

Study Title

Granulometry of Diniobium pentaoxide

DATA REQUIREMENT

REACH requirement EC/1907/2006

AUTHOR

Dr Andreas Königer

STUDY COMPLETION DATE:

2009-09-15

PERFORMING LABORATORY

CURRENTA GmbH & Co. OHG
Services Analytik
D-51368 Leverkusen
Federal Republic of Germany

SPONSOR

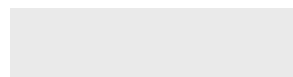
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Mr. Jorge Davo
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Brasil

LABORATORY PROJECT ID

Study No. 2009/0074/04



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1. Statement of compliance with GLP (SOC) Claim

This study was conducted in compliance with the OECD principles of Good Laboratory Practice (GLP, as revised in 1997) and with the Principles of Good Laboratory Practice according to Annex 1, German Chemical Law (Änderung des Anhangs 1 vom 8.Mai 2001).

The determination of the particle size distribution will be performed in a sub-contract by Saltigo GmbH, HSWQ PD Analytics, Building Q 18, D-51368 Leverkusen. This laboratory is no GLP test site. To make sure that the results are in compliance with the GLP-requirements, the experimental phase (phase II) was inspected by the quality assurance unit of CURRENTA, Services Analytik. This is in compliance with SOP 00066 version 2 "Vergabe von Unteraufträgen". All raw data were transferred to the study director.

STUDY DIRECTOR
CURRENTA GmbH & Co. OHG
Services Analytik
Building Q 18
D-51368 Leverkusen
Federal Republic of Germany

Dr Andreas Königler:



Date:

2009-09-15

FOR THE HEAD OF TEST FACILITY
CURRENTA GmbH & Co. OHG
Services Analytik
Building Q 18
D-51368 Leverkusen
Federal Republic of Germany

Prof. Dr Caspers /
Dr Kreiss /
Dr Richter :



Date:

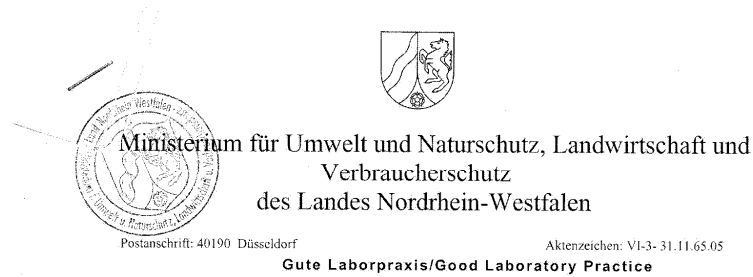
2009-05-16

2. Archiving

The original report, the study plan and all raw data pertaining to this study are stored in the "GLP Archiv, Services Analytik, Building Q 18, Currenta GmbH & Co. OHG, D-51368 Leverkusen". A sample of the test item is stored in "GLP-Probenlager, Services Analytik, Building DA 1, Currenta GmbH & Co. OHG, D-41538 Dormagen".

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3. GLP CERTIFICATE



Ministerium für Umwelt und Naturschutz, Landwirtschaft und
Verbraucherschutz
des Landes Nordrhein-Westfalen

Postanschrift: 40190 Düsseldorf

Aktenzeichen: VI-3-31.11.65.05

Gute Laborpraxis/Good Laboratory Practice

GLP-Bescheinigung/Statement of GLP Compliance
(gemäß/according to § 19b Abs. 1 Chemikaliengesetz)

Eine GLP-Inspektion zur Überwachung der Einhaltung der GLP-Grundsätze gemäß Chemikaliengesetz bzw. Richtlinie 88/320/EG wurde durchgeführt in: Assessment of conformity with GLP according to Chemikaliengesetz and Directive 88/320/EEC at:

Prüfeinrichtung/Test facility Prüfstandort/Test site

Bayer Industry Services GmbH & Co OHG

Prüfeinrichtung BIS-SUA-Analytics

D-51368 Leverkusen

(unverwechselbare Bezeichnung und Adresse/Unequivocal name and address)

Prüfungen nach Kategorien

(gemäß ChemVwV-GLP Nr. 5.3/OECD guidance)

Kategorie 1

Prüfungen zur Bestimmung der physikalisch-chemischen Eigenschaften und Gehaltsbestimmungen

Kategorie 4

Ökotoxikologische Prüfungen zur Bestimmung der Auswirkungen auf aquatische und terrestrische Organismen

Kategorie 5

Prüfungen zum Verhalten im Boden, im Wasser und in der Luft; Prüfungen zur Bioakkumulation und zur Metabolisierung

Kategorie 8

Analytische Prüfungen an biologischen Materialien

Areas of Expertise

(according ChemVwV-GLP Nr. 5.3/OECD guidance)

category 1

physical-chemical testing

category 4

environmental toxicity studies on aquatic and terrestrial organisms

category 5

studies on behaviour in water, soil and air; bioaccumulation

category 8

analytical and clinical chemistry testing

Datum der Inspektion

(Tag, Monat, Jahr)

14. bis 16. September
und 26. bis 28. Oktober 2005

Die genannte Prüfeinrichtung befindet sich im nationalen GLP-Überwachungsverfahren und wird regelmäßig auf Einhaltung der GLP-Grundsätze überwacht.

Auf der Grundlage des Inspektionsberichtes wird hiermit bestätigt, dass in dieser Prüfeinrichtung die oben genannten Prüfungen unter Einhaltung der GLP-Grundsätze durchgeführt werden können.

Date of Inspection

(day, month, year)

on 14 until 16 September and on 26 until 28
October 2005

The above mentioned test facility is included in the national GLP Compliance Programme and is inspected on a regular basis.

Based on the inspection report it can be confirmed, that this test facility is able to conduct the aforementioned studies in compliance with the Principles of GLP.

Düsseldorf, den 11. Januar 2006

Im Auftrag


(Prof. Dr. David)



Dienstsiegel/official-seal

Please note: Effective January 1st, 2008, the company name Bayer Industry Services GmbH & Co. OHG was changed to CURRENTA GmbH & Co. OHG.

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6. Summary

Report: Dr Andreas Königer: Granulometry of Diniobium pentaoxide; Currenta, report no.: 2009/0074/04

Guidelines: The test was performed according to OECD Guidelines for Testing of Chemicals, Section 1 – Physical-Chemical Properties OECD TG 110, CIPAC MT 187, Saltigo-internal method 2023-3007601-07D

Deviation from Guidelines: No

GLP: The determination of the particle size distribution will be performed in a sub-contract by Saltigo GmbH, HSWQ PD Analytics, Building Q 18, D-51368 Leverkusen. This laboratory is no GLP test site. To make sure that the results are in compliance with the GLP-requirements, the experimental phase (phase II) was inspected by the quality assurance unit of CURRENTA, Services Analytik. This is in compliance with SOP 00066 version 2 “Vergabe von Unteraufträgen”. All raw data were transferred to the study director.

Time of experimental tests: 2009-09-07 to 2009-09-09

Materials and Determinations: With Diniobium pentaoxide, batch no.: AD/4199, purity 99.2 %, the granulometry was performed by laser diffraction according to the Saltigo internal method 2023-3007601-07D, this method corresponds to CIPAC MT 187 and to OECD 110.

The test item was dispersed in water and measured. For calculation of the particle size distribution, the Fraunhofer model was used. The following results were received:

Results:

Particle size distribution

The particle size distribution was performed.

Range:	0.0400 µm to 2000 µm		
Mean value:	41.45 µm	Median value:	40.34 µm
Maximum at:	50.22 µm	Specific surface:	2264 cm ² /g
d(0.1):	10.59 µm	d(0.25):	24.35 µm
d(0.5):	40.34 µm	d(0.75):	55.35 µm
d(0.9):	69.60 µm		
sum of mass < 1 µm =	2.95 %		
sum of mass < 10µm =	9.45 %		
sum of mass < 100µm =	98.3 %		

7. Methods and Documents

The determination of the particle size distribution was performed according to the Saltigo internal method 2023-3007601-07D, this method corresponds to CIPAC MT 187 "Particle size analysis by laser diffraction" CIPAC Handbook Volume K, Analysis of Technical and Formulated Pesticides and to the OECD guideline for testing of chemicals No: 110 "Particle Size Distribution/Fibre Length and Diameter Distributions" (adopted, May 1981).

7.1 Principle of the method

Particle size distribution

The test item was dispersed in water and measured by laser diffraction. For calculation of the particle size distribution, the Fraunhofer model was used.

8. Sample description

Product name:	Diniobium pentaoxide	Chemical name:	Diniobium pentaoxide
Empirical formula:	Nb ₂ O ₅	Molecular mass:	265.8 g/mol
CAS-No:	1313-96-8	Batch No.:	AD/4199
Content:	99.2 %	Expiry date:	2010-01-21
Arrival at test site:	2009-07-21	Sample no./year:	998/2009

9. Test Methods

9.1 Particle size distribution

Method no.: 2023-3007601-07D

Supervisor: Dr. Kühl (Saltigo GmbH)

Procedure:

The particle size distribution was performed by laser diffraction. The test substance was dispersed in water. The measurement concentration was approx. 130 mg/ml water. Triple determinations with always three measurement data were performed. For calculation of the particle size distribution, the Fraunhofer model was used. This procedure corresponds to CIPAC MT 187 "Particle size analysis by laser diffraction" CIPAC Handbook Volume K, Analysis of Technical and Formulated Pesticides and to the OECD guideline for testing of chemicals No: 110 "Particle Size Distribution/Fibre Length and Diameter Distributions" (adopted, May 1981).

Results:

Range:	0.0400 µm to 2000 µm		
Mean value:	41.45 µm	Median value:	40.34 µm
Maximum at:	50.22 µm	Specific surface:	2264 cm ² /g
d(0.1):	10.59 µm	d(0.25):	24.35 µm
d(0.5):	40.34 µm	d(0.75):	55.35 µm
d(0.9):	69.60 µm		
sum of mass < 1 µm =	2.95 %		
sum of mass < 10µm =	9.45 %		
sum of mass < 100µm =	98.3 %		

Table 1: Measured values (mean value of three determinations)

09_00197.Sav							
Kanalanzahl	Volumen	Kanaldurchmesser	Volumen	Kanalanzahl	Volumen	Kanaldurchmesser	Volumen
	Diff.	(Mitte)	Kum. <		Diff.	(Mitte)	Kum. <
	%	µm	%		%	µm	%
1	0.0013	0.042	0	61	1.01	11.29	10.2
2	0.0018	0.046	0.0013	62	1.14	12.40	11.2
3	0.0030	0.050	0.0031	63	1.28	13.61	12.3
4	0.0065	0.055	0.0062	64	1.44	14.94	13.6
5	0.014	0.061	0.013	65	1.62	16.40	15.0
6	0.024	0.067	0.026	66	1.83	18.00	16.7
7	0.034	0.073	0.050	67	2.09	19.76	18.5
8	0.042	0.080	0.084	68	2.39	21.69	20.6
9	0.051	0.088	0.13	69	2.76	23.81	23.0
10	0.060	0.097	0.18	70	3.23	26.14	25.7
11	0.069	0.106	0.24	71	3.83	28.70	29.0
12	0.076	0.117	0.31	72	4.55	31.50	32.8
13	0.084	0.128	0.38	73	5.39	34.58	37.4
14	0.091	0.141	0.47	74	6.25	37.97	42.7
15	0.097	0.155	0.56	75	7.01	41.68	49.0
16	0.10	0.170	0.65	76	7.52	45.75	56.0
17	0.11	0.186	0.76	77	7.63	50.22	63.5
18	0.11	0.205	0.86	78	7.25	55.13	71.2
19	0.12	0.225	0.98	79	6.40	60.52	78.4
20	0.12	0.247	1.09	80	5.19	66.44	84.8
21	0.12	0.271	1.21	81	3.82	72.94	90.0
22	0.13	0.297	1.34	82	2.50	80.07	93.8
23	0.13	0.326	1.46	83	1.41	87.90	96.3
24	0.13	0.358	1.59	84	0.67	96.49	97.7
25	0.13	0.393	1.72	85	0.28	105.9	98.4
26	0.13	0.431	1.85	86	0.14	116.3	98.7
27	0.13	0.474	1.97	87	0.14	127.6	98.8
28	0.12	0.520	2.10	88	0.21	140.1	99.0
29	0.12	0.571	2.23	89	0.27	153.8	99.2
30	0.12	0.627	2.35	90	0.27	168.9	99.5
31	0.11	0.688	2.47	91	0.18	185.4	99.7
32	0.11	0.755	2.58	92	0.077	203.5	99.9
33	0.11	0.829	2.69	93	0.016	223.4	99.98
34	0.10	0.910	2.80	94	0.0012	245.2	99.999
35	0.095	0.999	2.90	95	0	269.2	100
36	0.091	1.097	2.99	96	0	295.5	100
37	0.086	1.204	3.08	97	0	324.4	100
38	0.083	1.321	3.17	98	0	356.1	100
39	0.081	1.451	3.25	99	0	390.9	100
40	0.080	1.592	3.33	100	0	429.2	100
41	0.081	1.748	3.41	101	0	471.1	100
42	0.084	1.919	3.49	102	0	517.2	100
43	0.089	2.107	3.58	103	0	567.7	100
44	0.098	2.313	3.67	104	0	623.3	100
45	0.11	2.539	3.76	105	0	684.2	100
46	0.12	2.787	3.87	106	0	751.1	100
47	0.14	3.059	4.00	107	0	824.5	100
48	0.17	3.358	4.14	108	0	905.1	100
49	0.20	3.687	4.31	109	0	993.6	100
50	0.23	4.047	4.51	110	0	1091	100
51	0.27	4.443	4.74	111	0	1197	100
52	0.31	4.877	5.01	112	0	1314	100
53	0.36	5.354	5.32	113	0	1443	100
54	0.42	5.878	5.68	114	0	1584	100
55	0.48	6.452	6.11	115	0	1739	100
56	0.55	7.083	6.59	116	0	1909	100
57	0.63	7.775	7.14				100
58	0.71	8.536	7.77				
59	0.80	9.370	8.48				
60	0.90	10.29	9.28				

Figure 1: Particle size distribution

