Test Report

µCT Analysis

Internal Report Number: µCT-560-01
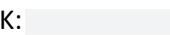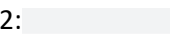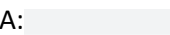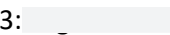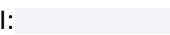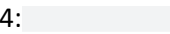
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Content

ANNOTATION: *Italic* written terms are explained in the glossary.

1. Overview

Contact test laboratory	SD Mechatronik GmbH Fritz-Krause-Straße 8 83620 Feldkirchen-Westerham Germany Tel. +49 (0)8063 207 4593 info@sdm-gmbh.de www.sdm-gmbh.de
Customer	B & D Dental Corp., 2371 S. Presidents Dr. Ste E, West Valley City, UT 84120
Contact	Bryan Chu, Email: SWC@BnDdental.com
Arrival of specimen	30.05.2022
Beginning of testing	30.05.2022
End of testing	31.05.2022
Used devices	Abrasion volume SkyScan 1275 (Bruker) ID: 01-0719-014 Calibration date: 01.07.2020
Place of testing	Lab 1, SD Mechatronik GmbH, Fritz-Krause-Straße 8, 83620 Feldkirchen-Westerham, Germany
Specimen	Specimen were selected by the customer and tested as delivered.

Specimen information provided by the manufacturer	No. of specimen: 8 (2x 4)
	Kind of specimen: Teeth specimen and flat antagonist
	Dimensions: N/A
	LOT: Unkown
	Manufacturer: See material
	Material:
	    B: B&D Dental Beyond Plus Multi-Y A2 top area
	    1: B&D Dental Beyond Plus Multi-Y A2 top area opposing teeth
	    K: A2 top area
	    2: A2 top area opposing teeth
	    A: A2 top area
	    3: A2 top area opposing teeth
	    I: A2 top area
	    4: A2 top area opposing teeth
	
	Specimen condition on receipt: Ready to be tested
	Specimen embedding: N/A

Used procedure	Abrasion volume determination with µCT
NOT in the scope of the accreditation	Complete test is not in the intended scope of the accreditation.
Deviations	N/A

Testing performed by	Sebastian Duy
Report approved by	Niclas Albrecht (Head of Lab)
Annotations, Occurences	see section 4
Document information	Revision 0, valid from 02.02.2022 (Report form) Created by: Niclas Albrecht Date: 01.06.2022

Signature Examiner:

Feldkirchen-Westerham, 02.06.2022

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Signature Examiner (Sebastian Duy)

Approved:

Feldkirchen-Westerham, 02.06.2022

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Signature Niclas Albrecht - Head of Lab

2. Parameters of µCT Analysis

2.1. Description of the test procedure

See section 4.1.1.

2.2. Supplements, deviations or exclusions of the test procedure

Not applicable.

3. Preparation of specimen

Not applicable.

4. Testing procedure and results

The results achieved do only apply to the specimen used during this test and in the scenario performed (see section 1). The results are only valid for the specimen as supplied. The results are not applicable to other specimen geometries or test conditions.

4.1. µCT Analysis

4.1.1. Specification of the measuring method

For the analysis of the specimen the device mentioned in section 1 is used. Within this procedure the specimen is x-rayed and the damping of the x-ray by the specimen is measured. The specimen is rotated stepwise and for every rotation step a picture is saved. After the specimen is fully scanned the pictures are brought together as a volume model of the specimen with several software functions. The receive optimal results for the scanning process following parameters were used (see Table 2):

Tube voltage:	80 kV
Tube current:	100µA
Filter for beam hardening:	Al
Rotation Angle between two pictures:	0,4°
No. of pictures for averaging:	5
Coverage:	180°
Scanning interval:	Pre and Post chewing simulation
Resulting resolution:	~15 µm

Table 1: Parameters of scanning process (SkyScan1275)

4.1.2. Purpose / Objective

The objective of the analysis was to determine the abrasion volume created by the chewing simulation on the specimen. This was done by comparing before and after scans.

4.1.3. Results

Following the abrasion volume of the specimen are shown. On the antagonists (specimen A, B, I, K) no abrasion could be measured.

Specimen	Abrasion volume [mm³]
1	0,24
2	26,63
3	0,31
4	0,69

Table 2. Abrasion volume of specimen

Specimen 2 was quite fractured and missing some parts as can be seen in Figure 2 that is why the volume is that high.

5. Annotation of the laboratory

Not applicable.

6. Pictures

Following pictures of the abraded areas (blue) are shown. With the antagonist the before and after scan is shown.

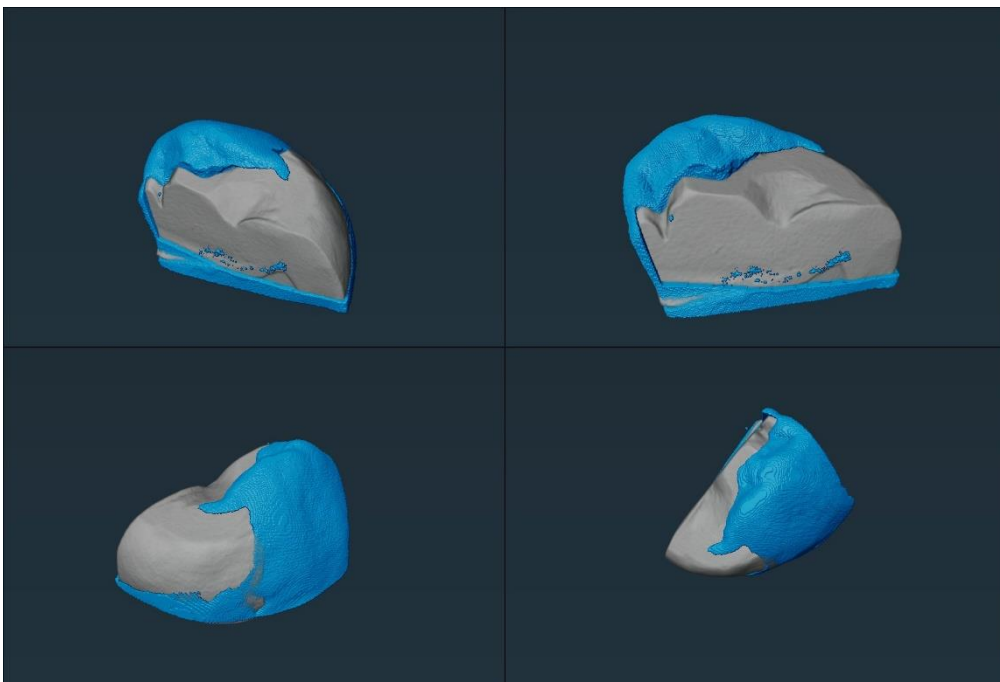*Figure 1: Abrasion (blue) on specimen 1*

Figure 2: Abrasion (blue) on specimen 2

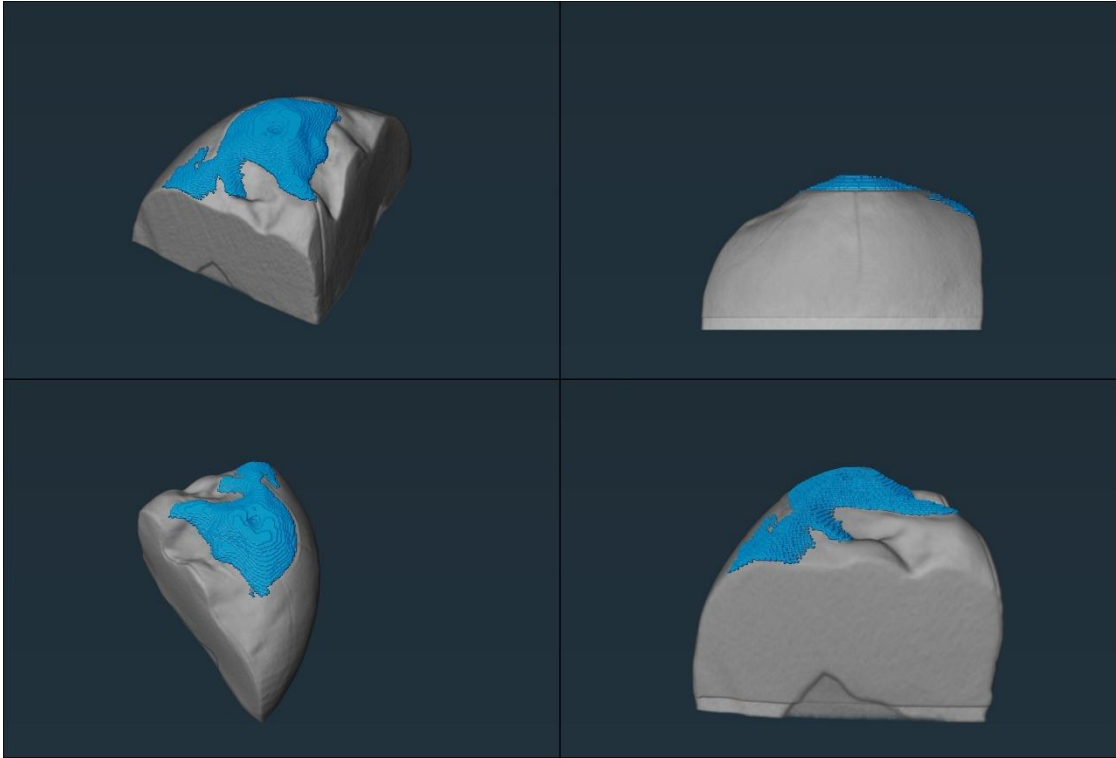*Figure 3: Abrasion (blue) on specimen 3*
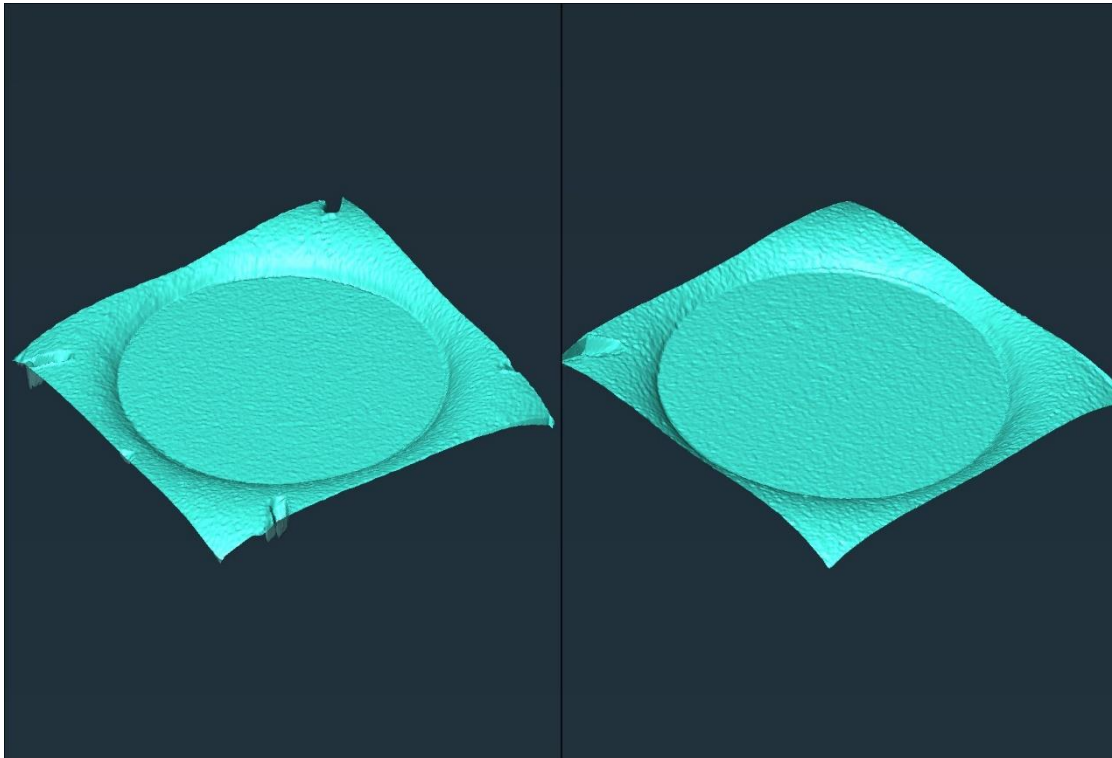

Figure 4: Abrasion (blue) on specimen 4
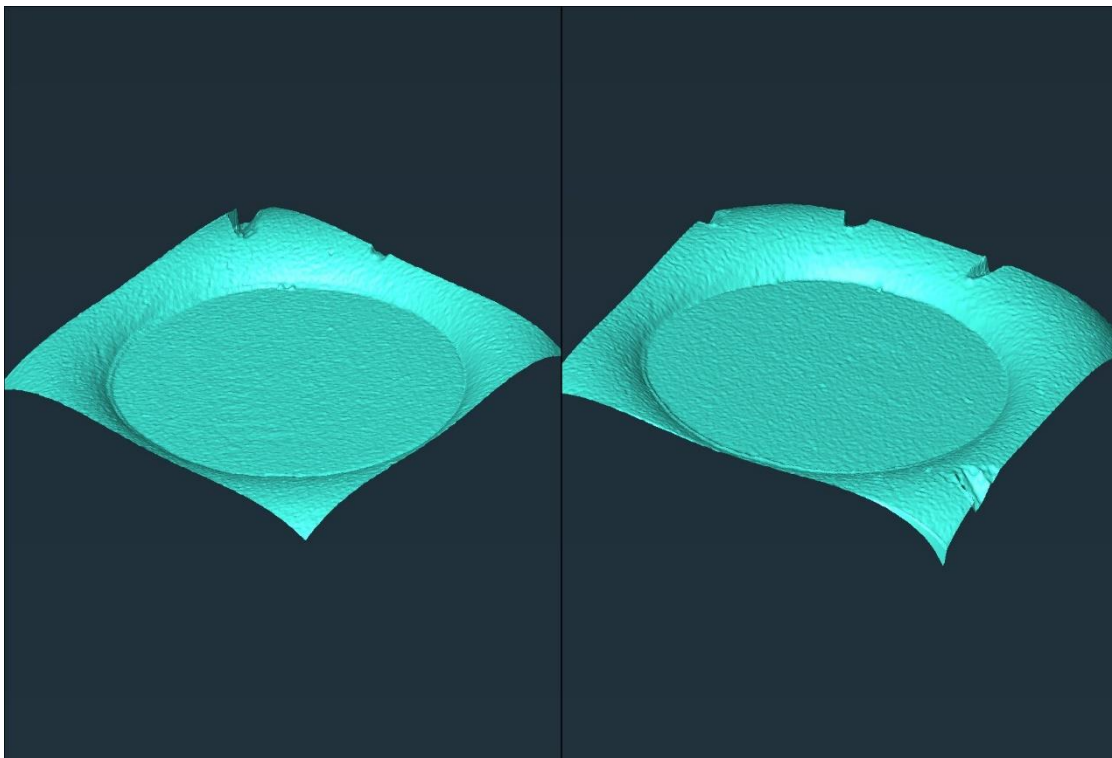
Figure 5: Before and after scan of antagonist A

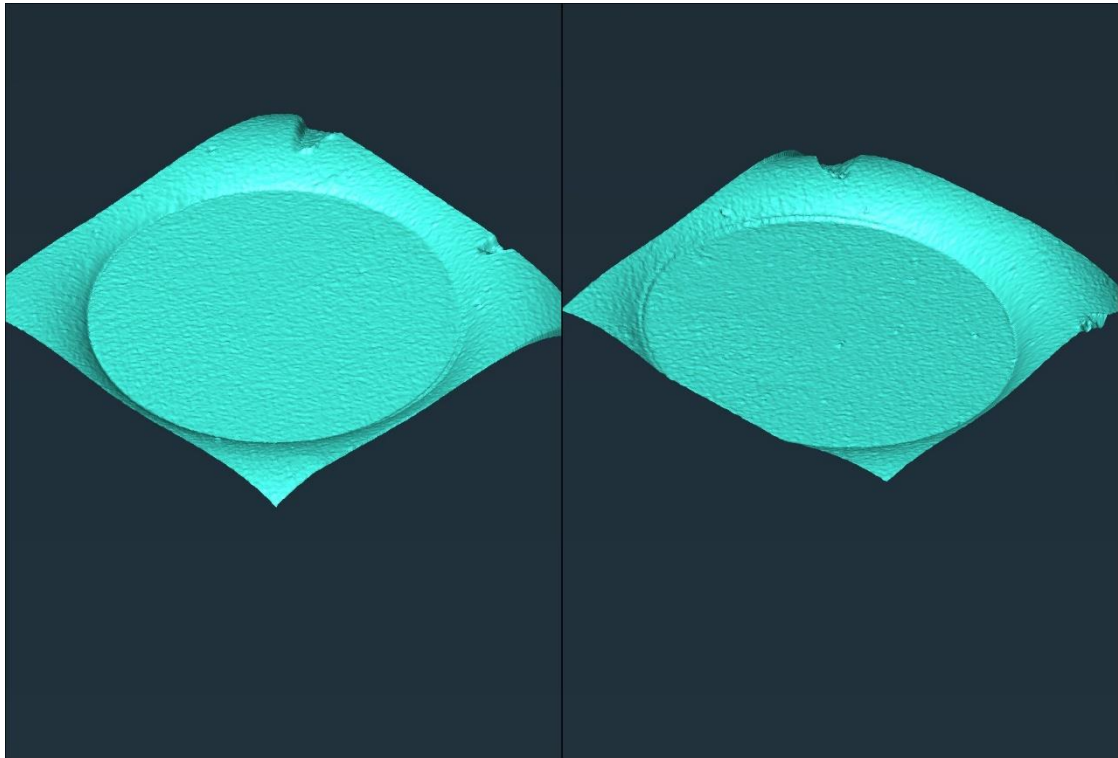*Figure 6: Before and after scan of antagonist B*

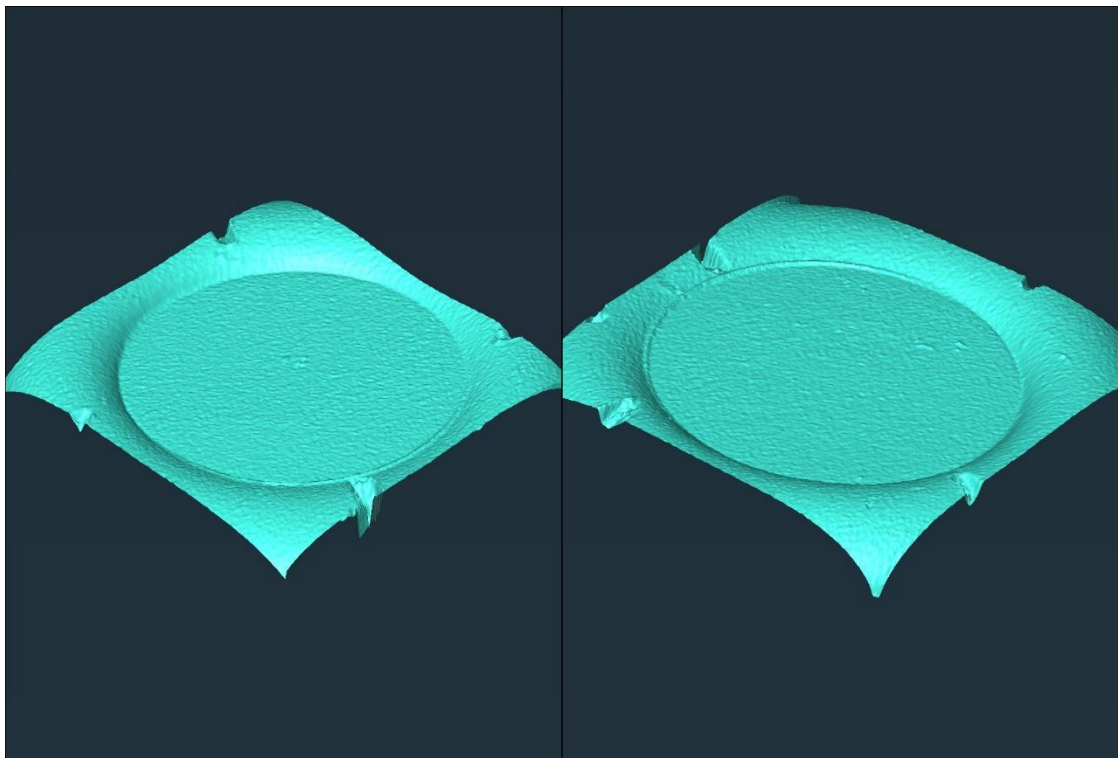*Figure 7: Before and after scan of antagonist I*

Figure 8: Before and after scan of antagonist K

7. Glossary

Following italic written terms are explained.

No terms are written italic, so no explanation necessary.

8. Revision history

01.06.2022:   Initial creation of the report

END OF THE REPORT