  
Test item: Cyber Clean®  
Contract date: 2009-08-31  
Sample arrival date: 2010-03-29  
Test period: 2010-03-29 to 2010-05-26

Bankverbindung:  
Stadtsparkasse Mönchengladbach  
Kto.Nr.: 333 5924  
BLZ: 310 500 00  
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## 1. Material

The safety data sheet of the Joker AG/SA characterises Cyber Clean<sup>®</sup> as a cleaning gel containing ethanol.

## 2. Task

With the following measurements the house dust binding capacity of Cyber Clean<sup>®</sup> should be described and estimated after the warming or cooling of the material, as well as after reaching the room temperature again.

## 3. Methods

The measurements of the house dust binding capacity were done in the GUI-laboratory. Two test methods were applied.

### Test method 1: actual temperature

The house dust binding capacity of Cyber Clean<sup>®</sup> was tested in steps of 5°C in a temperature range of -20°C to +70°C.

### Test method 2: room temperature

The house dust binding capacity of Cyber Clean<sup>®</sup> was tested after reaching the room temperature again. Before that, these samples were also tempered in steps of 5°C in a temperature range of -20°C to +70°C.

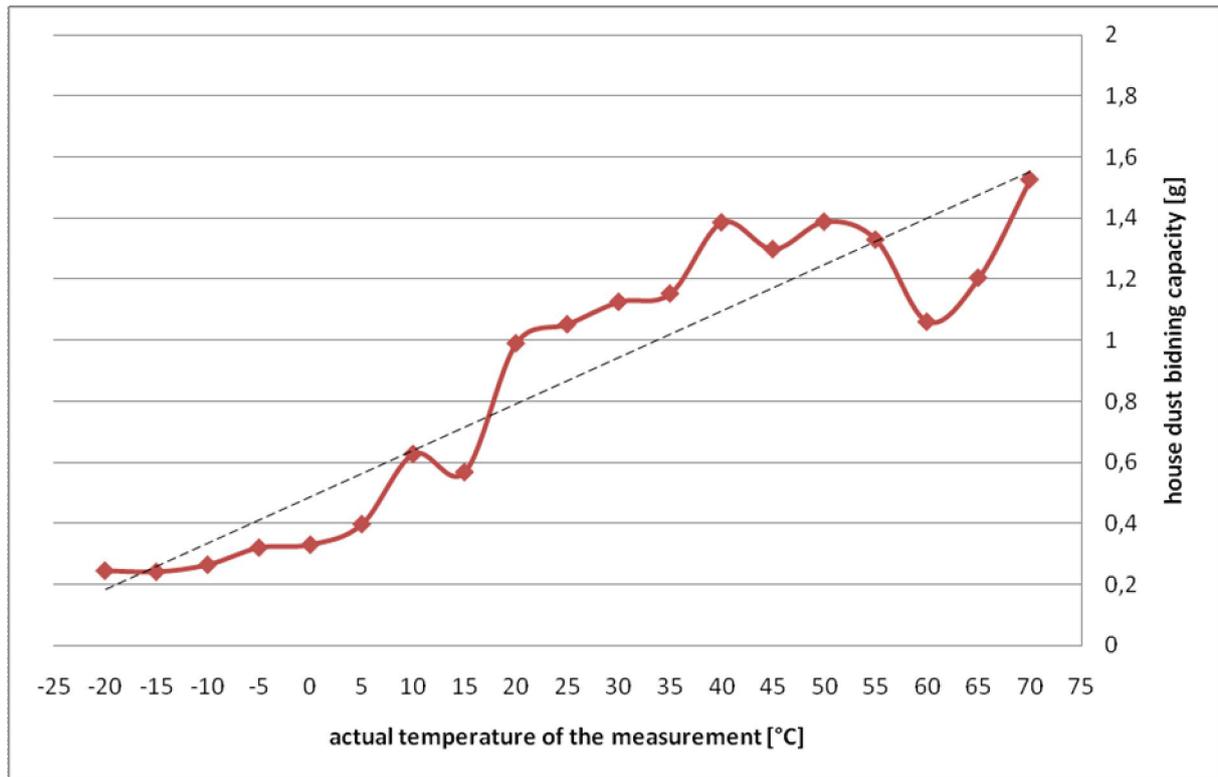
For both test methods 27,0g ( $\pm 0,1$ g) of Cyber Clean<sup>®</sup> were weighed out in a Petri dish and covered with the lid. To obtain a smooth and defined surface, the Petri dish was stored over night in an exsiccator at  $\geq 90\%$  rel. humidity and room temperature. After that, the exsiccator with the Petri dish was adjusted to the target temperature and tempered for 60 minutes. This incubation period assured that the sample had reached the adjusted temperature, which was



tested in pilot tests. For the measurements of the Cyber Clean<sup>®</sup>-samples at the actual temperature, the Petri dish was weighted, the lid of the dish removed, carefully placed on the house dust and weighed down with a 50,0g weight. After a residence time of 1 minute the Petri dish was lifted, closed with the lid and weighted again. The bound quantity of house dust [g] results from the difference between the weighing before and after the house dust binding.

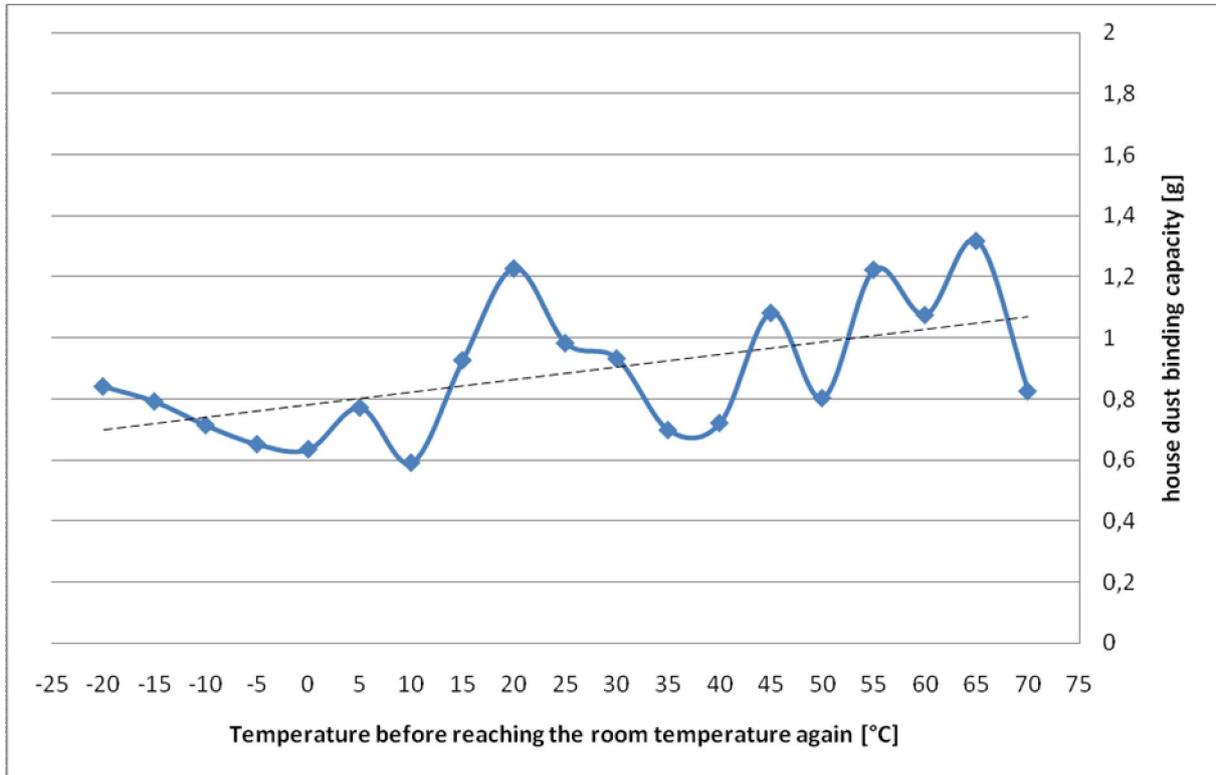
For the measurements of the house dust binding capacity of Cyber Clean<sup>®</sup> after reaching the room temperature again, the samples, which were tempered for 60 minutes, were stored at room temperature until they reached the room temperature and were tempered for 60 minutes again. For the determination of the bound house dust, the same testing procedure was chosen as in the testing stage 1.

## 4. Results



Pic. 1: House dust binding capacity of Cyber Clean® at temperatures of -20 °C to +70 °C

In picture 1 you can see, that the dust binding capacity of Cyber Clean® increases with the rising temperature.



Pic. 2: House dust binding capacity of Cyber Clean<sup>®</sup> after reaching the room temperature again

The temporary tempering of Cyber Clean<sup>®</sup> on temperatures of -20 to +70 °C and the subsequent reaching of the room temperature has no serious effect concerning the house dust binding capacity of Cyber Clean<sup>®</sup>, as the picture 2 shows.



#### 4. Summary assessment

Due to the elastic material properties of Cyber Clean® an increase of the house dust binding capacity with rising temperature can be seen. In the case of minus temperatures, Cyber Clean® shows a relatively inelastic consistency, because of the partly freezing of the liquid parts of Cyber Clean®. For that reason the house dust binding capacity decreases. The higher tempering Cyber Clean® the softer and less viscous is the material and the house dust binding capacity increases.

If Cyber Clean® is reaching the room temperature again, both after minus- and plus temperatures, the original house dust binding capacity is approximately achieved. Hence, a temporal limited storage of Cyber Clean® under temperatures of -20 to +70 °C, like in the case of transports, has no significant effect on the house dust binding capacity of Cyber Clean®. To ensure this, it is important that Cyber Clean® is stored in closed packages, so that no liquid of Cyber Clean® can vaporise.

Mönchengladbach, 2010-05-26

  
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