



TEST REPORT

No. 6327/10/07

Greiner Bio-One GmbH

Bad Haller Straße 32

A 4550 Kremsmünster

The results of the investigations carried out only concern the submitted samples.

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1 Submitted Samples

1.1 Name of the Client

Greiner Bio-One GmbH

Bad Haller Straße 32

A 4550 Kremsmünster

1.2 Description of the Packages

Primary receptacle

VACUETTE[®] vacuum tubes made of PET (16 x 100 mm, 13 x 100 mm or 13 x 75 mm) with safety cap (rubber plug) with ring;



Picture 1

Secondary packaging

“VTB” - VACUETTE[®] transport box (VTB)

Plastics box (270 x 125 x 180 mm <L x W x H>) made of polypropylene with click-closure, sealing ring and a absorbent insert on the bottom (for the whole liquid); soft foam insert with 40 recesses for the primary receptacles;



Picture 2



Picture 3

“VTC” - VACUETTE® transport container (VTC)

Plastics can (diameter: 112 mm, height incl. cap: 130 mm) made of polypropylene with screw cap and a absorbent insert on the bottom (for the whole liquid); soft foam insert with 12 recesses for the primary receptacles;



Picture 4



Picture 5

Outer packaging

Carrier bag for a transport box (VTB)

Bag in the shape of a box (outside dimensions: approx. 305 x 160 x 240 mm <L x W x H>) with lid flexible jointed to the rear side and a zipper; carrying handle seamed on the lid; two plastics ledges on the bottom; outer bag made of “Polietilene 600/900”; inner liner of the lid made of “Naylon 210/210 PVC” with hook-and-loop fastener; between the inner and outer liner of the lid a sheet made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; the rigid

inner part is made of three stitched U-shaped blanks made of chamber plates (“Atofina Polypropylene PPC 3660”, thickness 3 mm) with double sides and a single bottom; outside of the inner part covered with sheets made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; inside on the bottom a sheet of “Monferlene Antiurto 20 mm”; inner liner made of “Naylon 210/210 PVC”;



Picture 6



Picture 7



Picture 8



Picture 9

Carrier bag for three transport boxes (VTB)

Bag in the shape of a box (outside dimensions: approx. 480 x 305 x 255 mm <L x W x H>) with lid flexible jointed to the rear side and a zipper; carrying handle seamed on the lid; a carrying belt fixed on the broad side edges; three plastics ledges on the bottom; outer bag made of “Polietilene 600/900”; inner liner of the lid made of “Naylon 210/210 PVC” with hook-and-loop fastener; between the inner and outer liner of the lid a sheet made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm” and a sheet made of chamber plate (“Atofina Polypropylene PPC 3660”, thickness 3 mm); the rigid inner part is made of three chambers

glued together each made of three stitched U-shaped blanks made of chamber plates (“Atofina Polypropylene PPC 3660”, thickness 3 mm) with double sides and a single bottom; inside on the bottom of each chamber a sheet of “Monferlene Antiurto 20 mm”; between the chambers two sheets made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; outside of the inner part covered with sheets made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; inner liner made of “Naylon 210/210 PVC”;



Picture 10



Picture 11



Picture 12



Picture 13

Carrier bag for four transport boxes (VTB)

Bag in the shape of a box (outside dimensions: approx. 640 x 305 x 255 mm <L x W x H>) with lid flexible jointed to the rear side and a zipper; carrying handle seamed on the lid; a carrying belt fixed on the broad side edges; three plastics ledges on the bottom; outer bag made of “Polietilene 600/900”; inner liner of the lid made of “Naylon 210/210 PVC” with hook-and-loop fastener; between the inner and outer liner of the lid a sheet made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm” and a sheet made of chamber plate (“Atofina

Polypropylene PPC 3660”, thickness 3 mm); the rigid inner part is made of four chambers glued together each made of three stitched U-shaped blanks made of chamber plates (“Atofina Polypropylene PPC 3660”, thickness 3 mm) with double sides and a single bottom; inside on the bottom of each chamber a sheet of “Monferlene Antiurto 20 mm”; between the chambers two sheets made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; outside of the inner part covered with sheets made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; inner liner made of “Naylon 210/210 PVC”;



Picture 14



Picture 15



Picture 16



Picture 17

Carrier bag for a transport container (VTC)

Bag in the shape of a barrel (outside dimensions: diameter approx. 145 mm, height approx. 160 mm) with lid flexible jointed and a zipper; carrying handle seamed on the lid; outer bag made of “Polietilene 600/900”; inner liner of the lid made of “Naylon 210/210 PVC”; between the inner and outer liner of the lid a sheet made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; the rigid inner part is made of a core made of plastics (thickness 3.5 mm) which

is glued with expanded plastics foam (thickness 4 mm) on the inside and outside and a bottom plate made of a chamber plate (“Atofina Polypropylene PPC 3660”, thickness 3 mm); on the outside of the bottom plate a sheet of expanded plastics foam (thickness 4 mm), on the inside a sheet made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; inner liner made of “Naylon 210/210 PVC”;



Picture 18



Picture 19



Picture 20



Picture 21

Original filling material: biological substances, category B (UN 3373);

For the tests a water/antifreeze mixture was used.

2 Requested Investigations

In accordance with the packaging provision P650 of chapter 4.1, laid down in enclosure A of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), the completed package shall be capable of successfully passing the drop test in 6.3.2.5 as specified in 6.3.2.2 to 6.3.2.4 at a height of 1.2 m.

Similar regulations are in force for the transport by train (RID), by ship (IMDG-Code) and by plane (ICAO-Code), whereby the test requirements regarding the packagings for carrying dangerous goods by the various transport operators have been largely harmonised, because of the acceptance of the UN-Recommendations ("Orange book", Recommendations prepared by the United Nations Committee of Experts on the Transport of Dangerous Goods, fourteenth revised edition, 2005).

The submitted samples should be drop tested according to the packaging provision P650 to verify whether they fulfil this requirement.

A limited number of primary receptacles from different manufactures should be considered for the drop test on request of the client.

The requirement that either the primary receptacle or the secondary packaging shall be capable of withstanding, without leakage, an internal pressure of 95 kPa (0.95 bar) will be proofed by the manufacturer of the primary receptacles (acknowledgments were shown).

3 Investigations Carried out - Results of Investigations

Receipt of test samples: 2007-10-12, 2007-10-25 and 2007-12-04

The air-conditioning of the test samples was made under the standard climate condition 23 °C/ 50 % relative humidity. The tests were carried out under the same climatic conditions.

3.1 Test samples used for testing

3.1.1 **Carrier bag for a transport box (VTB)**

Primary receptacles in each transport box:

1st column (left)

“BD Vacutainer[®] UAP”, 15.2 x 106 mm, 8 ml;

“BD Vacutainer[®] Serum”, 12.2 x 81 mm, 4 ml;

“Sarstedt Monovette[®] Serum Gel”, 16.5 x 109 mm, 9 ml;

“Sarstedt Monovette[®] Sedivette[®] - 4 NC/3.5”, 8.4 x 146 mm, 3.5 ml;

2nd column

2x VACUETTE[®], 13 x 100 mm, 6 ml;

2x VACUETTE[®], 16 x 100 mm, 9 ml;

3rd column

“Terumo venosafe[™]”, 12 x 80 mm, 3 ml;

2x “Terumo venosafe[™]”, 12 x 80 mm, 4 ml;

“Terumo venosafe[™]”, 12 x 80 mm, 3 ml;

4th column

VACUETTE[®], 13 x 75 mm, 3 ml;

VACUETTE[®], 16 x 100 mm, 9 ml;

VACUETTE[®], 13 x 100 mm, 6 ml;

VACUETTE[®], 13 x 75 mm, 3 ml;

5th column

“Kabe Primavette[®] 4NC”, 11.2 x 81 mm, 2 ml;

“Kabe Primavette[®] 9NC”, 11.2 x 81 mm, 2.9 ml;

“BD Vacutainer[™] 9NC”, 12.2 x 82 mm, 2.7 ml;

“BD Vacutainer[®] Lithium Heparin”, 12.2 x 81 mm, 4ml;

6th column

4x VACUETTE[®], 16 x 100 mm, 9 ml;

7th column

4x VACUETTE[®], 13 x 75 mm, 3 ml;

8th column

4x VACUETTE[®], 13 x 100 mm, 6 ml;

9th column

2x VACUETTE[®], 13 x 75 mm, 3 ml;

VACUETTE[®], 16 x 100 mm, 9 ml;

VACUETTE[®], 13 x 100 mm, 6 ml;

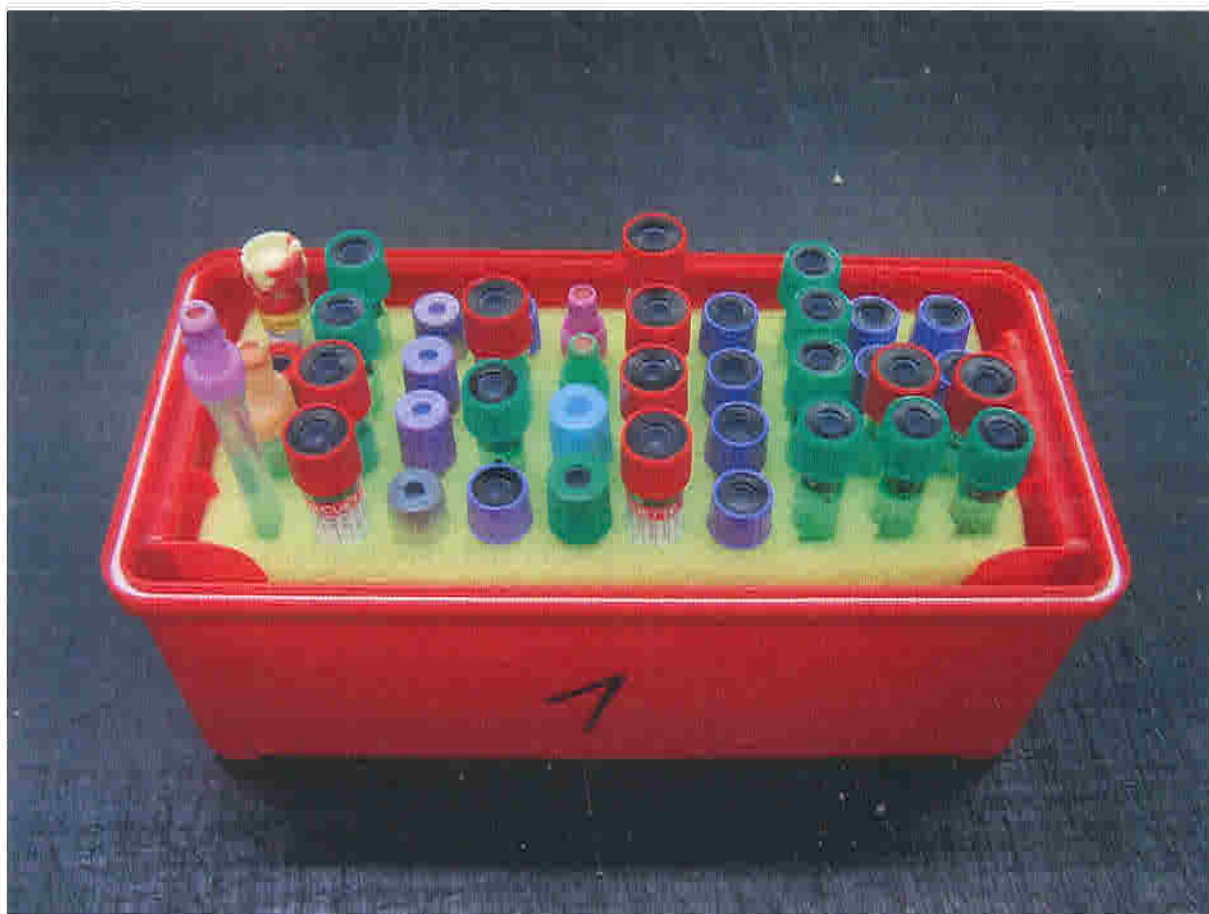
10th column

2x VACUETTE[®], 13 x 75 mm, 3 ml;

VACUETTE[®], 16 x 100 mm, 9 ml;

VACUETTE[®], 13 x 100 mm, 6 ml;

Gross mass of the filled and sealed packages: 1.57 - 1.66 kg;



Picture 22

3.1.2 Carrier bag for four transport boxes (VTB)

Primary receptacles in each transport box:

Three blocks each with 12 VACUETTE[®] vacuum tubes made of PET in the sizes 16 x 100 mm, 13 x 100 mm and 13 x 75 mm with safety cap (rubber plug) with ring. The remaining recesses were filled randomly;

Gross mass of the filled and sealed packages: 6.51 - 6.57 kg;



Picture 23

3.1.3 Carrier bag for a transport container (VTC)

Primary receptacles in each transport container:

4 VACUETTE[®] vacuum tubes made of PET of each size 16 x 100 mm, 13 x 100 mm and 13 x 75 mm with safety cap (rubber plug) with ring.

Gross mass of the filled and sealed packages: 612 - 664 g;



Picture 24

3.2 Drop tests

The drop of the packages was done with a drop tester, supplied by Lansmont Corporation, Model PDT-56E, the impact target was a steel plate.

The drop height was (according to packing provision P650) **1.2 m**.

3.2.1 **Carrier bag for a transport box (VTB)**

Drop orientation:

- flat on the base
- flat on the top (lid)
- flat on the longest side
- flat on the shortest side
- on to a corner

Drop test after conditioning in an atmosphere of -18 °C

The samples were conditioned at least 24 hours in an atmosphere of -18 °C and tested immediately after taking out of the freezer.

None of the tested samples was leaking or showed any appreciable damage after the tests.

After the drops, there was no leakage from the primary receptacles, which remained protected by the absorbent material in the secondary packaging.

Date of test: 2007-12-06

3.2.2 Carrier bag for four transport boxes (VTB)

Drop orientation:

- flat on the base
- flat on the top (lid)
- flat on the longest side
- flat on the shortest side
- on to a corner

Drop test after conditioning in an atmosphere of -18 °C

The samples were conditioned at least 24 hours in an atmosphere of -18 °C and tested immediately after taking out of the freezer.

None of the tested samples was leaking or showed any appreciable damage after the tests. After the drops, there was no leakage from the primary receptacles, which remained protected by the absorbent material in the secondary packaging.

Date of test: 2007-11-05

3.2.3 Carrier bag for a transport container (VTC)

Drop orientation:

- diagonally on the top chime
- diagonally on the base chime
- flat on the side (body)
- flat on the base
- flat on the top

Drop test after conditioning in an atmosphere of -18 °C

The samples were conditioned at least 24 hours in an atmosphere of -18 °C and tested immediately after taking out of the freezer.

None of the tested samples was leaking or showed any appreciable damage after the tests. After the drops, there was no leakage from the primary receptacles, which remained protected by the absorbent material in the secondary packaging.

Date of test: 2007-11-05

The tested samples fulfil the requirements of the drop test according to the packing provision P650.

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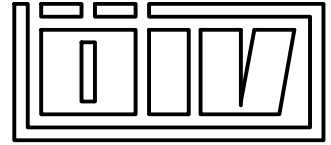


Dir. Univ.-Lektor Th. Rieder
Head of Institute

Dipl.-Ing. (FH) M. Auer
Investigator

Wien, 2007-12-21

This Test Report No. 6327/10/07 consists of 14 pages.



TEST REPORT

No. 6811/9/10

Greiner Bio-One GmbH

Bad Haller Straße 32

A 4550 Kremsmünster

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1 Submitted Samples

1.1 Name of the Client

Greiner Bio-One GmbH

Bad Haller Straße 32

A 4550 Kremsmünster

1.2 Description of the Packages

Primary receptacle

40 pieces of VACUETTE[®] vacuum tubes made of PET (16 x 100 mm, 8 ml) with safety cap (rubber plug) with ring within each secondary packaging;

Secondary packaging

“VTB” - VACUETTE[®] transport box (VTB)

Plastics box (270 x 125 x 180 mm <L x W x H>) made of polypropylene (top part: “Borealis RE420MO”; bottom part: „Borpact[™] SG930MO“ or „Bormod[™] BF970MO“) with click-closure, sealing ring and a absorbent insert on the bottom (for the whole liquid); soft foam insert with 40 recesses for the primary receptacles;



Picture 1



Picture 2

Outer packaging

Carrier bag for four transport boxes (VTB)

Bag in the shape of a box (outside dimensions: approx. 630 x 305 x 265 mm <L x W x H>) with lid flexible jointed to the rear side and a zipper; carrying handle seamed on the lid; a carrying belt fixed on the broad side edges; three plastics ledges on the bottom; outer bag made of “Polietilene 600/900”; inner liner of the lid made of “Naylon 210/210 PVC” with hook-and-loop fastener; between the inner and outer liner of the lid a sheet made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm” and a sheet made of chamber plate (“Atofina Polypropylene PPC 3660”, thickness 3 mm); the rigid inner part is made of four chambers glued together each made of three stitched U-shaped blanks made of chamber plates (“Atofina Polypropylene PPC 3660”, thickness 3 mm) with double sides and a single bottom; inside on the bottom of each chamber a sheet of “Monferlene Antiurto 20 mm”; between the chambers two sheets made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; outside of the inner part covered with sheets made of insulating material “Isolate X-105 -40 °C +90 °C 8 mm”; inner liner made of “Naylon 210/210 PVC”;
Four thermal packs “EZetil IceAkku G270” inserted in compartments of the lid.



Picture 3

Gross mass of the filled and sealed packages: 8.26 kg;

Original filling material: biological substances, category B (UN 3373);

For the tests a water/antifreeze mixture was used.

2 Requested Investigations

In accordance with the packaging provision P650 of chapter 4.1, laid down in enclosure A of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), the completed package shall be capable of successfully passing the drop test in 6.3.5.3 as specified in 6.3.5.2 at a height of 1.2 m.

Similar regulations are in force for the transport by train (RID), by ship (IMDG-Code) and by plane (ICAO-Code), whereby the test requirements regarding the packagings for carrying dangerous goods by the various transport operators have been largely harmonised, because of the acceptance of the UN-Recommendations (“Orange book“, Recommendations prepared by the United Nations Committee of Experts on the Transport of Dangerous Goods, 15th revised edition, 2007).

Within our Test Report No. 6327/10/07 carrier bags for one, three or four transport boxes (VTBs) fulfilled the requirements regarding the drop test according to packaging provision P650.

Because of the intention to use the bottom parts of the “VTB” - *VACUETTE*[®] *transport boxes* (VTBs) made of different material, appropriate drop tests should be done to examine whether the requirements regarding the drop test according to packaging provision P650 are still fulfilled.

3 Investigations Carried out - Results of Investigations

Receipt of test samples: 2010-09-06

The tests were carried out under the standard climate condition 23 °C/ 50 % relative humidity.

3.1 Drop tests

The samples were conditioned at least 24 hours in an atmosphere of -18 °C and tested immediately after taking out of the freezer. Five drops were done on a carrier bag with four transport boxes with bottom parts made of polypropylene „Borpact™ SG930MO“ and on a carrier bag with four transport boxes with bottom parts made of polypropylene „Bormod™ BF970MO“.

The drop of the packages was done with a drop tester, supplied by Lansmont Corporation, Model PDT-56E, the impact target was a steel plate.

The drop height was (according to packing provision P650) **1.2 m**.

Drop orientation of the carrier bags:

- on to a bottom corner
- flat on the shortest side
- flat on the longest side
- flat on the bottom
- flat on the top (lid)

None of the tested samples was leaking or showed any appreciable damage after the tests. After the drops, there was no leakage from the primary receptacles, which remained protected by the absorbent material in the secondary packaging.

Date of tests: 2010-09-15

The tested samples fulfil the requirements of the drop test according to the packing provision P650. The positive test results showed that the premises regarding the requirements of the drop test of packaging provision P650 are still fulfilled by the carrier bags for one, three or four transport boxes (VTBs).

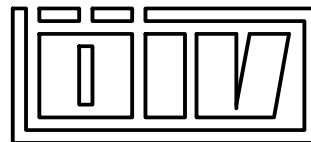
ÖSTERREICHISCHES INSTITUT FÜR VERPACKUNGSWESEN

Dir. Univ.-Lektor Th. Rieder
Head of Institute


Ing. Dipl.-Ing. (FH) M. Auer, MSc
Investigator


Wien, 2010-09-29

This Test Report No. 6811/9/10 consists of 6 pages and 7 pages of specifications.



This document is signed with the following qualified signatures:

Signature Value	7TdzF+uV1aYQKMVxVY17xK9AHNxqmqz2WF81R/NnE8fmM6ZtMcly7dzlygLDGzCJ1	
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