

TUV NORD  Certificate

for a Kiesling Low Noise Floor

Product name: **Kiesling** Low Noise

Floor with track

Type KBP

Serial-no.: SK015-016

Manufacturer: **Kiesling Fahrzeugbau GmbH**

Adress: Lauteracher Weg 10

D-89160 Tomeringen



This device fulfills PIEK
nighttime delivery standards
< 60 dB(A)

place/date: Hannover, 2012-06-25

certifier: Volker Werner

phone: +49 (0) 511-986-2027

fax: +49 (0) 511-986-2233

e-mail: VWerner@tuev-nord.de

TUV NORD  Certificate

for a Kiesling Cargo Body Doors

Product name: **Kiesling** Cargo Body Doors Manufacturer: **Kiesling Fahrzeugbau GmbH**
Type: KHT Adress: Lauteracher Weg 10
Serial-no.: SK030-01 D-89160 Tomeringen



This device fulfills PIEK
nighttime delivery standards
< 60 dB(A)

place/date: Hannover, 2012-06-25
certifier: Volker Werner
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TUV NORD  Certificate

for a Kiesling Cooling Body

Product name: **Kiesling** Cooling
Body
Type: KT
Serial-no.: KK

Manufacturer: **Kiesling Fahrzeugbau GmbH**
Adress: Lauteracher Weg 10
D-89160 Tomeringen



This device fulfills PIEK
nighttime delivery standards
< 60 dB(A)

place/date: Hannover, 2012-06-25
certifier: Volker Werner
phone: +49 (0) 511-986-2027
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e-mail: VWerner@tuev-nord.de



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KIESLING

Noise Test Report according the methods of measurement for peak noise during loading and unloading / PIEK Standard

Client:



Kiesling Fahrzeugbau GmbH
Lauteracher Weg 10
D-89160 Tomerdingen

Object:

Measuring of peak noise during loading and unloading according MON-RPT-2012-00466 / PIEK Standard

- Roll-off stop
- Rolling Noise (Rolling over the floor of the body)
- Noise of collision with walls of the body

Date: 2012-05-14

Our reference:
IS-ATC2-MUC/fe

Date of measurement: 24/04/2012

Project: 600 010 068

TÜV Report No.: TR.600010068.001.2012

Revision: 1.0

Department: TÜV SÜD Industrie Service GmbH
Bereich Anlagentechnik
Abteilung Messtechnik
IS-ATC2-MUC

This document consists of
10 Pages.
Page 1 of 10

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The test results refer exclusively
to the units under test.

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Table of revision

Revision	Date	Description	Author
1.0	2012-05-14	Initial Version	Fleckenstein



1 Scope

The acoustic laboratory of TÜV SÜD Industrie Service GmbH has been retained by Kiesling Fahrzeugbau GmbH to measure peak noise during loading and unloading (PIEK) at Kiesling Truck cooling body, Typ KT 73. The measurements have been performed on the 24th April 2012 between 10^{am} and 2^{pm} at Kiesling production site in Tomerdingen, Germany.

2 Standards and procedures

The testing was performed in accordance with the following standards and procedures:

- **“Methods of measurement for peak noise during loading and unloading”**
Dated: October 2002.
- **“Methods of measurement for peak noise during loading and unloading”**
Update: 2010.

According to Appendix B of the standard, stated above, the maximum peak levels L_{max} for deliveries to shops in the evening and night have to comply with the following values:

- | | |
|-----------|--|
| Day : | 7.00 am – 7.00 pm: No restrictions in terms of L_{max} . |
| Evening : | 7.00 pm – 11.00 pm: 65 dB(A) maximum. |
| Night : | 11.00 pm – 07.00 am: 60 dB(A) maximum. |

3 Equipment under test (EUT)

The measurements of the peak noise were done on a Kiesling cooling body. The Truck undercarriage is manufactured by MAN, Type MAN TGM 18 290 5057 C E5 Facelift (Picture 1). The Cooling Body is equipped with a Cooling unit, Manufacturer Carrier, Type Supra 1000 City Z. The Kiesling cargo body “Kiesling Tiefkühlkoffer, Type KT 73” is a cooling body with a carriage size of 7300 mm length, 2400 mm height and 2470 mm width. The cargo body is equipped with a tailboard, manufactured by MBB Palfinger, type 2000 K Alustar. The walls are collision noise reduced walls, called “Kiesling low-noise fillet”. The tailboard has 2 Kiesling roll off stops. The cargo body floor has a special Kiesling “low noise” track, type “Kiesling floor in Low-noise Design” with a track width of 550 mm.



Picture 1: Equipment under test

4 Measurement devices

The following measurement devices were used to record the noise levels:

Description	Manufacturer	Type	Ident.-Nr.	Accuracy	Calibration validity
Sound Level Meter @ Mpt 2	Norsonic	131	QS-004 03965	IEC 61672 class 1	12/2013
Mikrophon	Norsonic	1228	QS-004 03966	IEC 61672 class 1	12/2013
Pre-amplifier	Norsonic	1207	12610	IEC 61672 class 1	12/2013
Sound Level Meter @ Mpt 1	Brüel & Kjaer	2250	QS-00400978	IEC 61672 Klasse 1	12/2013
Sound Level Meter	Brüel & Kjaer	4189	QS-00400979	IEC 61672 Klasse 1	12/2013
Sound Calibrator	Norsonic	1251	QS-004 05824	IEC 60942 class 1	01/2013

The calibration of the sound level meter was verified before and after the measurement in accordance with manufacturer's recommendation with the sound calibrator. The sound level meters setup was A-weighting, "fast" adjustable integration time and reading option "Max-Hold". Both sound level meters were equipped with windscreens. The A-weighted sound pressure level and the octave-band levels were measured and recorded.

5 Measuring environment

The measurements have been performed on the 24th April 2012 between 10^{am} and 2^{pm} at Kiesling production site in Tomerdingen, Germany. The used measurement area was the area behind the production hall. The ground surface was flat and acoustically hard reflecting. There wasn't any object between the measured object and the 2 microphone positions. Furthermore, there wasn't any reflecting object or wall in a radius of 25 m around the EUT (see picture 2).

Weather conditions during test were dry but clouded. Some small spots on the measurement area were still slightly wet, caused by rain on the day before.

Meteorological conditions

Baro. Pressure:	998 [hPa]
Temperatur:	8 [°C]
Humidity:	78 [%]
Wind speed:	< 4 [m/s]

All measurements were performed in a height of 1.2 m above ground and in a distance of 7.5 m from the measured equipment.



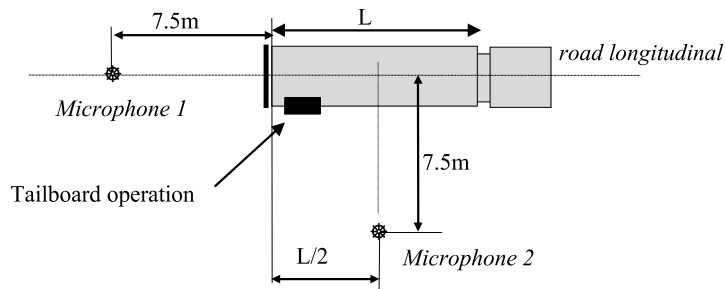
Picture 2: Measurement setup with 2 microphone positions

6 Measurements

6.1 Kiesling Roll-off stop

The Kiesling cargo body was equipped with a tailboard, manufactured by MBB Palfinger, type 2000 K Alustar. This tailboard has 2 Kiesling roll off stops, which were tested whether they fulfill the requirements of the PIEK Standard.

The measurement of peak noise of the Kiesling Roll-off stop was done according chapter 6 “Methods of measurement for tailboards and walls of vans and lorries, and fasteners”. In Detail, chapter 6.2.2 “Roll-off stop”. The measurement arrangement is defined in chapter 6.1. See picture 3 for microphone positions. The cargo body was empty during the test.



Picture 3: Microphone positions - Roll-off stop measurement

Results:

Results, 6.2.2	sound pressure level $L_{pAF,max}(7,5m)$ [dB/20 μ Pa]							Measurement result
Meas. Points	Background Noise	#1	#2	#3	#4	#5	Energetic average	
1	47,5	67,8	68,0	68,3	68,0	68,8	68,2	
2	46,5	63,6	62,8	64,0	63,0	63,5	63,4	

The background noise was at least 10 dB lower than the noise of the EUT at all microphone positions, no correction for background noise was made.

6.2 Kiesling Cargo body

The Kiesling cargo body is a cooling body with a carriage size of 7300 mm length, 2400 mm height and 2470 mm width. The floor has a special Kiesling “low noise” track, type “Kiesling Low-noise floor” with a track width of 550 mm to reduce rolling noise.

The measurement of peak noise of the Kiesling cargo floor was done according chapter 6 “Methods of measurement for tailboards and walls of vans and lorries, and fasteners”. In Detail, chapter 6.3.2 “Rolling over the floor of the body”. The measurement arrangement is defined in chapter 6.1. See picture 1 for microphone positions. The cargo body was empty during the test besides the quiet goods cart (see picture 4) and the operator of the cart. The cart was loaded with a 25 kg cement bag and equipped with hard standard plastic wheels, 100 mm diameter.



Picture 4: Quiet goods cart with 25 kg load on Kiesling low noise floor

Results:

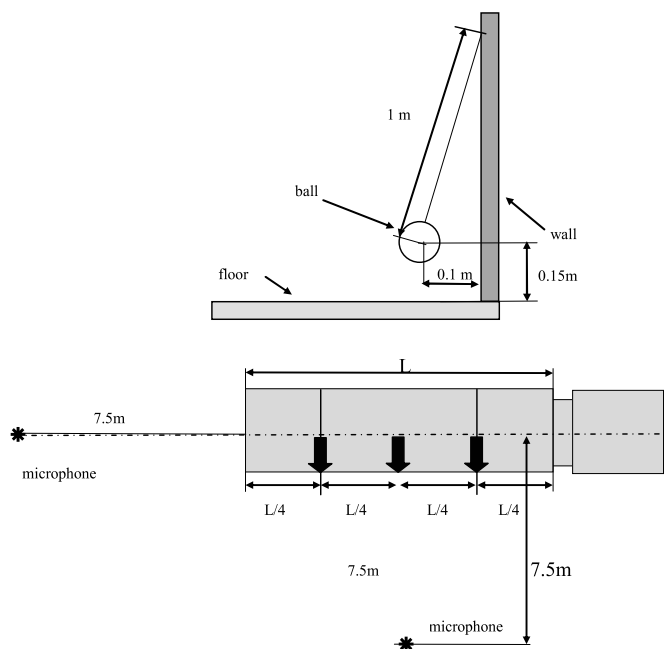
Results, 6.3.2	sound pressure level $L_{pAF,max (7,5m)}$ [dB/20 μ Pa]					Measurement result
Meas. Points	Background Noise	#1	#2	#3	Energetic average	
1	49,8	52,7	57,1	54,8	53,9	54
2	48,6	50,1	53,6	51,4		

Although, the background noise was not at least 10 dB lower than the noise of the EUT at all microphone positions, no correction for background noise was made.

6.3 Kiesling Cargo walls

The Kiesling cargo body type KT 73 is a cooling body with a carriage size of 7300 mm length, 2400 mm height and 2470 mm width. The walls are equipped with plastic strips to reduce noise by collision.

The measurement of peak noise of the Kiesling cargo walls was done according chapter 6 “Methods of measurement for tailboards and walls of vans and lorries, and fasteners”. In Detail, chapter 6.4 “Noise of collision with walls of the body”. The measurement arrangement is defined in chapter 6.1 and 6.4. See picture 5 for microphone positions and measurement setup. The cargo body was empty during the test besides the operator of the steel ball. The 1 kg steel ball was raised 10 cm from the cargo floor and hung on a 1 m cord. (See picture 6)



Picture 5: Measurement setup - Collision noise



Picture 6: Measurement setup with 1 kg steel ball

(Cargo body wall was equipped with additional plastic protection for testing)

Results:

		sound pressure level $L_{pAF,max}$ (7,5m) [dB/20 μ Pa]								
Meas. Points	Background Noise	1/4L			1/2L			3/4L		
		#1	#2	#3	#4	#5	#6	#7	#8	#9
1	49,8	57,0	57,6	56,4	55,7	58,6	54,0	58,2	56,2	58,2
2	48,6	58,3	59,3	59,1	55,0	57,4	55,5	56,2	56,8	59,6
1	Energetic average	57,0			56,5			57,6		
2	Energetic average	58,9			56,1			57,8		
Measurement Result		59								

Although, the background noise was not at least 10 dB lower than the noise of the EUT at all microphone positions, no correction for background noise was made.



7 Resume

The following results were achieved during test:

	Measurement result L_{max} [dB(A)]	Requirements of peak noise during loading and unloading L_{max} [dB(A)]			Result
		Day	Evening 7.00 pm – 11.00 pm	Night 11.00pm – 6.00 am	
Kiesling Roll off stop	68	No restriction	65	60	Not fulfilled
Kiesling low noise floor	54	No restriction	65	60	Fulfilled
Kiesling cargo walls	59	No restriction	65	60	Fulfilled

Besides the Kiesling Roll-off stop, all tested equipment fulfils the requirements of the referenced PIEK standard.



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Noise Test Report according the methods of measurement for peak noise during loading and unloading / PIEK Standard

Client:



Kiesling Fahrzeugbau GmbH
Lauteracher Weg 10
D-89160 Tomerdingen

Object:

Measuring of peak noise during loading and unloading according MON-RPT-2012-00466 / PIEK Standard

- Doors for cargo bodies

Date: 2012-05-14

Our reference:
IS-ATC2-MUC/fe

Date of measurement:
Project:

24/04/2012
600 010 068

This document consists of
7 Pages.
Page 1 of 7

TÜV Report No.:

TR.600010068.002.2012

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1.0

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Abteilung Messtechnik
IS-ATC2-MUC

The test results refer exclusively to the units under test.

Author:

Tobias Fleckenstein

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Table of revision

Revision	Date	Description	Author
1.0	2012-05-14	Initial Version	Fleckenstein

1 Scope

The acoustic laboratory of TÜV SÜD Industrie Service GmbH has been retained by Kiesling Fahrzeugbau GmbH to measure peak noise during loading and unloading (PIEK) at Kiesling Truck cooling body, Typ KT82. The measurements have been performed on the 24th April 2012 between 10^{am} and 2^{pm} at Kiesling production site in Tomerdingen, Germany.

2 Standards and procedures

The testing was performed in accordance with the following standards and procedures:

- **“Methods of measurement for peak noise during loading and unloading”**
Dated: October 2002.
- **“Methods of measurement for peak noise during loading and unloading”**
Update: 2010.

According to Appendix B of the standard, stated above, the maximum peak levels L_{max} for deliveries to shops in the evening and night have to comply with the following values:

Day :	7.00 am – 7.00 pm: No restrictions in terms of L_{max} .
Evening :	7.00 pm – 11.00 pm: 65 dB(A) maximum.
Night :	11.00 pm – 07.00 am: 60 dB(A) maximum.

3 Equipment under test (EUT)

The measurements of the peak noise were done on a Kiesling cooling body without undercarriage. The Kiesling cargo body “Kiesling Tiefkühlkoffer” is a cooling body with a carriage size of 8150 mm length, 2600 mm height and 2470 mm width. The cargo body is equipped with 2 doors at the back, manufactured by Kiesling, type “Kiesling rear doors with hinges and locks”. See following pictures 1 and 2.



Picture 1: Carrier with doors



Picture 2: Label of tested carrier body



4 Measurement devices

The following measurement devices were used to record the noise levels:

<i>Description</i>	<i>Manufacturer</i>	<i>Type</i>	<i>Ident.-Nr.</i>	<i>Accuracy</i>	<i>Calibration validity</i>
Sound Level Meter @ Mpt 2	Norsonic	131	QS-004 03965	IEC 61672 class 1	12/2013
Mikrophon	Norsonic	1228	QS-004 03966	IEC 61672 class 1	12/2013
Pre-amplifier	Norsonic	1207	12610	IEC 61672 class 1	12/2013
Sound Level Meter @ Mpt 1	Brüel & Kjaer	2250	QS-00400978	IEC 61672 Klasse 1	12/2013
Sound Level Meter	Brüel & Kjaer	4189	QS-00400979	IEC 61672 Klasse 1	12/2013
Sound Calibrator	Norsonic	1251	QS-004 05824	IEC 60942 class 1	01/2013

The calibration of the sound level meter was verified before and after the measurement in accordance with manufacturer's recommendation with the sound calibrator. The sound level meters setup was A-weighting, "fast" adjustable integration time and reading option "Max-Hold". Both sound level meters were equipped with windsocks. The A-weighted sound pressure level and the octave-band levels were measured and recorded.

5 Measuring environment

The measurements have been performed on the 24th April 2012 between 10^{am} and 2^{pm} at Kiesling production site in Tomerdingen, Germany. The used measurement area was the area behind the production hall. The ground surface was flat and acoustically hard reflecting. There wasn't any object between the measured object and the 2 microphone positions. Furthermore, there wasn't any reflecting object or wall in a radius of 25 m around the EUT.

Weather conditions during test were dry but clouded. Some small spots on the measurement area were still slightly wet, caused by rain on the day before.

Meteorological conditions

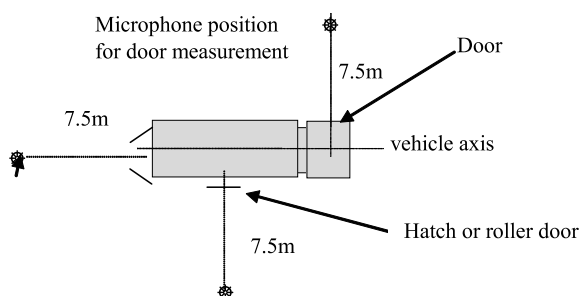
Baro. Pressure:	998 [hPa]
Temperatur:	8 [°C]
Humidity:	78 [%]
Wind speed:	< 4 [m/s]

All measurements were performed in a height of 1.2 m above ground and in a distance of 7.5 m from the measured equipment.

6 Measurement of the Kiesling cargo body doors

The Kiesling cargo body KT 82 was equipped with 2 backside doors, manufactured by Kiesling, type “Kiesling rear doors with hinges and locks”. These doors were tested whether they fulfill the requirements of the PIEK Standard. Only the doors of the Kiesling cargo body were tested.

The measurement of peak noise of the Kiesling cargo body doors was done according chapter 5 “Method of measurement for opening and closing doors of bodies and cabins and air curtains for cargo bodies”. In Detail, chapter 5.1 “5.1 Doors, hatches, hinged and roller doors and air curtains for cargo bodies”. See picture 3 for microphone positions. The cargo body was empty during the test.



Picture 3: Microphone positions – door noise measurement

Results:

Results, 5.1	sound pressure level $L_{pAF,max (7,5m)}$ [dB/20 μ Pa]							Energetic average	Measurement result
Meas. Points	Background Noise	#1	#2	#3	#4	#5			
1	47,5	57,8	57,3	58,6	58,9	57,7	56	56	
2	46,5	51,6	52,3	53,4	53,7	54,7			

Although the background noise was not at least 10 dB lower than the noise of the EUT at all microphone positions, no correction for background noise was made.



7 Resume

The following result was achieved during test:

	Measurement result L_{max} [dB(A)]	Requirements of peak noise during loading and unloading L_{max} [dB(A)]			Result
		Day	Evening 7.00 pm – 11.00 pm	Night 11.00pm – 6.00 am	
Kiesling cargo body doors	56	No restriction	65	60	Fulfilled

The Kiesling cargo body doors fulfil the requirements of the referenced PIEK standard.