

PPAP

Production Process and Product Approval acc. to AIAG 4th Edition

Design drawing:

Index revision:

Revision date:

PPAP valid for:

Rosenberger part nos.:

Customer part nos.:

PPAP Date:

Editor:
Name:
Phone:
E-Mail:

PPAP

Production Process and Product Approval acc. to AIAG 4th Edition

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1

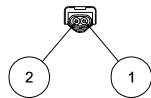
Design Record

PPAP Date:

Editor:
Name:
Phone:
E-Mail:

Side A

Side B



cn_00001

Pin
1
2

E7K10A-1AQX5-Y

18 mm ±4

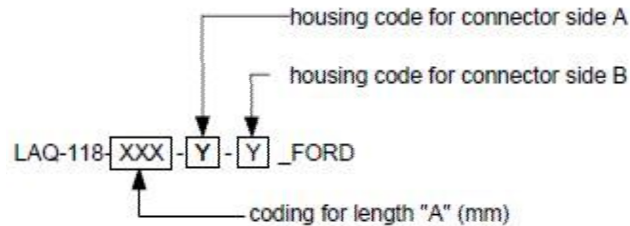
GG 2Speed 132

"A"

Pinning

Terminal Side A	Pin	Terminal Side B	Pin	Color/Description
cn_00001	2	cn_00002	2	green
cn_00001	1	cn_00002	1	white

Dimensions (mm)			
Range (length "A")	200 to 1000	1001 to 5000	5001 to 20000
Tolerance (mm)	+20/-0	+30/-0	+40/-0



5)

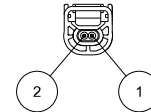
1)

2)

E7K11A-1AQX5-Y

18 mm ±4

60 mm ±10

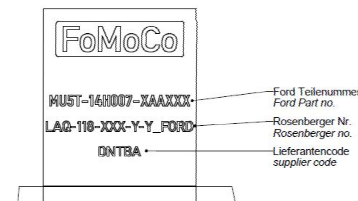


cn_00002

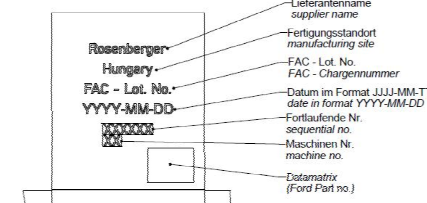
Pin
1
2

5) Label

Seite / side 1



Seite / side 2



2) Marking

ROSENBERGER ASSEMBLY PART NUMBER	FORD ASSEMBLY PART NUMBER
LAQ-118-XXXX-A-A_FORD	MU5T-14H007-AAAXXXX
LAQ-118-XXXX-B-B_FORD	MU5T-14H007-BAAXXXX
LAQ-118-XXXX-C-C_FORD	MU5T-14H007-CAAXXXX
LAQ-118-XXXX-D-D_FORD	MU5T-14H007-DAAXXXX
LAQ-118-XXXX-E-E_FORD	MU5T-14H007-EAAXXXX
LAQ-118-XXXX-E-F_FORD	MU5T-14H007-FAAXXXX
LAQ-118-XXXX-B-G_FORD	MU5T-14H007-GAAXXXX
LAQ-118-XXXX-D-H_FORD	MU5T-14H007-HAAXXXX

Rosenberger

vertraulich / confidential

Drawing Release

Name: _____

Date: _____

Department: _____

Signature: _____

Calculated
weigh [g]

external

Customer P/N

date	name
drawn 16.02.2022	D_Dorhuber
appr. 16.02.2022	A.Eder

Supplier P/N

title:

Cable Assembly

drawing-no.:

LAQ-118-XXX-Y-Y_FORD

remarks:

sheet:
1
of: 1

- 1) Marking: RAC batch no
3) Electrical tests acc. to RN_030-01
4) Tensile strength acc. assembly instruction

001	-	D_Dorhuber	16.02.2022	Initial creation
rev.	change no.	name	date	Revision text

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Design FMEA

PPAP Date:

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Confidential Information

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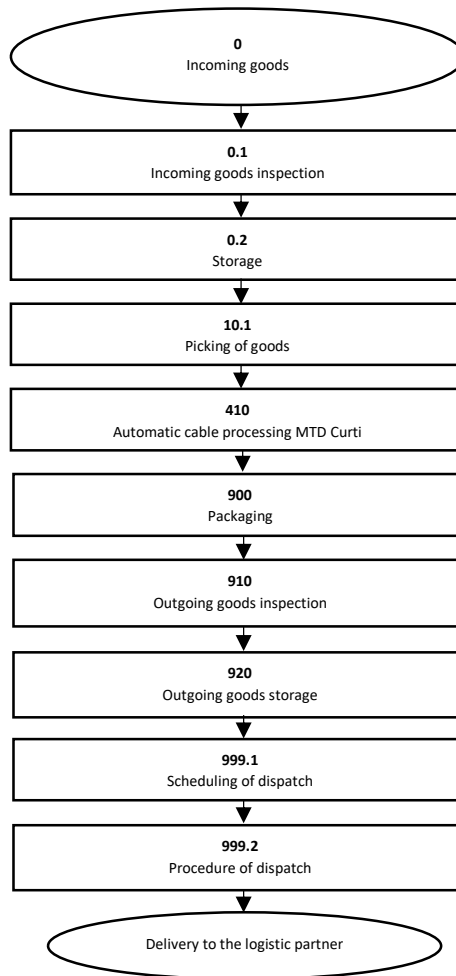
Revision date:

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Process Flow Diagram

PPAP Date:

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- ## Process Flow Guide

PPAP Manual 2.2.5, Note 1: “Process flow diagrams for ‘families’ of parts are acceptable if the new parts have been reviewed for commonality by the organization.”

THIS PROCESS FLOW DIAGRAM MAY BE FOR AN ANALOGUE PART WHICH UNDERGOES IDENTICAL PROCESSES TO THE SAMPLED PART.

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Process FMEA

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Control Plan

PPAP Date:

Editor:
Name:
Phone:
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FO-TP-020			CONTROL PLAN									
☐ Prototype ☐ Pre-Launch ☒ Production												
Control Plan Number			Key Contact / Phone / Email					Date (Original)		Date (Revision)		
PLP_MTD_LAQ-112/118-XXXX-Y-Y Rev.00								0		24.03.2022		
Part Number / Latest Change Level			Core Team					Customer Engineering Approval / Date (If Req'd.)				
MUST-14H007-DAA1775 / 90005589			Mónika Major / Zoltán Szabó / Pataki Attila									
Part Name / Description			Supplier / Plant Approval / Date					Customer Quality Approval / Date (If Req'd.)				
Cable Assembly			Rosenberger Automotive Cabling D / HUN									
Supplier / Plant		Supplier Code	Customer's Approval / Date (If Req'd.)					Date / Attendance customer representative:				
RAC D / HUN		-						RJ / RH				
PART/PROCESS-NUMBER	PROCESS NAME/OPERATION-DESCRIPTION	MACHINE, DEVICE, JIG, TOOLS, FOR MFG.	NO.	PRODUCT	PROCESS	SPECIAL-CHAR/CLASS	PRODUCT/PROCESS SPECIFICATION/TOLERANCE	EVALUATION/MEASUREMENT TECHNIQUE	SIZE	SAMPLE PLAN FREQ.	CONTROL METHOD	REACTION PLAN
0	Incoming Goods	-	1	Material Identity	-	-	AA-WE-001	Visual	100%	Per consignment	SAP	PB-QM-002
			2	Damage	-	-	AA-WE-001	Visual	100%	Per consignment		
			3	Completeness	-	-	AA-WE-001	Visual	100%	Per consignment		
0.1	Incoming goods inspection	-	1	See Quality Control Plan in CAQ	-	-	AA-WE-001 See Quality Control Plan in CAQ	Testing Tool According to Quality Control Plan	PA-FL-001	PA-FL-001	CAQ/SAP	PB-QM-002
0.2	Storage	-	1	Number of boxes, containers	-	-	AA-WE-001	Visual	100%	Per consignment	SAP	PB-QM-002
			2	Identity	-	-	AA-WE-001	Visual	100%	Per consignment		
			3	Labelling	-	-	AA-WE-001	Visual	100%	Per consignment		
10.1	Picking of goods	-	1	Material Identity	-	-	AA-ML-004	Visual	100%	Per Production Order		PB-QM-002
			2	Quantity	-	-	AA-ML-004	Visual, Counting scale	100%	Per Production Order		
410	Automatic cable processing MTD	Curti	1	Setup	-	-	Program acc. to partnumber	Visual	1 time	Change over / shift start	-	PB-QM-002
			2	Cut, Cut in dimensions, Depth of incision, Length, Labelling	-	-	Acc to drawing and the MA_E7V002	Visual Digital calliper 0-150mm/0,01	3pcs	PA-FL-001	CAQ	
			6	Crimp dimensions	-	-	Crimp height (isolation) acc. to MA_E7V002	Micrometer 0-25mm/0,001	3pcs	PA-FL-001	CAQ	PB-QM-002
							Crimp height (contact) acc. to MA_E7V002	Micrometer 0-25mm/0,001	3pcs	PA-FL-001	CAQ	
							Distance form strain relief sheath acc. to MA_E7V002	Measuring microscope MM1	3pcs	PA-FL-001	CAQ	
							Wire overhang acc. to MA_E7V002	Visual	3pcs	PA-FL-001	CAQ	
							Damage and burr free surface acc. to Rosenberger norm RN031_02	Visual	3pcs	PA-FL-001	CAQ	
				Cross section analysis acc. to Rosenberger norm RN031_02	Komax microlab 35	1pc	PA-FL-001	Investigation protocol CAQ				
			7	Pull off force	-	-	Pull off force acc. to MA_E7V002	Pulltester PT201PT25 0-500N/0,5	3pcs	PA-FL-001	CAQ	PB-QM-002
			8	Position of contacts to lower shell	-	-	Acc to MA_E7V002	Measuring microscope MM1	3pcs	PA-FL-001	CAQ	
			9	Position of housing to lower shell	-	-	Right type of housing pushed together with lower shell. Security lock is on.	Visual	3pcs	PA-FL-001	CAQ	PB-QM-002
			10	Content of laser marking	-	-	Acc. to product drawing Customer ID and RAC batch No.	Visual	3pcs	PA-FL-001	CAQ	PB-QM-002
							Length of cable Acc. to product drawing	Steel line. 0-5.000mm /1	3pcs	PA-FL-001	CAQ	PB-QM-002
11	Position of laser marking	-	-	Acc. to product drawing	Steel line. 0-5.000mm /1	3pcs	PA-FL-001	CAQ	PB-QM-002			
12	Content of label marking	-	-	Acc. to product drawing (Logo, customer ID, internal ID, QR-code)	Visual	3pcs	PA-FL-001	CAQ	PB-QM-002			
				QR-code quality and content	Scanner							
13	Position of label	-	-	Acc. to product drawing	Steel line. 0-5.000mm /1	3pcs	PA-FL-001	CAQ	PB-QM-002			
900	Packaging	Packing table	1	Labeling	-	-	acc. To production order	Visual	100%	100%	-	PB-QM-002
910	Outgoing goods inspection	QS	1	Identity Material	-	-	Material due to material number, drawing	Visual	(AQL Table)	Per consignment	SAP	PB-QM-002
			2	Printing	-	-	Printing is right and readable	Visual				
			3	Housing	-	-	Plugging of housing acc. to drawing	Visual				
			4	Damage	-	-	Damage free surfaces	Visual				
				Length acc. To drawing								
			5	Length	-	-		Ruler 0-1000mm/0,5				
6	Quantity	-	-	Packing material qty acc. to FA	Visual							
920	Outgoing goods storage	-	1	-	Storage area	-	place in stock	Visual	100%	100%	SAP	PB-QM-002
999.1	Scheduling of dispatch	-	1	Identity	-	-	Product, package, labels, acc- to dispatch note acc. to AA-AZ-005	Visual	100%	per packing unit	-	PB-QM-002
			2	Labeling VDA	-	-	Comparison of VDA etikett with internal etikett (Filling capacity of each carton, quantity carton, article number) acc. to AA-AZ-005	Visual	100%	per packing unit		
			3	Quantity	-	-	Packed qty due to dispatch note acc. to AA-AZ-005	Visual	100%	per packing unit		
			4	Packing unit	-	-	Pallets bounded acc. to AA-AZ-005	Visual	100%	per packing unit		
999.2	Procedure of dispatch	-	1	Quantity of packs	-	-	Packing quantity due to dispatch note	Visual	100%	per consignment	SAP	PB-QM-002
999.3	Requalification	-	1	all	-	-	All functional and drawing characteristic	AA-QM-006	AA-QM-006	AA-QM-006	CAQ/SAP	PB-QM-002

Legende:

AA = Arbeitsanweisung/ Working Instruction
 PA = Prüfanweisung/ Control Instruction
 FO = Formularvorlage/ Template
 FA = Fertigungsauftrag/ Production Order
 ESP = Erststück Prüfung/ First Piece Inspection
 LSP= Letztstück Prüfung/ Last Piece Inspection

Control Plan Guide



Abbreviations used:

CPL	Control Plan
QDE	Quality Data Collection
WEP	Incoming goods / Outgoing goods inspection
CAQ	Computer Aided Quality
ERPS	Enterprise-Resource-Planning System
*, WE_Attr.; WE_Var etc	System-generated dynamic sampling size, similar to e.g. ISO 2859, ISO3951
F1/F3	Predetermined sampling size (Fx, where x=sampling size)

Referenced documents:

WORK INSTRUCTIONS:

RAA00031 (RAA_31)	Performing inspections in the production dept.
RAA00065 (RAA_65)	Workflow and handling in incoming inspection
RAA00092 (RAA_92)	setting guidelines for camera test stations
RAA00133 (RAA_133)	Performance and inspection of coloured ID of semi-finished products
RAA00233 (EOB_AA_06, NA_AA_06, 08)	Washing machinery
RAA00248 (GAL_AA_02)	Analysis intervals for active pools
RAA00363 (M_AA_25)	Carrying out tests in assembly
RAA00430 (MAF_AA_01)	Performance of initial sampling inspections for robot-assembled parts
RAA00498 (QM_AA_25)	Inspections in the piece-part production dept
RAA00499 (QM_AA_30)	Performance of first sample inspections in the assembly dept.
RAA00502 (QM_AA_50)	Performance of inspections in control centre
RAA00576 (ROHU_AA_03)	Performance of inspections in the assembly dept
RAA00737 (LVS_AA_05)	Storage, commissioning & packing of goods
RAA00750 (QM_AA_13)	Requalification test
RAA00758 (ROHU_AA_04)	Performance of initial sampling inspections
RAA00760 (ROHU_AA_06)	Performance of random sampling inspections
RAA00773 (ROHU_AA_16)	Performance of outgoing inspection
RAA00774 (ROHU_AA_17)	Hand packaging and packaging with different machines
RAA00823 (ROHUMA_AA_02)	handling parts in preassembling
RAA00824 (ROHUMA_AA_03)	random visual inspection
RAA00839 (QM_AA_20)	Performance of inspections by QM-inspector of galvanic plating
RAA00842 (QM_AA_61)	Execution of Product Audits in CAQ system

FORMS:

RFB00144	Order data sheet
RFB00452	8D-Report
RFB00695	List for determining quality indicators
RFB00700	documentation card for completed tests
RFB00723	Blocked goods notice

Explanatory notes:

Visual check: these are workmanship standard checks which focus on the appearance of parts, e.g. if parts are free of deformation, burrs, cracks, spots, residues and scratches.

Several/Various: the terms “several” and “various” are used in the “Evaluation Measurement Technique” column where generic inspections are performed - e.g. an identity inspection according to work instructions where there is no test plan in which the test equipment is specified. In such cases the tester inspects according to the drawing and selects suitable test equipment for the required tests. Since it is not possible to list all internal drawing characteristics in the CPL, the “Evaluation Measurement” column only shows “several” or “various”. Typically, the inspector uses standard equipment such as calipers, micrometers, height gauges, plug gauges or profile projectors. If these standard devices do not suffice, additional measurement devices such as coordinate measurement machines, roughness depth gauges and others can be used as applicable.

Special Char. Class: In this column, special characteristics are marked either by the customer symbol, if the special characteristic was defined by the customer, or by a black triangle if the special characteristic was defined by Rosenberger. If the field is blank, this characteristic is not classified as a special characteristic.

Tooling diagram: The tooling diagram is an internal document relevant for piece part production. This document specifies all tools, including product specific test equipment and process parameters for piece part production e.g. required tools, rpm speed.

Camera inspection: 2 Golden samples are produced at the start of the production order and a comparison accuracy measurement of the samples is performed by QM personnel, as detailed in Rosenberger work instruction RAA00758

PPAP Manual 2.2.7, Note 1:

“Control Plans for ‘families’ of parts are acceptable if the new parts have been reviewed for commonality by the organization.”

THIS CONTROL PLAN MAY BE FOR AN ANALOGUE PART WHICH UNDERGOES IDENTICAL PROCESSES TO THE SAMPLED PART.

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Measurement System Analysis Study

PPAP Date:

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Calibration of inspection and test equipment

According to IATF 16949 7.1.5.3.2, if an accredited laboratory exists but is very remote and/or expensive and the inspection or test equipment manufacturer is nearby and available can they be used even if they are not accredited to ISO/IEC 17025.

The inspection or test equipment manufacturer developed the methodology to maintain and adjust the equipment to meet calibration requirements as part of the design and manufacture of the inspection or test equipment. Therefore, the original equipment manufacturer of the inspection and test equipment is qualified to calibrate the equipment they designed and manufactured.

How to interpret the MSA Compendium of Results

The MSA Compendium of Results is based on the AIAG 'MSA' manual. It is a Family-MSA for the inspection equipment used in our production processes, but not all of them are used for any specific automotive product.

The GRR% values are calculated in relation to the total width of tolerance:

The MSA is a worst case analysis. The total **tolerance space** for the MSA-calculation is used to show that the measurement systems could even be acceptable for an extreme tolerance situation under certain circumstances as explained in the MSA manual.

We use small tolerance spaces for significant characteristics in our internal production - and for supplied parts - so that we can ensure that we meet the larger tolerances of our customers' specifications on the finished products.

A "worst case" tolerance space of e.g. $\pm 0.01\text{mm}$ for a linear dimension would translate to approximately $\pm 0.05\text{mm}$ on the technical data sheet for our finished product.

In the calculation formula, GRR% and the total tolerance are inversely proportional.

Therefore when the total tolerance space rises from 0.02mm (± 0.01 = "worst case" from the MSA) to 0.10mm (± 0.05 = real tolerance space used on the drawing), the GRR% is reduced from e.g. **29.83%** to **5.97%** and so the GRR% is okay and no action is required.

Example:

Inspection Equipment: Mitutoyo dial gauge	MSA Example "Worst case"	<u>Real</u> dimension on the Rosenberger Technical data sheet
Dimension /Measuring range	7-11mm	8mm
Tolerance	±0.01mm	±0.05mm
Total tolerance space	0.02mm	0.10mm
Gage R&R / GRR	29.83%	<u>5.97%</u>

MSA (R&R)

Compendium of Results



Measuring range in mm		0 - 3	3 - 7	7 - 11	11 - 17	17 - 22	22 - 30	30 - 40	40 - 50	Tolerance space
Dial gauge Sylvac three-point measuring head	EV			27,77%	26,00%					0,02 mm
	AV			10,91%	14,41%					
	GRR			29,83%	29,72%					
Dial gauge Mitutoyo three-point measuring head	EV		27,18%	24,81%	24,48%					0,02 mm
	AV		10,96%	16,11%	15,35%					
	GRR		29,30%	29,59%	28,90%					
Dial gauge Sylvac two-point measuring head	EV	26,00%	20,56%	27,77%	27,77%					0,02 mm
	AV	8,73%	21,65%	9,75%	10,33%					
	GRR	27,42%	29,85%	29,43%	29,63%					
Dial gauge Mitutoyo two-point measuring head	EV	27,77%	21,86%	29,54%	26,59%					0,02 mm
	AV	6,66%	11,90%	2,01%	13,82%					
	GRR	28,56%	24,89%	29,61%	29,96%					
Dial gauge Mitutoyo	EV	28,36%		26,59%	24,16%	28,36%	26,59%	28,95%	26,00%	0,02 mm
	AV	9,69%		9,85%	16,09%	0,75%	13,82%	7,15%	9,32%	
	GRR	29,97%		28,35%	29,03%	28,37%	29,96%	29,82%	27,62%	
Dial gauge Mitutoyo old version	EV	26,59%	27,18%	28,36%	20,09%	25,40%	25,40%	24,81%	21,86%	0,02 mm
	AV	6,16%	9,80%	8,48%	22,19%	4,97%	6,33%	4,35%	7,36%	
	GRR	27,29%	28,89%	29,60%	29,93%	25,89%	26,18%	25,19%	23,06%	
Dial gauge Mitutoyo	EV	28,95%		27,18%	26,00%		24,81%			0,02 mm
	AV	2,27%		8,61%	10,48%		13,38%			
	GRR	29,04%		28,51%	28,03%		28,19%			
Dial gauge low perssure Sylvac groove measuring head	EV	23,63%	26,00%	27,77%	28,95%					0,02 mm
	AV	10,67%	6,25%	5,28%	2,27%					
	GRR	25,93%	26,74%	28,27%	29,04%					
Dial gauge low perssure Sylvac	EV		26,59%	28,36%	26,59%	24,81%				0,02 mm
	AV		9,85%	0,75%	9,85%	16,66%				
	GRR		28,35%	28,37%	28,35%	29,89%				
Micrometer Mitutoyo	EV	23,63%		24,81%		23,63%	29,54%			0,02 mm
	AV	15,63%		15,57%		2,96%	3,21%			
	GRR	28,33%		29,29%		23,82%	29,71%			
Micrometer Mitutoyo old version	EV	21,27%		23,04%	27,18%		25,40%			0,02 mm
	AV	19,77%		13,48%	9,80%		14,44%			
	GRR	29,04%		26,70%	28,89%		29,22%			
Micrometer Mitutoyo groove measuring head	EV	21,27%		26,59%	24,81%	27,18%	26,00%			0,02 mm
	AV	15,74%		11,75%	8,85%	11,53%	2,20%			
	GRR	26,46%		29,07%	26,34%	29,52%	26,09%			
Micrometer Mitutoyo old version	EV						18,31%		19,50%	0,02 mm
	AV						16,94%		15,82%	
	GRR						24,94%		25,11%	
Micrometer Mitutoyo thread measuring head	EV						21,86%	27,77%		0,02 mm
	AV						6,14%	4,53%		
	GRR						22,71%	28,14%		
Micrometer Mitutoyo thread measuring head	EV		26,00%			27,18%				0,02 mm
	AV		7,52%			7,38%				
	GRR		27,06%			28,16%				
Micrometer analog Mitutoyo groove measuring head	EV		14,18%			29,54%				0,02 mm
	AV		7,96%			3,21%				
	GRR		16,26%			29,71%				
Micrometer analog Mitutoyo	EV						13,23%	28,36		0,02 mm
	AV						13,60%	6,58		
	GRR						18,97%	29,11		
Micrometer Mitutoyo QuantuMike	EV	9,30%		9,30%		8,10%	6,60%			0,02 mm
	AV	2,40%		2,40%		3,90%	7,20%			
	GRR	9,60%		9,60%		9,00%	9,90%			

MSA (R&R)

Compendium of Results



Measuring range in mm		0 - 3	3 - 7	7 - 11	11 - 17	17 - 22	22 - 30	30 - 40	40 - 50	Tolerance space
Caliper gauge Mitutoyo	EV			9,45%			9,45%		23,63%	0,05 mm
	AV			10,32%			27,15%		14,00%	
	GRR			13,99%			28,75%		27,47%	
Inside calliper analog Interrest	EV		18,91%	26,00%						0,05 mm
	AV		21,70%	12,75%						
	GRR		28,78%	28,95%						
Lever gauge analog Mahr	EV	26,00%								0,05 mm
	AV	6,89%								
	GRR	26,89%								
Measuring range in mm		0 - 60	60 - 120	120 - 180	180 - 240	240 - 300	300 - 380	380 - 480	480 - 550	Tolerance space
Caliper gauge analog Mitutoyo	EV	26,00%	27,18%	26,00%						0,05 mm
	AV	4,11%	9,21%	6,89%						
	GRR	26,32%	28,70%	26,89%						
Caliper gauge analog Mitutoyo	EV		20,09%		24,81%		24,81%			0,05 mm
	AV		8,67%		10,58%		2,62%			
	GRR		21,88%		26,97%		24,95%			
Caliper gauge analog Mitutoyo	EV		23,63%				22,45%	26,00%		0,05 mm
	AV		7,17%				9,63%	10,48%		
	GRR		24,70%				24,43%	28,03%		
Caliper gauge analog Mitutoyo	EV		28,36%				24,81%	23,63%		0,05 mm
	AV		5,18%				9,49%	12,90%		
	GRR		28,83%				26,55%	26,92%		
Measuring range in mm		0 - 15	15 - 30	30 - 45	45 - 60	60 - 80	80 - 120	120 - 170	170 - 200	Tolerance space
Micrometer analog Mitutoyo	EV	27,57%	23,63%							0,03 mm
	AV	4,83%	16,83%							
	GRR	27,99%	29,05%							
Micrometer analog Mitutoyo	EV		17,72%		17,72%					0,03 mm
	AV		6,18%		24,20%					
	GRR		18,77%		29,99%					
Micrometer analog Mitutoyo	EV				13,75%	27,57%				0,03 mm
	AV				4,59%	11,12%				
	GRR				14,53%	29,73%				
Micrometer analog Mitutoyo	EV					27,57%				0,03 mm
	AV					9,17%				
	GRR					29,06%				
Micrometer analog Mitutoyo	EV						25,60%			0,03 mm
	AV						11,28%			
	GRR						27,97%			
Micrometer analog Mitutoyo	EV							27,57%		0,03 mm
	AV							7,12%		
	GRR							28,47%		
Micrometer analog Mitutoyo	EV							23,63%		0,03 mm
	AV							5,48%		
	GRR							24,26%		
Micrometer analog Mitutoyo	EV								25,60%	0,03 mm
	AV								13,14%	
	GRR								28,78%	
Micrometer analog Mitutoyo	EV						23,63%	25,60%	25,99%	0,03 mm
	AV						15,09%	11,28%	5,01%	
	GRR						28,04%	27,97%	27,05%	

MSA (R&R)

Compendium of Results



Measuring range in mm		200 - 235	235 - 270	270 - 310	310 - 340	340 - 400	400 - 430	430 - 465	465 - 500	Tolerance space
Micrometer analog Mitutoyo	EV	27,57%								0,03 mm
	AV	4,83%								
	GRR	27,99%								
Micrometer analog Mitutoyo	EV	25,60%		25,60%						0,03 mm
	AV	14,98%		13,14%						
	GRR	29,66%		28,78%						
Micrometer analog Mitutoyo	EV				25,60%					0,03 mm
	AV				11,28%					
	GRR				27,97%					
Micrometer analog Mitutoyo	EV						27,57%			0,03 mm
	AV						9,17%			
	GRR						29,06%			
Measuring range in mm		0 - 15	15 - 30	30 - 45	50 - 60	60 - 80	80 - 120	120 - 170	170 - 200	Tolerance space
Micrometer analog Mitutoyo groove measuring head	EV		26,50%							0,03 mm
	AV		12,80%							
	GRR		29,70%							
Micrometer analog Mitutoyo groove measuring head	EV				17,73%					0,03 mm
	AV				6,18%					
	GRR				18,77%					
Micrometer analog Mitutoyo groove measuring head	EV						25,60%			0,03 mm
	AV						9,36%			
	GRR						27,26%			
Measuring range in mm		0 - 15 mm	15 - 30 mm	30 -50 mm	50 -95 mm	100 - 150 mm	150-200 mm			Tolerance space
Three-point measuring instrument Mitutoyo	EV			27,77%						0,02 mm
	AV			2,72%						
	GRR			27,90%						
Setting ring gauge Hoffmann	EV		ok		ok	ok				0,005 mm
	AV		ok		ok	ok				
	GRR		ok		ok	ok				
Gap gauge Hoffmann	EV		ok	ok	ok					0,005 mm
	AV		ok	ok	ok					
	GRR		ok	ok	ok					
Plug gauge Hoffmann	EV	ok	ok	ok						0,02 mm
	AV	ok	ok	ok						
	GRR	ok	ok	ok						
Profile Projector Mitutoyo	EV	27,77%	27,77%							0,02 mm
	AV	1,29%	5,28%							
	GRR	27,80%	28,27%							
Profile Projector Hoffmann MM1	EV	5,33%								0,04 mm
	AV	3,20%								
	GRR	6,22%								
Measuring range in µm		0 - 10								Tolerance space
Nickelscope analog Fischer analog	EV	16,25%								4 µm
	AV	23,62%								
	GRR	28,66%								
Nickelsocpe Fischer digital	EV	18,61%								4 µm
	AV	21,18%								
	GRR	28,19%								
X-Ray Fischer Gold	EV	12,69%								0,5 µm
	AV	0,00%								
	GRR	12,69%								
X-Ray Fischer Silver	EV	18,53%								3 µm
	AV	0,00%								
	GRR	18,35%								

MSA (R&R)

Compendium of Results



Measuring range		M1 - M10	M10 - M15	M15 - M25	M25 - M50					Tolerance space
Plug thread gauge Hoffmann	EV	ok		ok	ok					not applicable
	AV	ok		ok	ok					
	GRR	ok		ok	ok					
Measuring range in mm		0 - 5	5 - 10	10 - 25	25 - 50	50 - 100	100 - 500	100 - 500		Tolerance space
Measuring machine Zeiss Prismo	EV	23,50%	21,20%	22,38%			3,54%			0,01 mm
	AV	0,00%	0,00%	0,00%			1,99%			
	GRR	23,50%	21,20%	22,38%			4,07%			
Measuring machine Zeiss MC 850	EV						14,18%			0,01 mm
	AV						7,96%			
	GRR						16,26%			
Measuring machine Zeiss Contura G2	EV			10,91%						0,02 mm
	AV									
	GRR			10,91%						
Measuring machine Mitutoyo QuickVision	EV	3,85%	8,39%							0,04 mm
	AV									
	GRR	3,85%	8,39%							
Measuring range in mm		0 - 15	15 - 30	30 - 50	50 - 95	100 - 150	150 - 200			Tolerance space
Depth gauge	EV		23,63%		15,75%					0,03 mm
	AV		9,53%		6,53%					
	GRR		25,48%		16,99%					
2Point dial gauge	EV				23,63%					0,02 mm
	AV				2,96%					
	GRR				23,82%					
Measuring range in mm		0-2								Tolerance space
Camera System Rosenberger	EV	9,19%								0,04 mm
	AV	0,68%								
	GRR	9,20%								
Camera System Ziemann & Urban	EV			4,58%						0.6 mm
	AV			1,80%						
	GRR			4,92%						
Camera System Ziemann & Urban 7XM0_137G1	EV	9,98%								0,257
	AV									
	GRR	9,98%								
Camera System Köstler 2	EV	14,57%								0.2 mm
	AV									
	GRR	14,57%								
Gauge for connector type		circuit board								Tolerance space
Clamp-on gauge Rosenberger	EV	ok								not applicable
	AV	ok								
	GRR	ok								
HV Products		0-6	6-10							Tolerance space
Measuring machine Zeiss Prismo	EV	4,55%	1,64%							0.2mm
	AV									
	GRR	4,55%	1,64%							

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Dimensional Results

PPAP Date:

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Production Part Approval Dimensional Test Results

[illegible]

Blanket statements of conformance are unacceptable for any test results.

MARCH
2006

CFG-1003

<u>SIGNATURE</u>	<u>TITLE</u>	<u>DATE</u>
i. A. Mónica Major 	Quality Engineer	03.01.2023

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Material, Performance Test Results

PPAP Date:

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E-Mail:

<u>SIGNATURE</u>	<u>TITLE</u>	<u>DATE</u>
i. A. Mónica Major 	Quality Engineer	03.01.2023

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Initial Process Studies

Where otherwise undefined, measurements for process capability studies could be performed according to an applicable interface drawing.

Please check the relevant data sheet or drawing for applicable interface standards.

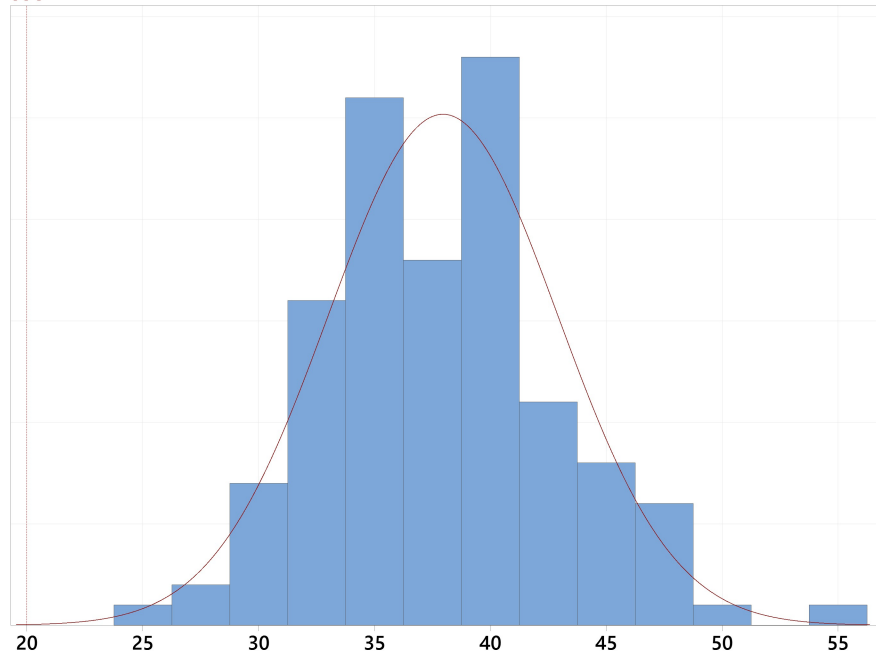
PPAP Date:

Editor:
Name:
Phone:
E-Mail:

Prozessfähigkeitsanalyse für 20/-0 Prozessleistungsbericht

Histogramm der Prozessfähigkeit
Liegen die Daten über dem Grenzwert?

USG



- Die Gesamtprozessfähigkeit ist das, was der Kunde wahrnimmt.
- Die potenzielle Prozessfähigkeit (innerhalb) könnte erzielt werden, wenn Shifts und Drifts im Prozess beseitigt würden.

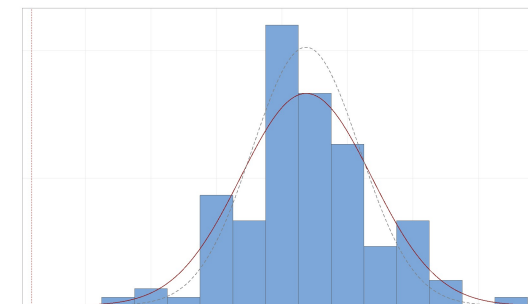
Prozesscharakterisierung

Gesamt N	125
Teilgruppengröße	3

Prozessfähigkeitsstatistiken

Gesamtprozessfähigkeit	
Pp	*
Ppk	1,40
Z.Bench	4,19
% auß. Spez. (beobachtet)	0,00
% auß. Spez. (erwartet)	0,00
PPM (DPMO) (beobachtet)	0
PPM (DPMO) (erwartet)	14
Potenziell (innerhalb)	
Cp	*
Cpk	1,70
Z.Bench	5,11
% auß. Spez. (erwartet)	0,00
PPM (DPMO) (erwartet)	0

Transformierte Daten



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Qualified Laboratory Documentation

PPAP Date:

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Certificates

Die aktuellen Versionen unserer Zertifikate (z.B. Qualität, Umwelt, Energie, Logistik, Luft- u. Raumfahrt & Labor Akkreditierungen usw.) sind zu finden unter

<https://www.rosenberger.com/de/downloads/zertifikate.php>

The up-to-date versions of our certificates (e.g. Quality, Environment, Energy, Logistic, Space & Laboratory Accreditations etc.) can be found at

<https://www.rosenberger.com/en/downloads/certificates.php>

Product Compliance

Informationen hierzu (z.B. REACH, RoHS, Konfliktmineralien usw.) finden Sie auf unserer Seite:

<https://www.rosenberger.com/de/company/quality/compliance.php>

For product compliance information (e.g. REACH, RoHS, Conflict Minerals etc.) please visit

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U_08 Tests in the laboratory

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2	Scope of application	2
3	Responsibilities and competencies.....	2
4	Laboratory	2
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4.2	Preliminary planning	2
4.3	Initiating of internal tests	3
4.4	External tests.....	4
4.5	Implementation of testing	5
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4.7	Obligation of the due date	5
4.8	Test facilities.....	5
4.9	Storage periods	6
5	Applicable documents.....	7
6	Document History	7

1 Purpose

This process instruction describes the preliminary planning of tests, the acceptance of test requests and the carrying out of tests in the internal laboratory of the company Rosenberger Hochfrequenztechnik GmbH & Co. KG. Furthermore the assignment of tests to accredited external laboratories and the coordination with the applicant are defined.

2 Scope of application

This process instruction applies to the laboratory department and all test applicants within the Rosenberger Hochfrequenztechnik GmbH & Co. KG.

3 Responsibilities and competencies

The head of the laboratory is responsible for the implementation of this procedural requirement. In the organisation chart the command structure is visible.

4 Laboratory

4.1 Scope

The laboratory department of Rosenberger Hochfrequenztechnik GmbH & Co. KG operates equipment for mechanical and electrical testing, environmental simulation, material analysis, high current and high frequency testing. The laboratory considers itself as a service provider inside the company and supports the business areas (BA) regarding to development, design and complaint investigation.

The laboratory ensures that the required technical properties of Rosenberger products are proven. In order to meet this demand the laboratory staffed qualified employees, irrespective of other responsibilities.

4.2 Preliminary planning

To initiate a preliminary planning of qualifications in the Laboratory the quantity, the part number (including index) and variants of the test samples have to be documented as well as the date of the approximately delivery. Only then a timetable for the testing processes can be created. For the planning and establishment of the test plan at least 10 working days are calculated.

If the test samples are not delivered in the laboratory within two weeks before the requested test starts the planned resources can be re-assigned. The affected test will be scheduled at a later date.

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Records of Compliance with Customer-Specific Requirements

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Certificates

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For product compliance information (e.g. REACH, RoHS, Conflict Minerals etc.) please visit

<https://www.rosenberger.com/en/company/quality/compliance.php>

Product Compliance Anforderungen
Product Compliance Requirements

1. Zweck

Rosenberger beliefert die Industrie mit Produkten der Hochfrequenztechnik und der Faseroptik und zählt damit weltweit zu den besten Unternehmen der Branche. Grundlage dieses Erfolgs ist, dass die Ansprüche der Kunden an Qualität, Zuverlässigkeit, Schnelligkeit und Preis richtig verstanden und mit Erfindungsgeist, persönlichem Einsatz, wirtschaftlichem Augenmaß und technischem Können in überlegene Produkte umgesetzt werden.

Diese Werksnorm dient der Umsetzung und Vereinheitlichung von gesetzlichen Anforderungen bzw. Kundenanforderungen hinsichtlich Product Compliance.

Purpose

Rosenberger supplies the industry with products of high-frequency technology and fibre optics and ranks among the best companies worldwide in this sector. Fundamental to this success is that the requirements of the customers concerning quality, reliability, speed and price are exactly realised, and using invention, personal commitment, economic visual judgement and technical knowledge, convert these into superior products.

This Rosenberger Standard serves to implement and unify legal and customer requirements regarding product compliance.

2. Anwendungsbereich

Diese Norm gilt für alle Business Areas der Rosenberger Hochfrequenztechnik am Standort Fridolfing.

Scope

This standard applies to all business areas of Rosenberger Hochfrequenztechnik at Fridolfing site.

3. Mitgeltende Unterlagen

Richtlinie 2011/65/EU*	Verordnung (EG) Nr. 1907/2006*
Richtlinie 2000/53/EG*	Verordnung (EG) Nr. 850/2004*
Richtlinie 94/62/EG*	Verordnung (EG) Nr. 1005/2009*
Richtlinie 2006/66/EG*	Verordnung (EU) Nr. 528/2012*
Richtlinie 2012/19/EU*	

*Es gilt jeweils die zum Lieferzeitpunkt gültige Version inklusive aller Änderungen und Erweiterungen.

Administrative Measures for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products ("China RoHS II")
 SJ/T 11364:2014

Other Applicable Documents

Directive 2011/65/EU*	Regulation (EC) No. 1907/2006*
Directive 2000/53/EC*	Regulation (EC) No. 850/2004*
Directive 94/62/EC*	Regulation (EC) No. 1005/2009*
Directive 2006/66/EC*	Regulation (EU) No. 528/2012*
Directive 2012/19/EU*	

*The version valid at the date of delivery including all changes and amendments applies.

Administrative Measures for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products ("China RoHS II")
 SJ/T 11364:2014

Rosenberger Hochfrequenztechnik GmbH & Co. KG

					Date	Name	Verteiler / Distributor:
				Drawn	28.02.2019	M. Müller	
a01	18-2354	I. Mühlauer	05.12.2019	Check.	05.12.2019	I. Mühlauer	
a00	18-2354	I. Mühlauer	28.02.2018	Appr.	05.12.2019	M. Müller	
Rev.	Change-no	Name	Date	TCC_FB_21_V_2.1_25.01.2016			Seite / Sheet 1 von / of: 8

Product Compliance Anforderungen
Product Compliance Requirements

4. Begriffe

„Erzeugnis“

Es gilt die Definition entsprechend Verordnung (EG) Nr. 1907/2006 (REACH), Artikel 3(3):

Erzeugnis: Gegenstand, der bei der Herstellung eine spezifische Form, Oberfläche oder Gestalt erhält, die in größerem Maße als die chemische Zusammensetzung seine Funktion bestimmt;

„Stoff“

Es gilt die Definition entsprechend Verordnung (EG) Nr. 1907/2006 (REACH), Artikel 3(1):

Stoff: chemisches Element und seine Verbindungen in natürlicher Form oder gewonnen durch ein Herstellungsverfahren, einschließlich der zur Wahrung seiner Stabilität notwendigen Zusatzstoffe und der durch das angewandte Verfahren bedingten Verunreinigungen, aber mit Ausnahme von Lösungsmitteln, die von dem Stoff ohne Beeinträchtigung seiner Stabilität und ohne Änderung seiner Zusammensetzung abgetrennt werden können;

Terms

„Article“

The definition of Regulation (EU) No. 1907/2006 (REACH), Article 3(3) applies:

article: means an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition;

The definition of Regulation (EU) No. 1907/2006 (REACH), Article 3(1) applies:

substance: means a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition;

5. Anforderungen

Alle gelieferten Erzeugnisse und Stoffe, die in Rosenberger Produkten verbleiben, müssen die Anforderungen dieser Norm einhalten. Für zugekaufte Erzeugnisse und Stoffe, die nicht in Rosenberger Produkten verbleiben, z.B. Möbel zur Büroausstattung oder Produktionsmaschinen, muss diese Norm nicht angewendet werden.

Abweichungen von den Anforderungen dieser Norm müssen vor der Lieferung an Rosenberger gemeldet werden. Nicht-konforme Produkte dürfen nur nach vorheriger schriftlicher Genehmigung durch Rosenberger geliefert werden. Diese Genehmigung muss von product.compliance@rosenberger.com angefordert werden.

Der Lieferant ist verpflichtet sich selbstständig über Änderungen der gesetzlichen Anforderungen zu informieren und sein Wissen hierzu aktuell zu halten.

Der Lieferant muss alle notwendigen Maßnahmen in seiner eigenen Lieferkette ergreifen um die Einhaltung der Anforderungen sicherzustellen.

Requirements

*All supplied articles and substances that remain in Rosenberger products have to fulfil the requirements of this standard. This standard is not applied to purchased articles and substances that do not remain in Rosenberger products, e.g. furniture or production machines. **Deviations from the requirements of this standard have to be named to Rosenberger prior to delivery. Not conforming products may be delivered only after written authorisation of Rosenberger. This authorisation has to be requested from product.compliance@rosenberger.com** Supplier is obliged to keep himself informed about changes of legal requirements and to keep his knowledge of these requirements up to date. Supplier has to take all necessary measures in its own supply chain to ensure fulfilment of the requirements.*

Rosenberger Hochfrequenztechnik GmbH & Co. KG

					Date	Name	Verteiler / Distributor:
				Drawn	28.02.2019	M. Müller	
a01	18-2354	I. Mühlauer	05.12.2019	Check.	05.12.2019	I. Mühlauer	
a00	18-2354	I. Mühlauer	28.02.2018	Appr.	05.12.2019	M. Müller	
Rev.	Change-no	Name	Date	TCC FB 21, V. 2.1, 25.01.2016			Seite / Sheet 2 von / of: 8

Product Compliance Anforderungen
Product Compliance Requirements

6. Beschränkte Stoffe

Die für Rosenberger relevanten weltweiten gesetzlichen Stoffbeschränkungen sollen für alle gelieferten direkten Erzeugnisse und Stoffe erfüllt sein.

Regel 1:

Gelieferte Erzeugnisse und Stoffe dürfen keine verbotenen Stoffe (P) (P=Prohibited) entsprechend der aktuellen Version der Global Automotive Declarable Substance List (GADSL) über den dort angegebenen bzw. den gesetzlichen Grenzwerten enthalten.

Ausnahmen entsprechend GADSL oder den gesetzlichen Vorgaben sind zulässig.

Die GADSL ist kostenfrei abrufbar unter: <https://www.gadsl.org/>

Der Lieferant ist verpflichtet sich selbstständig über Änderungen in der GADSL zu informieren.

Regel 2:

Verpackungen müssen die Inhaltsstoff-Anforderungen der Richtlinie 94/62/EG einhalten.

Restricted Substances

Worldwide legal substance restrictions relevant for Rosenberger shall be fulfilled for all supplied direct articles and substances.

Rule 1:

Supplied articles and substances may not contain prohibited substances (P) (P=Prohibited) according to the current version of Global Automotive Declarable Substance List (GADSL) above the threshold named there or the legal threshold.

Exemptions according to GADSL or legal definitions are permitted.

GADSL is available free of charge at: <https://www.gadsl.org/>

Supplier is obliged to inform himself about changes of GADSL.

Rule 2:

Packaging has to comply with the substance requirements of Directive 94/62/EC.

7. Gesetzliche Vorgaben zu beschränkten und deklarationspflichtigen Stoffen

Die Vorgaben in diesem Kapitel erläutern die Regeln aus Kapitel 6 und definieren Vorgaben zu deklarationspflichtigen Stoffen und zur Kennzeichnung. Die Regeln 1 und 2 beschränken sich nicht zwangsläufig auf die in diesem Kapitel genannten Gesetze und Normen und werden durch dieses Kapitel nicht eingeschränkt.

Legal Requirements for Restricted and Declarable Substances

The definitions in this chapter explain the rules of chapter 6 and define requirements for declarable substances and for the marking. Rules 1 and 2 are not necessarily completely fulfilled by the laws and standards named in this chapter and are not limited by this chapter.

7.1 RoHS – Richtlinie 2011/65/EU

Richtlinie 2011/65/EU beschränkt die Verwendung bestimmter Stoffe in Elektro- und Elektronikgeräten. Die Liste der beschränkten Stoffe ist in Anhang II der Richtlinie gegeben. Sie wurde zuletzt durch die delegierte Richtlinie (EU) 2015/863 geändert.

Anforderungen

Da die Stoffbeschränkungen sich jeweils auf den homogenen Werkstoff beziehen, dürfen keine gelieferten direkten Erzeugnisse und Stoffe beschränkte Stoffe entsprechend Anhang II der Richtlinie über dem dort angegebenen Grenzwert enthalten. Dies gilt unabhängig davon ob es sich bei dem Produkt um ein fertiges

Rosenberger Hochfrequenztechnik GmbH & Co. KG

Rev.	Change-no	Name	Date	TCC FB 21, V. 2.1, 25.01.2016	Date	Name	Verteiler / Distributor:
					Drawn	28.02.2019	M. Müller
a01	18-2354	I. Mühlauer	05.12.2019		Check.	05.12.2019	I. Mühlauer
a00	18-2354	I. Mühlauer	28.02.2018		Appr.	05.12.2019	M. Müller

Product Compliance Anforderungen
Product Compliance Requirements

Elektro- und Elektronikgerät im Sinne der Richtlinie handelt oder nicht. Die Anwendung von Ausnahmen aus den Anhängen III und IV der Richtlinie ist zulässig. Ausnahmen müssen an Rosenberger mitgeteilt werden. Mögliche Kommunikationsformen sind:

- E-Mail an product.compliance@rosenberger.com
- BOMCheck
- iPoint Supplier Entry Portal
- Für Lieferanten, die IMDS Daten senden gilt Anhang I

RoHS – Directive 2011/65/EU

Directive 2011/65/EU restricts the use of certain hazardous substances in electrical and electronic equipment. The list of restricted substances is defined in annex II of the directive. It was most recently changed by Delegated Directive (EU) 2015/863.

Requirements

As the substance restrictions apply to the homogenous material no delivered direct article or substance may contain restricted substances of annex II of the directive above the threshold defined therein. This applies independent of whether the product is finished electrical and electronic equipment according to the directive or not. The application of exemptions of annexes III and IV of the directive is permitted. Exemptions have to be named to Rosenberger. Possible forms of communication are:

- Email to product.compliance@rosenberger.com
- BOMCheck
- iPoint Supplier Entry Portal
- For suppliers that send IMDS data annex I applies

7.2 ELV – Richtlinie 2000/53/EG

Richtlinie 2000/53/EG beschränkt die Verwendung bestimmter Stoffe in Fahrzeugen. Die Liste der beschränkten Stoffe ist in Artikel 4 in Verbindung mit Anhang II der Richtlinie gegeben.

Anforderungen

Die ELV-Richtlinie wird für alle Bauteile und Werkstoffe angewendet, die in Fahrzeugen verwendet werden. Für diese erfolgt die Kommunikation zu Inhaltsstoffen über IMDS entsprechend des Anhangs dieser Norm.

ELV – Directive 2000/53/EC

Directive 2000/53/EC restricts the use of certain hazardous substances in vehicles. The list of restricted substances is given in article 4 in combination with annex II of the directive.

Requirements

ELV-Directive applies to all parts and materials that are used in vehicles. For them the communication on substances happens via IMDS according to the annex of this standard.

7.3 REACH – Verordnung (EU) Nr. 1907/2006

Verordnung (EU) Nr. 1907/2006 regelt den Umgang mit Stoffen in der EU. Für Rosenberger sind besonders die REACH Kandidatenliste, sowie die Anhänge XIV und XVII relevant.

Anforderungen

Enthält ein geliefertes Erzeugnis eine SVHC der Kandidatenliste über 0,1% entsprechend des Urteils des EU-GH (Rechtssache C-106/14) ist dies Rosenberger unverzüglich mitzuteilen.

Stoffe, die in Anhang XIV der Verordnung aufgenommen wurden, dürfen nur nach vorheriger schriftlicher Genehmigung durch Rosenberger in zu liefernden Erzeugnissen enthalten sein.

Stoffe aus Anhang XVII dürfen in den dort beschränkten Anwendungen generell nicht enthalten sein. Mögliche Kommunikationsformen sind:

Rosenberger Hochfrequenztechnik GmbH & Co. KG						
					Date	Name
				Drawn	28.02.2019	M. Müller
a01	18-2354	I. Mühlauer	05.12.2019	Check.	05.12.2019	I. Mühlauer
a00	18-2354	I. Mühlauer	28.02.2018	Appr.	05.12.2019	M. Müller
Rev.	Change-no	Name	Date	TCC FB 21, V. 2.1, 25.01.2016		

Verteiler / Distributor:

Product Compliance Anforderungen
Product Compliance Requirements

- E-Mail an product.compliance@rosenberger.com
- BOMCheck
- iPoint Supplier Entry Portal
- Für Lieferanten, die IMDS Daten senden gilt der Anhang

REACH – Regulation (EU) No. 1907/2006

Regulation 1907/2006 defines the requirements for substances in the EU. For Rosenberger especially the REACH Candidate List, as well as annexes XIV and XVII are relevant.

Requirements

Rosenberger has to be informed immediately if an supplied article contains a SVHC above 0.1% according to the judgment of the European Court of Justice (Case C-106/14). Articles that contain substances of annex XIV may only be delivered after written authorisation of Rosenberger. Substances of Annex XVII may never be contained in applications defined in annex XVII. Possible forms of communication are:

- Email to product.compliance@rosenberger.com
- BOMCheck
- iPoint Supplier Entry Portal
- Suppliers that send IMDS data apply the annex

7.4 Verpackungen

Alle Verpackungen sowie alle Stoffe/Gemische, die Rosenberger zur Herstellung von Verpackungen verwendet (z.B. Folien zur Herstellung von Blister Verpackungen), müssen die Inhaltsstoffanforderungen entsprechend der Richtlinie 94/62/EG einhalten. Es gelten folgende Grenzwerte:

Stoff	Maximal erlaubte Konzentration
Summe der Konzentration von Blei, Cadmium, Quecksilber und Chrom VI	100 Gewichts-ppm

Packaging

All packaging as well as all substances/mixtures that are used by Rosenberger to produce packaging (e.g. foils for the production of blister packaging) has to comply with the substance requirements of Directive 94/62/EC. The following threshold applies:

Substance	Maximum allowed concentration
Sum of the concentration of lead, cadmium, mercury and chromium VI	100 weight ppm

7.5 Batterien

Alle gelieferten Batterien müssen die Stoffverbote entsprechend Artikel 4 der Richtlinie 2006/66/EG einhalten:

Stoff	Maximal erlaubte Konzentration
Cadmium	0,0005% w/w
Quecksilber	0,0001% w/w

Batteries

All supplied batteries have to fulfil the substance restrictions according to article 4 of directive 2006/66/EC:

Substance	Maximum allowed concentration
Cadmium	0.0005% w/w
Mercury	0.0001% w/w

7.6 Persistente organische Schadstoffe

Stoffe deren Herstellung, Inverkehrbringen und Verwendung durch Verordnung (EG) Nr. 850/2004 verboten sind, dürfen nicht geliefert werden.

Rosenberger Hochfrequenztechnik GmbH & Co. KG

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a00	18-2354	I. Mühlauer	28.02.2018	Appr.	05.12.2019	M. Müller	
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Product Compliance Anforderungen
Product Compliance Requirements

Persistent Organic Pollutants

Substances their production, placing on the market and use is forbidden by Regulation (EC) No. 850/2004 may not be supplied.

7.7 Stoffe, die zum Abbau der Ozonschicht führen

Geregelte Stoffe nach Verordnung (EG) Nr. 1005/2009 dürfen nicht geliefert werden.

Substances that deplete the ozone layer

Controlled substances according to Regulation (EC) No. 1005/2009 may not be supplied.

7.8 Biozidprodukte

Biozidprodukte entsprechend Verordnung (EU) Nr. 528/2012 dürfen nur geliefert werden, wenn alle notwendigen Genehmigungen vorliegen.

Biocidal Products

Biocidal products according to Regulation (EU) No. 528/2012 may only be supplied if all necessary authorisations were obtained.

7.9 China-RoHS II

Für Erzeugnisse die nach China exportiert werden sollen und für die entsprechend SJ/T 11364:2014 die Aufbringung des „EPUP-Logos“ notwendig ist, kann Rosenberger dies von den Lieferanten verlangen. Auf Anfrage muss der Lieferant alle notwendigen Informationen zur Verfügung stellen um die Informationsanforderungen nach SJ/T 11364:2014 zu erfüllen.

China-RoHS II

For articles Rosenberg exports to China and for which according to SJ/T 11364:2014 the affixing of the “EPUP Logo” is mandatory, Rosenberg can require this affixing from the supplier. On request supplier has to provide all necessary information to fulfil the information requirement of SJ/T 11364:2014.

8. Conflict Minerals

Rosenberger legt sehr hohen Wert auf einen verantwortungsvollen Umgang mit Rohstoffen. Lieferanten wurden bereits in unserem Mission Statement über unsere Anforderungen bezüglich Conflict Minerals informiert.

Rosenberger fordert von seinen Lieferanten jährlich ein ausgefülltes CMRT an. Hierbei gelten folgende Anforderungen:

- Es wird nur das CMRT akzeptiert. Vom Lieferanten selbst entworfene Schreiben ohne Angabe von Schmelzbetrieben werden nicht akzeptiert.
- Frage 5 des CMRT muss mit 100% beantwortet werden können.
- Es dürfen keine Hochrisiko-Schmelzen in der Lieferkette des Lieferanten vorhanden sein.
- Frage 6 sollte mit Ja beantwortet werden können. Falls dies noch nicht möglich ist, muss ein Zeitplan vorgelegt werden, ab wann Frage 6 mit Ja beantwortet werden kann.
- Das CMRT des Lieferanten sollte auf company level ausgestellt sein. Falls die Anforderungen nicht auf company level erfüllt werden können, darf ein CMRT auf product level gesendet werden.

Conflict Minerals

Rosenberger sets very high value on a responsible use of raw materials. Suppliers have been informed in our Mission Statement about our requirements regarding Conflict Minerals.

Rosenberger requires from its suppliers every year a filled CMRT. For this the following requirements apply:

Rosenberger Hochfrequenztechnik GmbH & Co. KG						
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				Drawn	28.02.2019	
a01	18-2354	I. Mühlauer	05.12.2019	Check.	05.12.2019	
a00	18-2354	I. Mühlauer	28.02.2018	Appr.	05.12.2019	
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Product Compliance Anforderungen
Product Compliance Requirements

- Only a CMRT is accepted. Documents made by the supplier without identification of smelters are not accepted.
- Question 5 of the CMRT has to be answered with 100%.
- No High-Risk smelters may be part of the supplier's supply chain.
- Question 6 should be answered with Yes. If this is not yet possible, a time schedule has to be provided to show when question 6 can be answered with yes.
- The CMRT of the supplier shall be issued on company level. If the requirements above cannot be fulfilled on company level, a CMRT on product level may be sent.

9. Materialdeklarationen

Rosenberger wendet zur Erfüllung von Inhaltsstoffanforderungen die Normen DIN EN 50581 und IEC 63000 an. Dementsprechend werden für Erzeugnisse, für die keine IMDS Daten erhalten oder erzeugt werden, für die technische Dokumentation üblicherweise unterschriebene Verträge und/oder Zuliefererklärungen verwendet. In bestimmten Fällen ist es jedoch zur Erfüllung von besonderen Deklarationsanforderungen oder Kundenanforderungen notwendig eine Materialdeklaration für ein Produkt zu erstellen. Hierbei ist der Lieferant zur Unterstützung verpflichtet.

Material Declarations

For fulfilment of substance requirements Rosenberger applies the standards DIN EN 50581 and IEC 63000. Thus, for articles for which no IMDS data are obtained or generated usually signed contracts and/or supplier declarations are used for the technical documentation. In specific cases to fulfil special declaration requirements or customer requirements it is necessary to issue a material declaration for a product. In this case the supplier has to support.

10. Registrierung von Elektrogeräten, Batterien und Verpackungen

Soweit dies entsprechend der gesetzlichen Vorgaben notwendig ist, müssen Lieferanten Elektrogeräte, Batterien und Verpackungen in den entsprechenden Registern registriert haben. In Deutschland erfolgt die Registrierung bei Stiftung ear für Elektrogeräte, beim BattG-Melderegister des Umweltbundesamts für Batterien und bei der Stiftung Zentrale Stelle Verpackungsregister für Verpackungen. In anderen EU-Mitgliedsstaaten existieren jeweils andere nationale Register. Nicht vorschriftsgemäß registrierte Elektrogeräte, Batterien und Verpackungen dürfen nicht geliefert werden.

Registration of Electrical Equipment, Batteries and Packaging

As far as required by legal requirements supplier has to register electrical equipment, batteries and packaging in the respective registers. In Germany the registration of electrical equipment is done at the "Stiftung ear", of batteries at the "BattG-Melderegister" of "Umweltbundesamt" and for packaging at the "Zentrale Stelle Verpackungsregister". In other EU member states other national registers exist. Not proper registered electrical equipment, batteries and packaging may not be supplied.

Diese Norm ersetzt RN_051-01 Index f00 und RN_051-02 Index a00.

This standard supersedes RN_051-01 Index f00 and RN_051-02 Index a00.

Rosenberger Hochfrequenztechnik GmbH & Co. KG

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a00	18-2354	I. Mühlauer	28.02.2018	Appr.	05.12.2019	M. Müller	
Rev.	Change-no	Name	Date	TCC FB 21, V. 2.1, 25.01.2016			Seite / Sheet 7 von / of: 8

Product Compliance Anforderungen
Product Compliance Requirements

Anhang I: weiterführende Anforderungen für die Business Area Automotive
Annex I: further requirements for the Business Area Automotive

Bereitstellung von IMDS Deklarationen

IMDS ist das Internationale Materialdatensystem der Automobilindustrie und über folgenden Link im Internet zu erreichen.

<https://www.mdssystem.com/>

Spätestens mit der Bereitstellung des Erstmusterprüfberichtes (EMPB) sind alle verwendeten Materialien von Teilen und Halbzeugen in diesem kostenlosen Portal an die Rosenberger Org ID 3093 zu deklarieren. EMPBs werden nur mit vollständigen und korrekten IMDS Daten akzeptiert. Die Struktur der Einträge richten sich nach der jeweils gültigen Fassung der IMDS Richtlinien.

Weitere Referenzen:

GADSL	Global Automotive Declarable Substance list
VDA Vol 2.	Qualitätsmanagement in Automotive - Qualitätssicherung von Lieferanten
IATF 16949	International Automotive Task Force
ISO 1043	für Kunststoffe - Symbole und Abkürzungen
ISO 1629	für Gummi - Nomenklatur
ISO 18064	für thermoplastische Elastomere - Nomenklatur und verkürzte Begriffe

In Zweifelsfällen soll Rücksprache gehalten werden mit imds@rosenberger.com

Supply of IMDS declarations

IMDS is the International Material Data System for the automotive industry. It can be reached via:

<https://www.mdssystem.com/>

At the latest with the provision of the initial sample inspection report (ISIR) all used materials of components and semicomponents must be declared in this free portal to Rosenberger Org ID 3093.

ISIRs will only be accepted with complete and correct IMDS report.

The structure of the entries is based on the IMDS guidelines in its's valid version.

Further references:

GADSL	Global Automotive Declarable Substance list
VDA Vol 2.	Quality management in the automotive industry – Quality assurance of suppliers
IATF 16949	International Automotive Task Force
ISO 1043	for Plastics – Symbols and abbreviated terms
ISO 1629	for Rubbers - Nomenclature
ISO 18064	for Thermoplastic elastomers – Nomenclature and abbreviated terms

In case of doubt, please contact us at imds@rosenberger.com

Rosenberger Hochfrequenztechnik GmbH & Co. KG

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a00	18-2354	I. Mühlauer	28.02.2018	Appr.	05.12.2019	M. Müller	
Rev.	Change-no	Name	Date	TCC_FB_21_V_2.1_25.01.2016			Seite / Sheet 8 von / of: 8

Information regarding Regulation (EC) No 1907/2006 (REACH)

concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

Regulation (EC) No 1907/2006 (REACH) sets different requirements for the actors in the supply chain.

Rosenberger is a manufacturer of articles and does not produce chemical substances or mixtures. Thus, Rosenberger is a so called "downstream user" in the sense of the Regulation (Art. 3, 13). As such Rosenberger has neither the duty nor the possibility to register substances. This was done by our supplies as far as necessary.

Annex XIV of the regulation lists the substances that may only be used when authorisation was granted. Before a substance is added to annex XIV it is taken up in the so called "candidate list" and thus identified as "substance of very high concern" (SVHC). The candidate list is available here: <https://echa.europa.eu/de/candidate-list-table>

It is very important to notice that SVHC can still be used without restriction. Between the uptake of a substance in annex XIV and the start of the authorisation requirement (so called "Sunset Date") a transition period of several years exist.

For articles that contain a SVHC above 0.1% w/w the duty to communicate information according to article 33 applies. Every supplier of such an article must provide the recipient at least with the name of the substance as long as no other information necessary for safe use are available to the supplier.

On 27th June 2018 lead (CAS 7439-92-1) was added to the REACH candidate list. This SVHC is contained above 0.1% w/w in all Rosenberger articles for which RoHS exemption 6c or ELV exemption 3¹ is applied. Products can be checked on the presence of SVHC here:

<https://www.rosenberger.com/en/company/quality/compliance.php>

Further information is available from: product.compliance@rosenberger.com

To the actual knowledge and based on information from the suppliers no article of Rosenberger contains substances listed in REACH Annex XIV and Annex XVII above the threshold defined in these annexes.



i. V. Dr. Michael Müller
(Product Compliance)

¹ For customers that receive IMDS data, Article 33 is fulfilled via them.

To our customers

An unsere Kunden

Fridolfing, 27th August 2020

Substance restrictions according to
EU Directive 2011/65/EU on the restriction of certain hazardous substances in electrical and
electronic equipment last amended by Commission Delegated Directive (EU) 2015/863
and
Directive 2000/53/EC on end-of life vehicles

Stoffbeschränkungen unter der
EU Richtlinie 2011/65/EU zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in
Elektro- und Elektronikgeräten zuletzt geändert durch die Delegierte Richtlinie (EU) 2015/863 der
Kommission

und
Richtlinie 2000/53/EG über Altfahrzeuge

Dear Madam or Sir,

Sehr geehrte Damen und Herren,

With this letter we point out, that the products we supply to you meet the substance restrictions of the above mentioned directives.

mit diesem Schreiben weisen wir Sie darauf hin, dass bei den an Sie gelieferten Produkten die Stoffbeschränkungen gemäß der o.g. Richtlinien eingehalten werden.

Exemptions as listed in Annex III or IV of Directive 2011/65/EU or Annex II of Directive 2000/53/EC may apply. For product specific inquiries we provide the respective exemptions to our individual products. This document does not apply to parts or equipment that is specially designed for applications that are excluded from the scope of the directives, e.g. defence or aerospace.

Ausnahmen nach Anhang III oder IV der Richtlinie 2011/65/EU oder Anhang II der Richtlinie 2000/53/EG können Anwendung finden. Auf produktspezifische Anfragen erstellen wir die jeweiligen Ausnahmebestätigungen zu einzelnen Produkten. Dieses Dokument gilt nicht für Komponenten oder Geräte die speziell für Anwendungen entwickelt wurden, die vom Geltungsbereich der Richtlinien ausgenommen sind, z.B. Verteidigung oder Luftfahrt.



i.V. Dr. Michael Müller

Manager Product Compliance

Substances restricted by EU Directive 2011/65/EU, last amended by Delegated Directive (EU) 2015/863 as well as Directive 2000/53/EC

Stoffe beschränkt durch EU Richtlinie 2011/65/EU, zuletzt geändert durch die Delegierte Richtlinie (EU) 2015/863 sowie Richtlinie 2000/53/EG

Substance / Stoff	EU Directive / EU Richtlinie	Maximum concentration in homogeneous material / Maximalkonzentration im homogenen Material
Lead* / Blei*	2011/65/EU 2000/53/EG	0,1 %
Mercury / Quecksilber	2011/65/EU 2000/53/EG	0,1 %
Cadmium / Cadmium	2011/65/EU 2000/53/EG	0,01 %
Hexavalent Chromium / Sechswertiges Chrom	2011/65/EU 2000/53/EG	0,1 %
Polybrominated Biphenyls / Polybromierte Biphenyle (PBB)	2011/65/EU 2000/53/EG	0,1 %
Polybrominated Diphenyl Ethers / Polybromierte Diphenylether (PBDE)	2011/65/EU 2000/53/EG	0,1 %
Bis(2-ethylhexyl) phthalate (DEHP) / Di(2-ethylhexyl)phthalat (DEHP)	2011/65/EU	0,1 %
Butyl benzyl phthalate (BBP) / Butylbenzylphthalat (BBP)	2011/65/EU	0,1 %
Dibutyl phthalate (DBP) / Dibutylphthalat (DBP)	2011/65/EU	0,1 %
Diisobutyl phthalate (DIBP) / Diisobutylphthalat (DIBP)	2011/65/EU	0,1 %

* 2011/65/EU: For many of our products exemption 6c (up to 4% lead in copper alloys) is applied

* 2000/53/EG: For many of our products exemption 3 (up to 4% lead in copper alloys) is applied

* 2011/65/EU: Für viele unserer Produkte wird die Ausnahme 6c (bis zu 4% Blei in Kupferlegierungen) angewendet

* 2000/53/EG: Für viele unserer Produkte wird die Ausnahme 3 (bis zu 4% Blei in Kupferlegierungen) angewendet

PPAP

Production Process and Product Approval acc. to AIAG 4th Edition

Design drawing:

Index revision:

Revision date:

18

Part Submission Warrant (PSW)

PPAP Date:

Editor:
Name:
Phone:
E-Mail:

Part Submission Warrant

Part Name	<u>Cable Assembly</u>	Cust. Part Number	<u>MU5T-14H007-DAA1775</u>
Shown on Drawing No.	<u>LAQ-118-1775-D-D_FORD</u>	Org. Part Number	<u>90005589</u>
Engineering Change Level	<u>001</u>	Dated	<u>24.03.2022</u>
Additional Engineering Changes	<u>N/A</u>	Dated	<u>N/A</u>
Safety and/or Government Regulation	☐ Yes ☒ No	Purchase Order No.	<u>Weight (kg) 0,0243</u>
Checking Aid No.	<u>N/A</u>	Checking Aid Engineering Change Level	<u>N/A</u>
		Dated	<u>N/A</u>

ORGANIZATION MANUFACTURING INFORMATION

Rosenberger Automotive Cabling Kft. 52-542-4391
Organization Name & Supplier/Vendor Code
Necső telep 1
Street Address
Jászberény 5100 Hungary
City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

Nursan Elektrik
Customer Name/Division
Buyer/Buyer Code
Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported?

☒ Yes

☐ No

☐ n/a

 Submitted by IMDS or other customer format: IMDS ID 1173673949 / 1

Are polymeric parts identified with appropriate ISO marking codes?

☐ Yes

☐ No

☒ n/a

REASON FOR SUBMISSION (Check at least one)

☒ Initial Submission

☐ Engineering Change(s)

☐ Tooling: Transfer, Replacement, Refurbishment, or additional

☐ Correction of Discrepancy

☐ Tooling Inactive > than 1 year

☐ Change to Optional Construction or Material

☐ Supplier or Material Source Change

☐ Change in Part Processing

☐ Parts Produced at Additional Location

☐ Other - please specify below

REQUESTED SUBMISSION LEVEL (Check one)

☐ Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.

☐ Level 2 - Warrant with product samples and limited supporting data submitted to customer.

☒ Level 3 - Warrant with product samples and complete supporting data submitted to customer.

☐ Level 4 - Warrant and other requirements as defined by customer.

☐ Level 5 - Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.

SUBMISSION RESULTS

 The results for ☒ dimensional measurements ☒ material and functional tests ☐ appearance criteria ☒ statistical process package

 These results meet all drawing and specification requirements: ☒ Yes ☐ No (If "NO" - Explanation Required)

Mold / Cavity / Production Process

Assembling line MTD Curti

DECLARATION

I hereby affirm that the samples represented by this warrant are representative of our parts which were made by a process that meets all Production Part

 Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of 5500 / 8 hours.

I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from the declaration below.

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered?

☒ Yes

☐ No

☐ n/a

 Organization Authorized Signature i. A.

 Date 03.01.2023

 Print Name Mónika Major

Phone No.

+36-57-531-620

Fax No.

 Title Quality Engineer

E-mail

Monika.Major3@rosenberger.com

FOR CUSTOMER USE ONLY (IF APPLICABLE)

 Part Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature

Date

Print Name

Customer Tracking Number (optional)