

Tornesch, 12.05.2022

Information über eine Rohstoffumstellung zur Sicherstellung der Lieferfähigkeit

Sehr geehrte Damen und Herren,

aufgrund der aktuellen angespannten Rohstoffverfügbarkeit sind wir gezwungen alternative Rohstoffe einzusetzen. Dies dient der langfristigen Aufrechterhaltung unserer Lieferfähigkeit. Die betroffenen Artikel sind im Anhang aufgeführt.

Durch diesen Schritt können wir die Lieferkette aufrecht erhalten, um Ihnen auch weiterhin als verlässlicher Partner zur Seite zu stehen.

Die HellermannTyton Zeichnungen behalten ihre Gültigkeit, da es sich bei beiden Rohstoffen um die gleiche Materialklasse (PA66) handelt.

Die Performance der Artikel ist bei beiden Rohstoffen vergleichbar und liegen über den geforderten Werten. Die funktionsrelevanten Bauteile (Kabelbinder und Metallklammer) bleiben unverändert.

Rohstoff (alt) Akromid A31S3 (1139)
Rohstoff (neu) Grilon TSZ1 black

Bestelladresse, Artikelnummern, Versandort, Ansprechpartner, Produktionsstandort, Herkunftsland, Beutel-, Karton- und Palettengröße bleiben unverändert.

Die Umstellung auf den neuen Rohstoff findet einfließend ab dem 1.9.2022 statt.

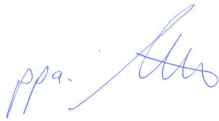
Wir bitten Sie um Rückmeldung bis zum 27.05.2022, falls ein neuer EMPB / PPAP benötigt wird.

Für weitere Fragen stehen wir Ihnen jederzeit gerne zur Verfügung.

Wir freuen uns auf eine weiterhin erfolgreiche Zusammenarbeit.

Mit freundlichen Grüßen

HellermannTyton GmbH



ppa. Harald Gottlieb
Director Automotive
Head of Automotive Global



i.A. Torben Konetzny
Product Manager
Cable Ties and Fixings

Anlagen:
Artikelübersicht

From: **Quality Assurance HellermannTyton GmbH**

Subject: PPAP Approval signature deadline

Dear customer:

As you are aware the PPAP process is an integral part of our business. With that in mind, we are informing our customers who are requesting a PPAP that there is a 30 day (calendar) deadline to which we are expecting your reply back with a signed copy of the PSW with a disposition regarding it's validity. It is important that we maintain compliance to the current AIAG PPAP manual.

As a part of compliance a signed and approved PSW is essential for our records.

We reserve the right to consider that PPAP valid and complete, if we do not receive a signed copy of the PSW within 30 days (calendar).

Once you have received our PPAP information please e-mail us a copy of your disposition with the appropriate signatures as soon as possible to the following person:

nescha.lohse@HellermannTyton.de

Quality Assistant

phone: +49 (0) 4122 701 5726

Your cooperation is greatly appreciated!

Respecting the procedure as described above, the documentation with HellermannTyton PB-No.:			
97970	with submission date	27.07.2022	will be considered as complete and valid auto-
atically on	26.08.2022	unless otherwise disposed!	

Part Submission Warrant

Part Name T50ROSEC5A Cust. Part Number 2048562
 Shown on Drawing No. 141478 Org. Part Number 15040591
 Engineering Change Level 5 Dated 24.10.2011
 Additional Engineering Changes n/a Dated n/a
 Safety and/or Government Regulation ☐ Yes ☒ No Purchase Order No. 15040591 Weight (kg) 0,0030
 Checking Aid No. n/a Checking Aid Engineering Change Level n/a Dated n/a

ORGANIZATION MANUFACTURING INFORMATION

HellermannTyton GmbH DUNS: 315430892

Organization Name & Supplier/Vendor Code

Großer Moorweg 45

Street Address

Tornesch

25436

Germany

City

Region

Postal Code

Country

CUSTOMER SUBMITTAL INFORMATION

REXEL Germany GmbH & Co. KG

(12570)

Customer Name/Division

Robert Grünert

Buyer/Buyer Code

various

Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported?

☒ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format:

-

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
usage of suitable material (Grilon TSZ1 instead of Akromid A31S3) for supplies starting from 01.09.2022

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 design record requirements: ☒ Yes ☐ No (If "No" - Explanation Required)

Mold / Cavity / Production Process

injection moulding / serial mold

DECLARATION

I 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 confidential - pcs / 24 hours.

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

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered?

☐ Yes ☐ No ☒ n/a

Organization Authorized Signature i.A. V. Schae

Date 27-Jul-22

Print Name i.A. N. Lohse

Phone No. +49 (0) 4122 701 5726

Fax No. +49 4122 701 241

Title Quality Assistant

E-mail nescha.lohse@HellermannTyton.de

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature

Date

Print Name

Customer Tracking Number (optional)

HellermannTyton

97970

Production Part Approval Performance Test Results

[illegible]

Blanket statements of conformance are unacceptable for any test results.

This letter is done automatically and is valid without signature.

<u>CREATOR</u>	<u>TITLE</u>	<u>DATE</u>
i.A. N. Lohse	Quality Assistant	27-Jul-22



Inspection certificate 21000189

according to: DIN EN 10204 3.1

Hellermann Tyton Sp.z.o.o.

Kotunia 111
PL, 62-400, Stupca

Confirmation EMS: 524976/01
Ord. no. customer: 4500130335
Packing List: 233878
Date of delivery: 04.01.2021

To:
Fax No.: +48632237110

Product:

Grilon TSZ 1 schwarz 9835 (Sackware 25kg) 112

Quantity [kg]:
10500

Production Number Position:
0131307 067, 068, 069, 070, 071, 072, 073, 074, 075, 076
, 077, 078, 079, 080

			Production Number:			
Properties	Method	Unit	0131307			
Moisture content 160°C Karl-Fischer	ISO15512	%	0.03			
MVR at 275°C 5 kg	ISO1133	ml/10min	120			

Gross-Umstadt, 05.01.2021
K. Hryniewicz , Quality Assurance

We hereby certify that the material fully corresponds to the agreed properties and condition. The applicable procedures such as sampling, test plan and methods are described in our quality system in accordance with IATF 16949 and certified by SQS. The test results have been determined to the best of our knowledge. Our company does not accept any liability for properties of parts manufactured from this material. In addition, the qualification of the product for a given application cannot be derived from the data and must be ascertained by the customer. The certificate does not release the customer from a received material inspection. The general sales terms and conditions of purchase of EMS-CHEMIE (Deutschland) GmbH apply. These can be downloaded at www.emsgrivory.com. This document is issued electronically and is valid without signature.



HELLERMANN TYTON GMBH
GROSSER MOORWEG 45
TORNESCH, GERMANY 25436
Attention : AXEL LANG

Ascend Performance Materials Operations LLC
Nylon Plastics and Polymers
3000 Chemstrand Road
Cantonment, FL 32533
Telephone : (850)968-7000

Certificate Date : 11-Feb-22
Delivery No : 382604159
Shipped Qty : 47,450.000 Lbs
21,523.320 Kgs
Customer P.O. No: 4500155499/30
Container : 0000000000002085153

Certificate of Analysis

This certifies that Nylon Resin shipped to you from Ascend Performance Materials Operations LLC has been tested and found to meet required specifications.

This material was produced under a Quality System that meets ISO 9001:2015 and IATF 16949:2016 criteria.

If you have questions or concerns about this Certificate of Analysis, please contact Ascend Performance Materials Customer Operations at 1-888-927-2363.

This product meets the requirements of the following specifications: ASTM D4066 PA0121, ASTM D6779 PA0121, WSK-M4D648A (ESF-M4D 82A), MRS # 75, Rev. 7, Date 2-Jan-2019, GMP.PA66.018, CMP NY057 AA, MSDB 41 CPN 1076, MSDB 41 CPN 1899, FMVSS 302*, CPN3490, D4000 PA012, SAE J1639 PA0121, Ford WQ 100A, GMW16036P-PA66.

Material: VYDYNE 22HSP NT Material No: 10425537 Batch No: JK22VY05 Date of Mfg: 22-Nov-2021

Ascend Performance Materials Operations LLC Specification

<u>Lot Data Property</u>	<u>Test Method</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
Copper	STM 00667	80	100	88	PPM
Flex Modulus	ISO 178;2MM/MIN	2500		3056	MPa
Moisture	ASTM D6869	0.12	0.20	0.13	%
Nom. Str.@ Brk	ISO 527-1,2 / 1A	17.5	35.0	26.9	%
Notched Izod	ISO 180 / 1A	3.5	8.0	4.9	kJ/m^2
Relative Visc.	ASTM D789[9.34]	45.0	48.0	46.0	N/A
Strength @ Yld	ISO 527-1,2 / 1A	78	98	80	MPa
VISCOSITY NUM. SULFURIC	ISO 307	136.9	142.8	138.9	ml/g

Note: This certificate is generated and controlled by electronic means. No signature is required. This document may not be reproduced, except in full, without written consent of the Nylon Plastics and Polymers Department, Ascend Performance Materials Operations LLC.

All information contained in this letter is provided for informational purposes only and is not meant to alter or waive the appropriate contractual product specifications. Moisture values are representative of the product at the time it was sampled. If numerical flame spread ratings appear herein, they are not intended to reflect the hazards presented by this or any other material under actual fire conditions. Each end user should determine whether potential fire hazards are associated with the finished product, and whether this resin is suitable for the particular end use.

This Certificate of Analysis is provided by Ascend Performance Materials (or its authorized distributor) to its direct purchaser only and is intended for internal use. It is not valid if resold, conveyed or otherwise transferred to another party without Ascend's prior written consent. Ascend makes no warranties and assumes no liability for any product or certification obtained from an unauthorized source. Contact Ascend at +1 713-315-5700 to confirm the validity of any third party supplier. Ascend and Vydine are registered trademarks of Ascend Performance Materials Operations LLC.



HFP BANDSTAHL
HUEHOCO GROUP

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Eingegangen
29.06.2021

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

21003616

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067
Zu Auftrag Lieferplan AL-21000412

vom: 28.06.2021
vom: 23.10.2020

Seite: 1
(FB_036)

Bestellnummer: E 20 00659 Bestelldatum: 21.10.2020 Lieferant: 1690000
Kundennummer: 10009 Fax-Nr.: +49 2754 375364 eMail: nadine.schuppert@osterrath.de
Abruf-Nr.: 9. Abruf 22.06.2021

Artikelnummer	Kundenartikel	Menge ME
0400003500101832 0,4B x 35,0 C75S +A _ GK G DIN/EN/Norm 10132-4 / 10140 ** Im Übrigen wie bestätigt ** Lieferzustand geölt	BC-04003530 MA-RL	12.561 kg

Schmelzanalyse *									
Schmelzen-Nr.	C	Si	Mn	P	S	Cr	Mo	Ni	
Soll min	0,700	0,150	0,600						
Soll max	0,800	0,350	0,900	0,025	0,025	0,400	0,100	0,400	
582228	0,710	0,240	0,690	0,007	0,001	0,220	0,004	0,030	

Maßtoleranzen		Soll Dicke	0,4	-0,03 /
		Soll Breite	35,0	/ +0,2

Mechanische Werte *					
Packstück	Dicke (mm)	PA-Nr.	Rp (MPa)	Rm (MPa)	A (%) A80
Soll min	0,370				15,0
Soll max	0,400		510	640	

Abruf-Nr.: 9. Abruf 22.06.2021

UP201777	0,379	21002060-5	409	557	25,2
UP201778	0,385	21002060-5	388	547	25,1
UP201779	0,379	21002060-5	409	557	25,2
UP201793	0,388	21002060-5	383	541	25,0
UP201794	0,388	21002060-5	383	541	25,0
UP201799	0,388	21002060-5	383	541	25,0
UP201816	0,379	21002060-5	409	557	25,2
UP201817	0,379	21002060-5	409	557	25,2
UP201820	0,388	21002060-5	383	541	25,0
UP201826	0,388	21002060-5	383	541	25,0
UP201830	0,385	21002060-5	388	547	25,1
UP201832	0,385	21002060-5	388	547	25,1

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Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

Telefon
0049 3695 663-0
Telefax
0049 3695 663-105
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jena HRB 306033
UID-Nr.
DE289746684

GEPRÜFT
10.07.2021
Sebastian Damm



Management
System
LAPF 16840.2016
www.tuv.com
ID: 310603740

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055060
IBAN: DE6784055050000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0480255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF520
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE8EXXX



HFP BANDSTAHL

HUEHOCO GROUP

21003616

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067

vom: 28.06.2021

Seite: 2

Zu Auftrag Lieferplan AL-21000412

vom: 23.10.2020

(FB_036)

Bestellnummer: E 20 00659

Bestelldatum:

21.10.2020 Lieferant: 1690000

Es wird bestätigt, dass die Lieferungen den Anforderungen der Lieferbedingung entsprechen.

Diese durch ein geeignetes Datenverarbeitungssystem erstellte Bescheinigung ist gemäß EN 10204, Abschnitt 5, ohne Unterschrift gültig.

Abnahmebeauftragter
Sebastian Specht

GEPRÜFT
10.07.2021
Sebastian Damm

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Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

Telefon
0049 3695 663-0
Telefax
0049 3695 663-106
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jona HRB 306033
UID-Nr.
DE289746684

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055050
IBAN: DE57840550500000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0460255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF330
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE33XXX



Management
System
ISO 9001:2015
www.tuv.com
ID 9108637546

Barth Galvanik GmbH | In den Schwarzwiesen 4 | 61440 Oberursel (Taunus) |

Osterrath GmbH & Co.KG
Wahlbachsmühle 3

57334 Bad Laasphe

Sammel-Prüfprotokoll

Lieferschein 450720

vom 03.08.2021

Kundennummer 17800

Prüfprotokoll Nr.:462141

Auftragsnr.: 641209-1

Chargennr.: 141-200 / S2103347

Bestellmenge

Artikel

891,000 kg

Blechklammer
vergüten

613944156049

Ihr Auftrag

Ihre BestellNr

LSHT02803

Ihr LS-Datum

30.07.2021

Merkmal 1	6001 Härteprüfung KH HV10				
Messwerte	Einheit: HV10				
1 Stichprobe					

Auswertung über: 1 Stichprobe

Fehler	UTG	OTG	Min	Max	Mittel
0	410,00	520,00	478,00	484,00	481,25

Messwerte der Stichproben:

Nr.	Messwerte									
1	481,00	478,00	480,00	483,00	484,00	483,00	480,00	481,00		

Die beiliegenden Teile wurden in unserem Betrieb nach den entsprechenden Normen bzw. gemäß Kundenvorschrift gewissenhaft bearbeitet und geprüft. Unsere Qualitätssicherung entbindet Sie aber nicht von der Notwendigkeit, die Teile vor der Weiterverarbeitung entsprechenden Kontrollen und Prüfungen zu unterziehen.

Dieses Protokoll wurde maschinell erstellt und ist ohne Unterschrift gültig.



AU21-12434

Prüfzeugnis/inspection certificat DIN EN 10204/3.1

Kunde:	Osterrath GmbH & Co.KG
Artikel:	Stahl-Klammer 61-3944-15/6049
	10004221F
Menge:	891kg
Auftragsnummer:	AU21-12434
Beschichtungsdatum:	19.08.21
Beschichtung / coating:	microcor 500 silber GZ TL245 t647
Schichtstärke/thickness (middle)	18µm (ZnPHS,Protekt KL 100, VH301GZ)
Korrosionsbeständigkeit / corrosion protection : DIN EN ISO 9227 NSS :	840h (VW TL 245 t647)
Rostgrad / rust grade DIN EN ISO 4628-3:	Ri0

Chargen: 2103347

Datum: 19.08.21

QM: QMB Herr Schäfer

P-FMEA	D-02	Project- No GPN / NT Nr.	variable	Revision date Überarbeitungsdatum	04.05.2022
Product Group Produkt Gruppe	assembling edge clips (Montage Edge Clips)	Installation location Verbautort des Bauteils		Revision by Überarbeitet durch:	M. Michel
Part No Artikel Nr.	variable	Drawing number Zeichnung Nr.	variable	Review Date Überprüfungsdatum	04.05.2023
Part Description Artikel Bezeichnung	variable	Ind. Of Drwg. / date Zg. Index / Datum	variable	Reviewed by Überprüft durch	M. Michel
Core Team FMEA Team	M.Michel Prod., O.Pracht QS, H.Spieß PE, Ch. Sievert NT-PM				
Process Responsibility Prozessverantwortung bei	HT-Tornesch	Version of FMEA Version der FMEA	15	This FMEA is generated and administrated electronically. Valid without signature. Diese FMEA ist elektronisch erstellt und verwaltet. Gültig ohne Unterschrift.	
Prepared by Erstellt von	Marco Michel	Original Issue Date Erstausgabe Datum	01.07.2010		

We confirm that we have process FMEA´s available - They are valid for the parts belonging to the Product Group mentioned above.

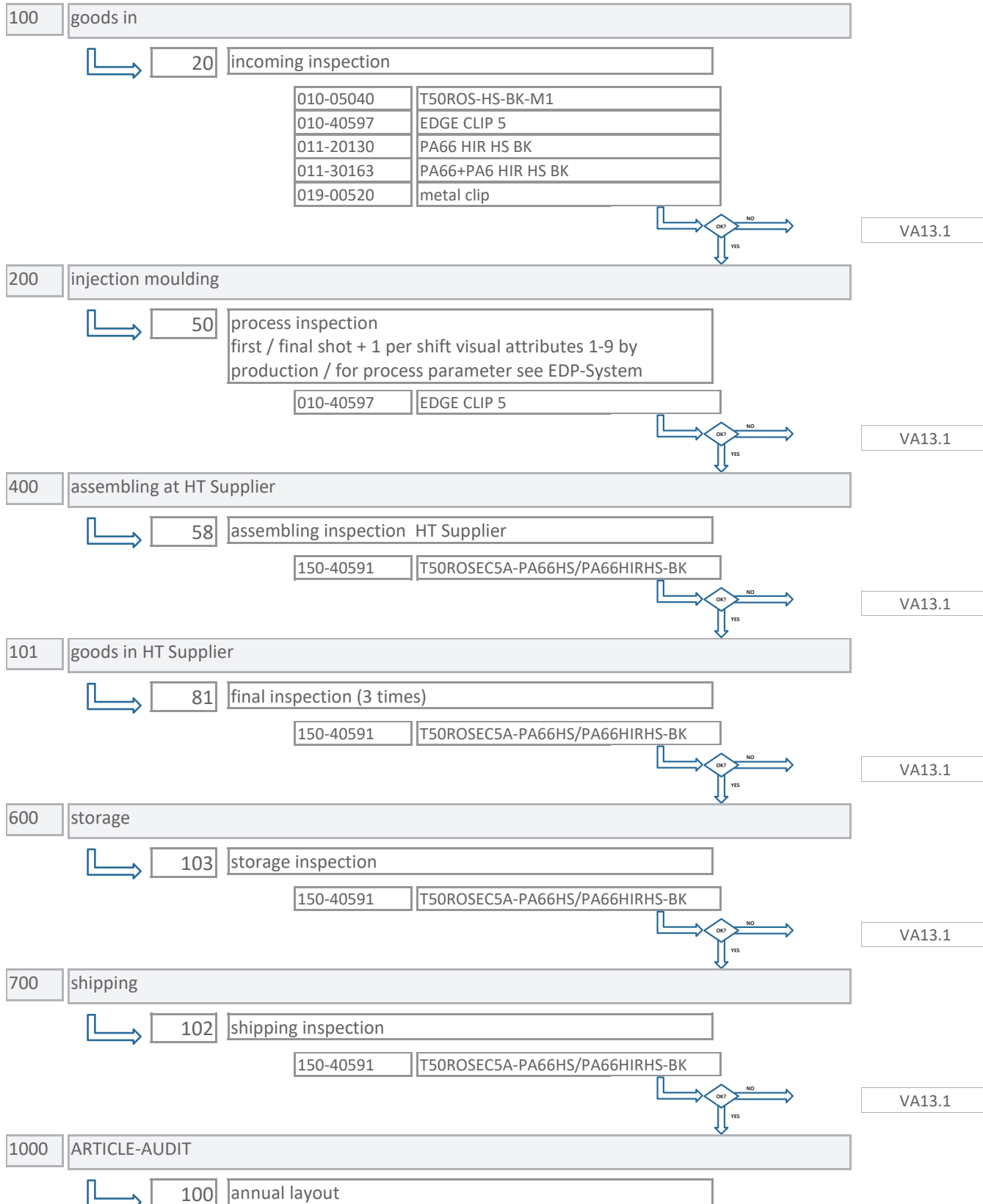
Due to confidentially reasons all further pages of this Process-FMEA need to remain internally, they should not be distributed to external!

In case of entitled interests this documents can be reviewed upon request and on site.

Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK	KEY CONTACT PHONE:	+49 4122 701 330	DATE REVIEWED:	01.07.2022
DRAWING :	2M5T-14197-MA	CUSTOMER APPROVAL:			
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch		

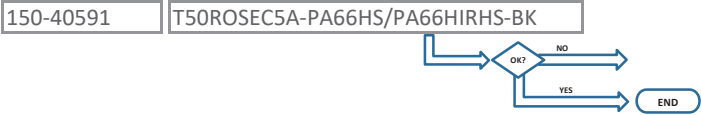
Process / test procedure	document
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Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Process / test procedure	document
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Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
19	identification check					VA13.1
011-20130	PA66 HIR HS BK					
107	box / palette label			100%	900000 Barcode-Scanner	
019-00520	metal clip					
107	box / palette label			100%	900000 Barcode-Scanner	
20	incoming inspection					VA13.1
010-05040	T50ROS-HS-BK-M1					
116	compare with master sample		1 bag	1 / delivery	420000 sample / visual	
010-40597	EDGE CLIP 5					
116	compare with master sample		1 pcs	1 / delivery	420000 sample / visual	
011-20130	PA66 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
304	COC notch impact strength		1 bag	1 / delivery	410000 manual / visual	
305	COC yield stress		1 bag	1 / delivery	410000 manual / visual	
011-30163	PA66+PA6 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
306	COC meld volume index		1 bag	1 / delivery	410000 manual / visual	
019-00520	metal clip					
40-1	dimension	5 - 6,5 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-2	dimension	0 - 0,4 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-3	dimension	0 - 0,6 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
20 incoming inspection						VA13.1
019-00520 metal clip						
40-4 dimension		3,9 - 4,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-5 dimension		7,75 - 8,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
54 expanding test			50 pcs	SKIP LOT PLAN	80243 check gauge	
116 compare with master sample			5 pcs	SKIP LOT PLAN	500353 Master Samples, visual	
307 COC hardness		410 - 520 HV10	1	SKIP LOT PLAN	410000 manual / visual	
1007 pull out force		min 70 N / HTQS-Blech	20 pcs	SKIP LOT PLAN	10000 Tensile tester	
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
1 sink marks			1 shot	1 / day	500338 Master Samples, visual	
2 shortage			1 shot	1 / day	500338 Master Samples, visual	
3 Flashes			1 shot	1 / day	500338 Master Samples, visual	
4 mould mis alignment			1 shot	1 / day	500338 Master Samples, visual	
5 moulding lines			1 shot	1 / day	500338 Master Samples, visual	
6 burnings			1 shot	1 / day	500338 Master Samples, visual	
7 dirt			1 shot	1 / day	500338 Master Samples, visual	
8 deformation			1 shot	1 / day	500338 Master Samples, visual	
9 inclusions			1 shot	1 / day	500338 Master Samples, visual	
54 expanding test			1 shot	1 / day	80066 check gauge 80136 check gauge	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
65 shot weight		see test procedure	1 shot	1 / day	20000 balance	
58 assembling inspection HT Supplier						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
59 assembling				100%	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts				100%	500886 Master Samples, visual 420000 sample / visual	
81 final inspection (3 times)						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
18 quantity			1 bag	1 / delivery	430000 scale counter / manual	
45 mixed parts in pack unit			1 bag	1 / delivery	410000 manual / visual	
59 assembling			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
103 storage inspection						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
102 shipping inspection						VA13.1

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR	
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330	
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022	
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:		

Part / Prozess No / Characteristic		SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
102	shipping inspection						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
100	annual layout						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	1200 requalification / product audit acc. DRW-spec incl. packageing (1 part-No for mentioned part group)				1 / year acc. AUDITPLAN		

Capability study (ppk)

partname: **EDGE CLIP 5**
GPN: 97-0405

Date: **08.07.2022**

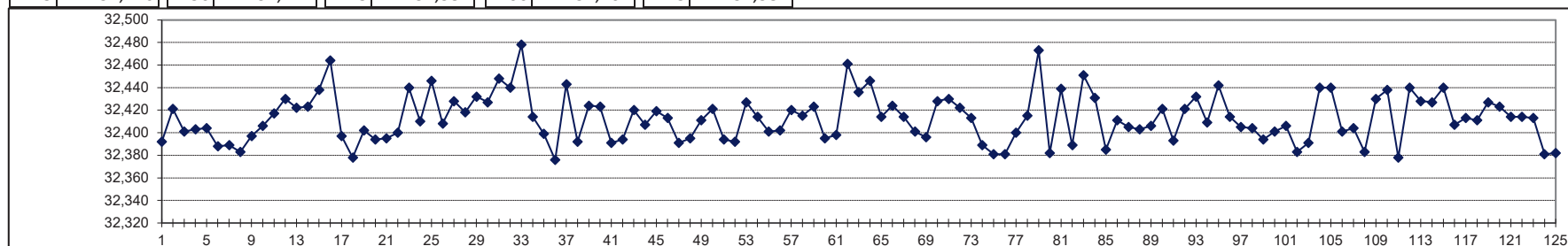
No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)
1	32,392	26	32,408	51	32,394	76	32,381	101	32,406
2	32,421	27	32,428	52	32,392	77	32,400	102	32,383
3	32,401	28	32,418	53	32,427	78	32,415	103	32,391
4	32,403	29	32,432	54	32,414	79	32,473	104	32,440
5	32,404	30	32,427	55	32,401	80	32,382	105	32,440
6	32,388	31	32,448	56	32,402	81	32,439	106	32,401
7	32,389	32	32,440	57	32,420	82	32,389	107	32,404
8	32,383	33	32,478	58	32,415	83	32,451	108	32,383
9	32,397	34	32,414	59	32,423	84	32,431	109	32,430
10	32,406	35	32,399	60	32,395	85	32,385	110	32,438
11	32,417	36	32,376	61	32,398	86	32,411	111	32,378
12	32,430	37	32,443	62	32,461	87	32,405	112	32,440
13	32,422	38	32,392	63	32,436	88	32,403	113	32,428
14	32,423	39	32,424	64	32,446	89	32,406	114	32,427
15	32,438	40	32,423	65	32,414	90	32,421	115	32,440
16	32,464	41	32,391	66	32,424	91	32,393	116	32,407
17	32,397	42	32,394	67	32,414	92	32,421	117	32,413
18	32,378	43	32,420	68	32,401	93	32,432	118	32,411
19	32,402	44	32,407	69	32,396	94	32,409	119	32,427
20	32,394	45	32,419	70	32,428	95	32,442	120	32,423
21	32,395	46	32,413	71	32,430	96	32,414	121	32,414
22	32,400	47	32,391	72	32,422	97	32,405	122	32,414
23	32,440	48	32,395	73	32,413	98	32,404	123	32,413
24	32,410	49	32,411	74	32,389	99	32,394	124	32,381
25	32,446	50	32,421	75	32,381	100	32,401	125	32,382

acceptable tolerance (+/-) **5** [‰]

max	32,4780
min	32,3760
R	0,1020
S	0,0209
X/	32,4129
LT	32,2508
UT	32,5749
valid +/-	0,1621

ppk 2,58

(demand: >= 1.67)



REPEATABILITY AND REPRODUCIBILITY ANALYSIS REPORT

acc. to MSA 4th Edition

NON DESTRUCTIVE TEST

Specimen : Plastic reference part (GPN20-1304)	Gage type : Weight scale	Plant : Tornesch																																																																																																																																																																																																																																																																																																																																																																																																			
Part. No. : 01021304	Gage number : PMN 02-0111	Date : 31.01.2022																																																																																																																																																																																																																																																																																																																																																																																																			
Characteristic : Shot weight ($\pm 3,5\%$)	performed by:	approved by:																																																																																																																																																																																																																																																																																																																																																																																																			
Tolerance : 0,064 Units gramm	Name: Tobias Cohrt	Jens Feil																																																																																																																																																																																																																																																																																																																																																																																																			
Signature:																																																																																																																																																																																																																																																																																																																																																																																																					
# of operators: 3	# of trials: 3	# of parts: 10																																																																																																																																																																																																																																																																																																																																																																																																			
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[\text{Min}(X)_{ABC}] = 8,0927 - 8,0924$ </td> <td>X_{DIFF} = 0,0003</td> </tr> <tr> <td colspan="11"> $UCL_R = R * D_4 = 0,0012 * 2,58$ </td> <td>UCL_R = 0,0031</td> </tr> <tr> <td colspan="11"> $D_4 = 3,27 \text{ for 2 trials} \quad 2,58 \text{ for 3 trials}$ </td> </tr> <tr> <td colspan="11">Measurement Unit Analysis</td> <td>Total Variation Method</td> <td>Tolerance Method</td> </tr> <tr> <td colspan="11"> Repeatability : Equipment Variation (EV) $EV = R * K_1$ $EV = 0,0007$ </td> <td> Trials K₁ 3 0,5908 </td> <td> $\% EV = 100[EV/TV]$ $\% EV = 21,29$ </td> <td> $\% EV = 100[EV/(tol/6)]$ $\% EV = 6,65$ </td> </tr> <tr> <td colspan="11"> Reproducibility : Appraiser Variation (AV) $AV = [(X_{DIFF} * K_2)^2 - (EV^2 / nr)]^{1/2}$ $AV = 0,0001$ </td> <td> (n parts, r trials) Oper K₂ 3 0,5231 </td> <td> $\% AV = 100[AV/TV]$ $\% AV = 3,51$ </td> <td> $\% AV = 100[AV/(tol/6)]$ $\% AV = 1,10$ </td> </tr> <tr> <td colspan="11"> Repeatability & Reproducibility (GRR) $GRR = (EV^2 + AV^2)^{1/2}$ $GRR = 0,0007$ </td> <td colspan="2"> $\% GRR = 100[GRR/TV]$ $\% GRR = 21,58$ </td> <td> $\% GRR = 100[GRR/(tol/6)]$ $\% GRR = 6,74$ </td> </tr> <tr> <td colspan="11"> Part Variation (PV) $PV = R_{PART} * K_3$ $PV = 0,0033$ </td> <td> Parts K₃ 10 0,3146 </td> <td> $\% PV = 100[PV/TV]$ $\% PV = 97,64$ </td> <td></td> </tr> <tr> <td colspan="11"> Total Variation (TV) $TV = (GRR^2 + PV^2)^{1/2}$ $TV = 0,0033$ </td> <td colspan="3" rowspan="2"> CONCLUSION: Gage system is satisfactory. </td> </tr> <tr> <td colspan="11"> Number of Distinct Categories (ndc) $ndc = 1.41(PV / GRR)$ $ndc = 6,37938$ </td> </tr> <tr> <td colspan="12"> - Under 10% error - 10% to 30% error - Over 30% error Gage system is satisfactory. May be acceptable based upon importance of application, cost of gage, cost of repairs, etc. Gage system is not satisfactory. Identify the causes and take corrective action. </td> </tr> <tr> <td colspan="12">Remarks:</td> </tr> </table>											TRIAL #	P A R T										RESULTS	1	2	3	4	5	6	7	8	9	10	A 1	8,086	8,096	8,092	8,094	8,097	8,090	8,088	8,091	8,094	8,093	A ₁	2	8,087	8,095	8,093	8,094	8,097	8,090	8,088	8,092	8,094	8,093	A ₂	3	8,086	8,096	8,093	8,095	8,098	8,091	8,089	8,091	8,093	8,095	A ₃	Average	8,086	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,094	X _A 8,0924	Range	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	R _A 0,0011	B 1	8,087	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,093	B ₁	2	8,087	8,097	8,093	8,094	8,097	8,091	8,087	8,092	8,093	8,093	B ₂	3	8,086	8,098	8,093	8,095	8,097	8,092	8,089	8,090	8,094	8,093	B ₃	Average	8,087	8,097	8,093	8,094	8,097	8,091	8,088	8,091	8,094	8,093	X _B 8,0925	Range	0,001	0,002	0,000	0,001	0,000	0,002	0,002	0,002	0,001	0,000	R _B 0,0011	C 1	8,087	8,097	8,092	8,095	8,097	8,091	8,089	8,091	8,093	8,093	C ₁	2	8,086	8,098	8,095	8,095	8,096	8,091	8,089	8,091	8,094	8,094	C ₂	3	8,088	8,097	8,093	8,094	8,097	8,090	8,088	8,092	8,095	8,093	C ₃	Average	8,087	8,097	8,093	8,095	8,097	8,091	8,089	8,091	8,094	8,093	X _C 8,0927	Range	0,002	0,001	0,003	0,001	0,001	0,001	0,001	0,001	0,002	0,001	R _C 0,0014	PART	8,0867	8,0967	8,0930	8,0944	8,0970	8,0907	8,0883	8,0912	8,0938	8,0933	R _{PART} = 0,0103	$R = R_A + R_B + R_C / \text{No of operators} = 0,0011 + 0,0011 + 0,0014 / 3$											R = 0,0012	$X_{DIFF} = [\text{Max}(X)_{ABC}] - [\text{Min}(X)_{ABC}] = 8,0927 - 8,0924$											X _{DIFF} = 0,0003	$UCL_R = R * D_4 = 0,0012 * 2,58$											UCL _R = 0,0031	$D_4 = 3,27 \text{ for 2 trials} \quad 2,58 \text{ for 3 trials}$											Measurement Unit Analysis											Total Variation Method	Tolerance Method	Repeatability : Equipment Variation (EV) $EV = R * K_1$ $EV = 0,0007$											Trials K ₁ 3 0,5908	$\% EV = 100[EV/TV]$ $\% EV = 21,29$	$\% EV = 100[EV/(tol/6)]$ $\% EV = 6,65$	Reproducibility : Appraiser Variation (AV) $AV = [(X_{DIFF} * K_2)^2 - (EV^2 / nr)]^{1/2}$ $AV = 0,0001$											(n parts, r trials) Oper K ₂ 3 0,5231	$\% AV = 100[AV/TV]$ $\% AV = 3,51$	$\% AV = 100[AV/(tol/6)]$ $\% AV = 1,10$	Repeatability & Reproducibility (GRR) $GRR = (EV^2 + AV^2)^{1/2}$ $GRR = 0,0007$											$\% GRR = 100[GRR/TV]$ $\% GRR = 21,58$		$\% GRR = 100[GRR/(tol/6)]$ $\% GRR = 6,74$	Part Variation (PV) $PV = R_{PART} * K_3$ $PV = 0,0033$											Parts K ₃ 10 0,3146	$\% PV = 100[PV/TV]$ $\% PV = 97,64$		Total Variation (TV) $TV = (GRR^2 + PV^2)^{1/2}$ $TV = 0,0033$											CONCLUSION: Gage system is satisfactory.			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Range	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	R _A 0,0011																																																																																																																																																																																																																																																																																																																																																																																										
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3	8,086	8,098	8,093	8,095	8,097	8,092	8,089	8,090	8,094	8,093	B ₃																																																																																																																																																																																																																																																																																																																																																																																										
Average	8,087	8,097	8,093	8,094	8,097	8,091	8,088	8,091	8,094	8,093	X _B 8,0925																																																																																																																																																																																																																																																																																																																																																																																										
Range	0,001	0,002	0,000	0,001	0,000	0,002	0,002	0,002	0,001	0,000	R _B 0,0011																																																																																																																																																																																																																																																																																																																																																																																										
C 1	8,087	8,097	8,092	8,095	8,097	8,091	8,089	8,091	8,093	8,093	C ₁																																																																																																																																																																																																																																																																																																																																																																																										
2	8,086	8,098	8,095	8,095	8,096	8,091	8,089	8,091	8,094	8,094	C ₂																																																																																																																																																																																																																																																																																																																																																																																										
3	8,088	8,097	8,093	8,094	8,097	8,090	8,088	8,092	8,095	8,093	C ₃																																																																																																																																																																																																																																																																																																																																																																																										
Average	8,087	8,097	8,093	8,095	8,097	8,091	8,089	8,091	8,094	8,093	X _C 8,0927																																																																																																																																																																																																																																																																																																																																																																																										
Range	0,002	0,001	0,003	0,001	0,001	0,001	0,001	0,001	0,002	0,001	R _C 0,0014																																																																																																																																																																																																																																																																																																																																																																																										
PART	8,0867	8,0967	8,0930	8,0944	8,0970	8,0907	8,0883	8,0912	8,0938	8,0933	R _{PART} = 0,0103																																																																																																																																																																																																																																																																																																																																																																																										
$R = R_A + R_B + R_C / \text{No of operators} = 0,0011 + 0,0011 + 0,0014 / 3$											R = 0,0012																																																																																																																																																																																																																																																																																																																																																																																										
$X_{DIFF} = [\text{Max}(X)_{ABC}] - [\text{Min}(X)_{ABC}] = 8,0927 - 8,0924$											X _{DIFF} = 0,0003																																																																																																																																																																																																																																																																																																																																																																																										
$UCL_R = R * D_4 = 0,0012 * 2,58$											UCL _R = 0,0031																																																																																																																																																																																																																																																																																																																																																																																										
$D_4 = 3,27 \text{ for 2 trials} \quad 2,58 \text{ for 3 trials}$																																																																																																																																																																																																																																																																																																																																																																																																					
Measurement Unit Analysis											Total Variation Method	Tolerance Method																																																																																																																																																																																																																																																																																																																																																																																									
Repeatability : Equipment Variation (EV) $EV = R * K_1$ $EV = 0,0007$											Trials K ₁ 3 0,5908	$\% EV = 100[EV/TV]$ $\% EV = 21,29$	$\% EV = 100[EV/(tol/6)]$ $\% EV = 6,65$																																																																																																																																																																																																																																																																																																																																																																																								
Reproducibility : Appraiser Variation (AV) $AV = [(X_{DIFF} * K_2)^2 - (EV^2 / nr)]^{1/2}$ $AV = 0,0001$											(n parts, r trials) Oper K ₂ 3 0,5231	$\% AV = 100[AV/TV]$ $\% AV = 3,51$	$\% AV = 100[AV/(tol/6)]$ $\% AV = 1,10$																																																																																																																																																																																																																																																																																																																																																																																								
Repeatability & Reproducibility (GRR) $GRR = (EV^2 + AV^2)^{1/2}$ $GRR = 0,0007$											$\% GRR = 100[GRR/TV]$ $\% GRR = 21,58$		$\% GRR = 100[GRR/(tol/6)]$ $\% GRR = 6,74$																																																																																																																																																																																																																																																																																																																																																																																								
Part Variation (PV) $PV = R_{PART} * K_3$ $PV = 0,0033$											Parts K ₃ 10 0,3146	$\% PV = 100[PV/TV]$ $\% PV = 97,64$																																																																																																																																																																																																																																																																																																																																																																																									
Total Variation (TV) $TV = (GRR^2 + PV^2)^{1/2}$ $TV = 0,0033$											CONCLUSION: Gage system is satisfactory.																																																																																																																																																																																																																																																																																																																																																																																										
Number of Distinct Categories (ndc) $ndc = 1.41(PV / GRR)$ $ndc = 6,37938$																																																																																																																																																																																																																																																																																																																																																																																																					
- Under 10% error - 10% to 30% error - Over 30% error Gage system is satisfactory. May be acceptable based upon importance of application, cost of gage, cost of repairs, etc. Gage system is not satisfactory. Identify the causes and take corrective action.																																																																																																																																																																																																																																																																																																																																																																																																					
Remarks:																																																																																																																																																																																																																																																																																																																																																																																																					

Intended For Welded Screw Ø
Pour Goujon Soudé à Filets Couchés Ø
Aufnahme fuer Schweissbolzen Ø

Tensile Force (N)
Tenue au serrage (N)
Schlaufenhaltekraft (N)
siehe Tabelle/
see table

Hole Size
Trou Ø
Loch Ø

Panel Thickness
Épaisseur Support
Blechdicke

Bundle Ø
Toron Ø
Buendel Ø
siehe Tabelle/
see table

Material
Matière
Werkstoff

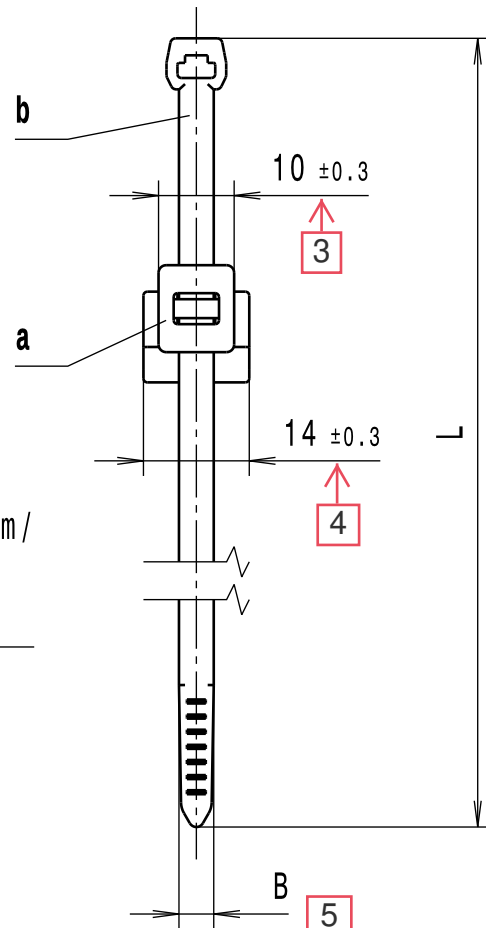
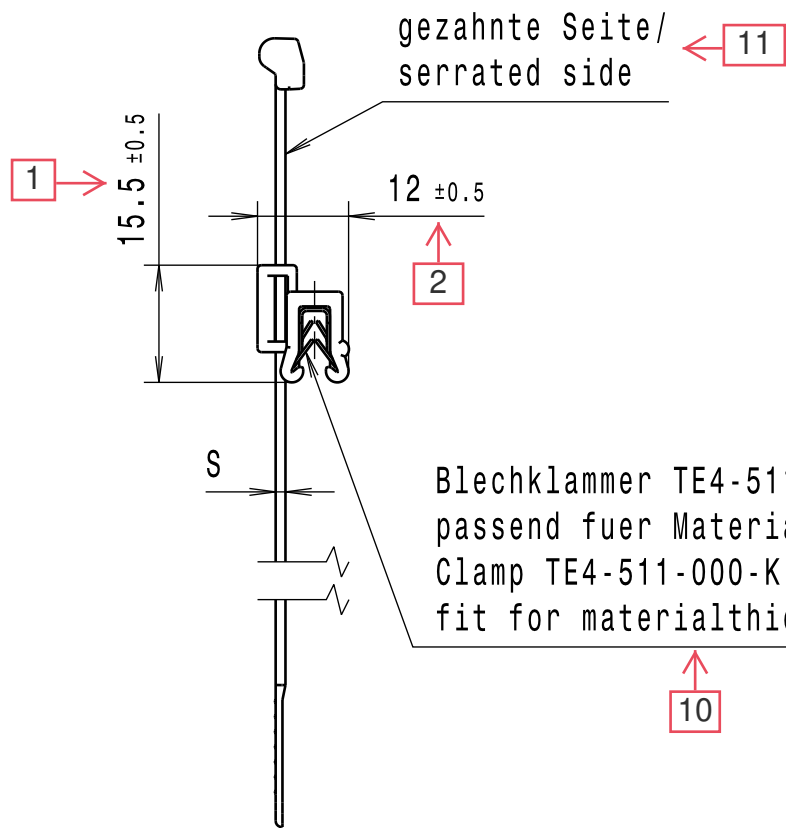
a:
PA 6.6

b:
PA 6.6

Tolerances
Dimension without tolerances
details to:
Tolérances
Cotes sans tolérances:
Toleranzen
Masse ohne
Toleranzangaben nach:

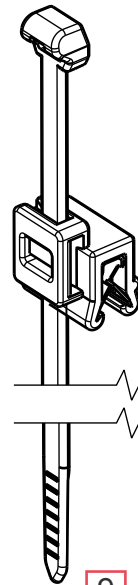
PERFORMANCE
SPECIFICATION
AUSFUEHRUNG
SPEZIFIKATION

Durch das Herstellverfahren bedingte Geometrieaenderungen (Anspritung, Auswerfermarkierungen, etc.) zulaessig. Einzelheiten der Ausfuehrung bleiben dem Hersteller ueberlassen. The manufacturing-related geometry changes (injection point, ejectors marks, etc.) allowed. Design of the details are left to suppliers discretion.



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ISO
1:1



Bezeichnungsbeispiel: ① ②
a: Sockel EC5A und
b: Kabelbinder T50ROS
ist: Befestigungsbinder T50R0SEC5A
Example of designation:
a: Socket EC5A and
b: Cable tie T50ROS
being: Fixing tie T50R0SEC5A

deutscher Text ist verbindlich /
german text is valid

Revision level Indice Aenderungsstand		Revision Record Désignation Beschreibung der Aenderung	Changed Modifié Geaendert	Date Datum	Approved Approuvé Geprueft	Date Datum
Drawing Dessin Zeichnung	Part Pièce Solid					
1	0	Bezeichnung ...EC5A war ...EC5B	Steiner	16.11.00	Mueller	16.11.00
2	0	T50S0SEC5A in Tabelle hinzu, Bezeichnung -MC5-BK entfaellt	Steiner	23.04.01	Wien	23.04.01
3	0	Buendel Ø 31 mm war Ø 45 mm	Mueller	26.04.02	Wien	26.04.02
4	0	Farbe natur und Schlaufenhaltekraft hinzu, Mass 200 ±5 war 200 ±10, Rahmen neu, CAD-Systemwechsel	Langeloh	07.08.08	Spiesz	07.08.08
5	0	Materialangaben ueberarbeitet	Langeloh	24.10.11	Schiwek	24.10.11

Zeile/ line	Artikelbezeichnung/ product type	Laenge/ length L	Bandbreite/ strap width B	Dicke/ thickness S	Buendel/ bundle Ø	Schlaufenhaltekraft/ tensile force N min.
1	T50R0SEC5A	200 ±5	4.6 ±0.2	1.3 ±0.2	4-45	225
2	T50S0SEC5A	150 ±5	4.6 ±0.2	1.3 ±0.2	4-31	225

The copyright of this drawing is reserved by HELLERMANNTYTON. It is issued on condition that it is not reproduced, copied or disclosed to a third party, either wholly or in part, without the consent of HELLERMANNTYTON.		Drawn Dessiné Par Gezeichnet	Steiner	27.09.00	Scale Echelle Maszstab	1:1	Project Number Numéro de projet Projektnummer	NT 405-97
La propriété de ce plan est réservée à la société HELLERMANNTYTON. Il est distribué à condition qu'il ne soit pas reproduit, communiqué ou révélé à une tierce partie, soit complètement ou en partie, sans le consentement de la société HELLERMANNTYTON.		Approved Approuvé Par Geprueft	Spiesz	27.09.00	Title Titre Benennung			Befestigungsbinder/Fixing tie ...EC5A ①
Weitergabe sowie Vervielfaeltigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdruecklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte fuer den Fall der Patenterteilung oder Gebrauchsmuster-Eintragung vorbehalten.		HellermannTyton		Drawing-No Plan-No Zeichnungs-Nr		14.1478		
		Manchester Telephone: +44 (0) 161 945 4181 Facsimile: +44 (0) 161 947 2228		Trappes Téléphone: +33 (0) 1 30 13 80 00 Télécopie: +33 (0) 1 30 13 80 60		Tornesch Telefon: +49 (0) 41 22 / 701 - 1 Telefax: +49 (0) 41 22 / 701 - 400		Format D.Size A3
								Sheet Page Blatt 1 / 1



Inspection certificate 21000189

according to: DIN EN 10204 3.1

Hellermann Tyton Sp.z.o.o.

Kotunia 111
PL, 62-400, Stupca

Confirmation EMS: 524976/01
Ord. no. customer: 4500130335
Packing List: 233878
Date of delivery: 04.01.2021

To:
Fax No.: +48632237110

Product:

Grilon TSZ 1 schwarz 9835 (Sackware 25kg) 112

Quantity [kg]:
10500

Production Number Position:
0131307 067, 068, 069, 070, 071, 072, 073, 074, 075, 076
, 077, 078, 079, 080

			Production Number:			
Properties	Method	Unit	0131307			
Moisture content 160°C Karl-Fischer	ISO15512	%	0.03			
MVR at 275°C 5 kg	ISO1133	ml/10min	120			

Gross-Umstadt, 05.01.2021
K. Hryniewicz , Quality Assurance

We hereby certify that the material fully corresponds to the agreed properties and condition. The applicable procedures such as sampling, test plan and methods are described in our quality system in accordance with IATF 16949 and certified by SQS. The test results have been determined to the best of our knowledge. Our company does not accept any liability for properties of parts manufactured from this material. In addition, the qualification of the product for a given application cannot be derived from the data and must be ascertained by the customer. The certificate does not release the customer from a received material inspection. The general sales terms and conditions of purchase of EMS-CHEMIE (Deutschland) GmbH apply. These can be downloaded at www.emsgrivory.com. This document is issued electronically and is valid without signature.



HELLERMANN TYTON GMBH
GROSSER MOORWEG 45
TORNESCH, GERMANY 25436
Attention : AXEL LANG

Ascend Performance Materials Operations LLC
Nylon Plastics and Polymers
3000 Chemstrand Road
Cantonment, FL 32533
Telephone : (850)968-7000

Certificate Date : 11-Feb-22
Delivery No : 382604159
Shipped Qty : 47,450.000 Lbs
21,523.320 Kgs
Customer P.O. No: 4500155499/30
Container : 0000000000002085153

Certificate of Analysis

This certifies that Nylon Resin shipped to you from Ascend Performance Materials Operations LLC has been tested and found to meet required specifications.

This material was produced under a Quality System that meets ISO 9001:2015 and IATF 16949:2016 criteria.

If you have questions or concerns about this Certificate of Analysis, please contact Ascend Performance Materials Customer Operations at 1-888-927-2363.

This product meets the requirements of the following specifications: ASTM D4066 PA0121, ASTM D6779 PA0121, WSK-M4D648A (ESF-M4D 82A), MRS # 75, Rev. 7, Date 2-Jan-2019, GMP.PA66.018, CMP NY057 AA, MSDB 41 CPN 1076, MSDB 41 CPN 1899, FMVSS 302*, CPN3490, D4000 PA012, SAE J1639 PA0121, Ford WQ 100A, GMW16036P-PA66.

Material: VYDYNE 22HSP NT Material No: 10425537 Batch No: JK22VY05 Date of Mfg: 22-Nov-2021

Ascend Performance Materials Operations LLC Specification

<u>Lot Data Property</u>	<u>Test Method</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
Copper	STM 00667	80	100	88	PPM
Flex Modulus	ISO 178;2MM/MIN	2500		3056	MPa
Moisture	ASTM D6869	0.12	0.20	0.13	%
Nom. Str.@ Brk	ISO 527-1,2 / 1A	17.5	35.0	26.9	%
Notched Izod	ISO 180 / 1A	3.5	8.0	4.9	kJ/m^2
Relative Visc.	ASTM D789[9.34]	45.0	48.0	46.0	N/A
Strength @ Yld	ISO 527-1,2 / 1A	78	98	80	MPa
VISCOSITY NUM. SULFURIC	ISO 307	136.9	142.8	138.9	ml/g

Note: This certificate is generated and controlled by electronic means. No signature is required. This document may not be reproduced, except in full, without written consent of the Nylon Plastics and Polymers Department, Ascend Performance Materials Operations LLC.

All information contained in this letter is provided for informational purposes only and is not meant to alter or waive the appropriate contractual product specifications. Moisture values are representative of the product at the time it was sampled. If numerical flame spread ratings appear herein, they are not intended to reflect the hazards presented by this or any other material under actual fire conditions. Each end user should determine whether potential fire hazards are associated with the finished product, and whether this resin is suitable for the particular end use.

This Certificate of Analysis is provided by Ascend Performance Materials (or its authorized distributor) to its direct purchaser only and is intended for internal use. It is not valid if resold, conveyed or otherwise transferred to another party without Ascend's prior written consent. Ascend makes no warranties and assumes no liability for any product or certification obtained from an unauthorized source. Contact Ascend at +1 713-315-5700 to confirm the validity of any third party supplier. Ascend and Vydine are registered trademarks of Ascend Performance Materials Operations LLC.



HFP BANDSTAHL
HUEHOCO GROUP

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Eingegangen
29.06.2021

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

21003616

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067
Zu Auftrag Lieferplan AL-21000412

vom: 28.06.2021
vom: 23.10.2020

Seite: 1
(FB_036)

Bestellnummer: E 20 00659 Bestelldatum: 21.10.2020 Lieferant: 1690000
Kundennummer: 10009 Fax-Nr.: +49 2754 375364 eMail: nadine.schuppert@osterrath.de
Abruf-Nr.: 9. Abruf 22.06.2021

Artikelnummer	Kundenartikel	Menge ME
0400003500101832 0,4B x 35,0 C75S +A _ GK G DIN/EN/Norm 10132-4 / 10140 ** Im Übrigen wie bestätigt ** Lieferzustand geölt	BC-04003530 MA-RL	12.561 kg

Schmelzanalyse	* C	Si	Mn	P	S	Cr	Mo	Ni
Soll min	0,700	0,150	0,600					
Soll max	0,800	0,350	0,900	0,025	0,025	0,400	0,100	0,400
582228	0,710	0,240	0,690	0,007	0,001	0,220	0,004	0,030

Maßtoleranzen	Soll Dicke	0,4	-0,03 /
	Soll Breite	35,0	/ +0,2

Mechanische Werte	* Dicke (mm)	PA-Nr.	Rp (MPa)	Rm (MPa)	A (%) A80
Packstück					
Soll min	0,370				15,0
Soll max	0,400		510	640	

Abruf-Nr.: 9. Abruf 22.06.2021

UP201777	0,379	21002060-5	409	557	25,2
UP201778	0,385	21002060-5	388	547	25,1
UP201779	0,379	21002060-5	409	557	25,2
UP201793	0,388	21002060-5	383	541	25,0
UP201794	0,388	21002060-5	383	541	25,0
UP201799	0,388	21002060-5	383	541	25,0
UP201816	0,379	21002060-5	409	557	25,2
UP201817	0,379	21002060-5	409	557	25,2
UP201820	0,388	21002060-5	383	541	25,0
UP201826	0,388	21002060-5	383	541	25,0
UP201830	0,385	21002060-5	388	547	25,1
UP201832	0,385	21002060-5	388	547	25,1

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Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

Telefon
0049 3695 663-0
Telefax
0049 3695 663-105
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jena HRB 306033
UID-Nr.
DE289746684

GEPRÜFT
10.07.2021
Sebastian Damm



Management
System
LATE 16040.2016
www.tuv.com
ID: 310603740

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055060
IBAN: DE6784055050000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0480255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF520
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE8EXXX



HFP BANDSTAHL

HUEHOCO GROUP

21003616

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Kunde:

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067

vom: 28.06.2021

Seite: 2

Zu Auftrag Lieferplan AL-21000412

vom: 23.10.2020

(FB_036)

Bestellnummer: E 20 00659

Bestelldatum:

21.10.2020 Lieferant: 1690000

Es wird bestätigt, dass die Lieferungen den Anforderungen der Lieferbedingung entsprechen.

Diese durch ein geeignetes Datenverarbeitungssystem erstellte Bescheinigung ist gemäß EN 10204, Abschnitt 5, ohne Unterschrift gültig.

Abnahmebeauftragter
Sebastian Specht

GEPRÜFT
10.07.2021
Sebastian Damm

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Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

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0049 3695 663-0
Telefax
0049 3695 663-106
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jona HRB 306033
UID-Nr.
DE289746684

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055050
IBAN: DE57840550500000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0460255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF330
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE33XXX



Management
System
ISO 9001:2015
www.tuv.com
ID 9108637546

Barth Galvanik GmbH | In den Schwarzwiesen 4 | 61440 Oberursel (Taunus) |

Osterrath GmbH & Co.KG
Wahlbachsmühle 3

57334 Bad Laasphe

Sammel-Prüfprotokoll

Lieferschein 450720

vom 03.08.2021

Kundennummer 17800

Prüfprotokoll Nr.:462141

Auftragsnr.: 641209-1

Chargennr.: 141-200 / S2103347

Bestellmenge

891,000 kg

Artikel

Blechklammer
vergüten

613944156049

Ihr Auftrag

Ihre BestellNr

LSHT02803

Ihr LS-Datum

30.07.2021

Merkmal 1	6001 Härteprüfung KH HV10				
Messwerte	Einheit: HV10				
1 Stichprobe					

Auswertung über: 1 Stichprobe

Fehler	UTG	OTG	Min	Max	Mittel
0	410,00	520,00	478,00	484,00	481,25

Messwerte der Stichproben:

Nr.	Messwerte									
1	481,00	478,00	480,00	483,00	484,00	483,00	480,00	481,00		

Die beiliegenden Teile wurden in unserem Betrieb nach den entsprechenden Normen bzw. gemäß Kundenvorschrift gewissenhaft bearbeitet und geprüft. Unsere Qualitätssicherung entbindet Sie aber nicht von der Notwendigkeit, die Teile vor der Weiterverarbeitung entsprechenden Kontrollen und Prüfungen zu unterziehen.

Dieses Protokoll wurde maschinell erstellt und ist ohne Unterschrift gültig.



AU21-12434

Prüfzeugnis/inspection certificat DIN EN 10204/3.1

Kunde:	Osterrath GmbH & Co.KG
Artikel:	Stahl-Klammer 61-3944-15/6049
	10004221F
Menge:	891kg
Auftragsnummer:	AU21-12434
Beschichtungsdatum:	19.08.21
Beschichtung / coating:	microcor 500 silber GZ TL245 t647
Schichtstärke/thickness (middle)	18µm (ZnPHS,Protekt KL 100, VH301GZ)
Korrosionsbeständigkeit / corrosion protection : DIN EN ISO 9227 NSS :	840h (VW TL 245 t647)
Rostgrad / rust grade DIN EN ISO 4628-3:	Ri0

Chargen: 2103347

Datum: 19.08.21

QM: QMB Herr Schäfer

P-FMEA	D-02	Project- No GPN / NT Nr.	variable	Revision date Überarbeitungsdatum	04.05.2022
Product Group Produkt Gruppe	assembling edge clips (Montage Edge Clips)	Installation location Verbautort des Bauteils		Revision by Überarbeitet durch:	M. Michel
Part No Artikel Nr.	variable	Drawing number Zeichnung Nr.	variable	Review Date Überprüfungsdatum	04.05.2023
Part Description Artikel Bezeichnung	variable	Ind. Of Drwg. / date Zg. Index / Datum	variable	Reviewed by Überprüft durch	M. Michel
Core Team FMEA Team	M.Michel Prod., O.Pracht QS, H.Spieß PE, Ch. Sievert NT-PM				
Process Responsibility Prozessverantwortung bei	HT-Tornesch	Version of FMEA Version der FMEA	15	This FMEA is generated and administrated electronically. Valid without signature. Diese FMEA ist elektronisch erstellt und verwaltet. Gültig ohne Unterschrift.	
Prepared by Erstellt von	Marco Michel	Original Issue Date Erstausgabe Datum	01.07.2010		

We confirm that we have process FMEA´s available - They are valid for the parts belonging to the Product Group mentioned above.

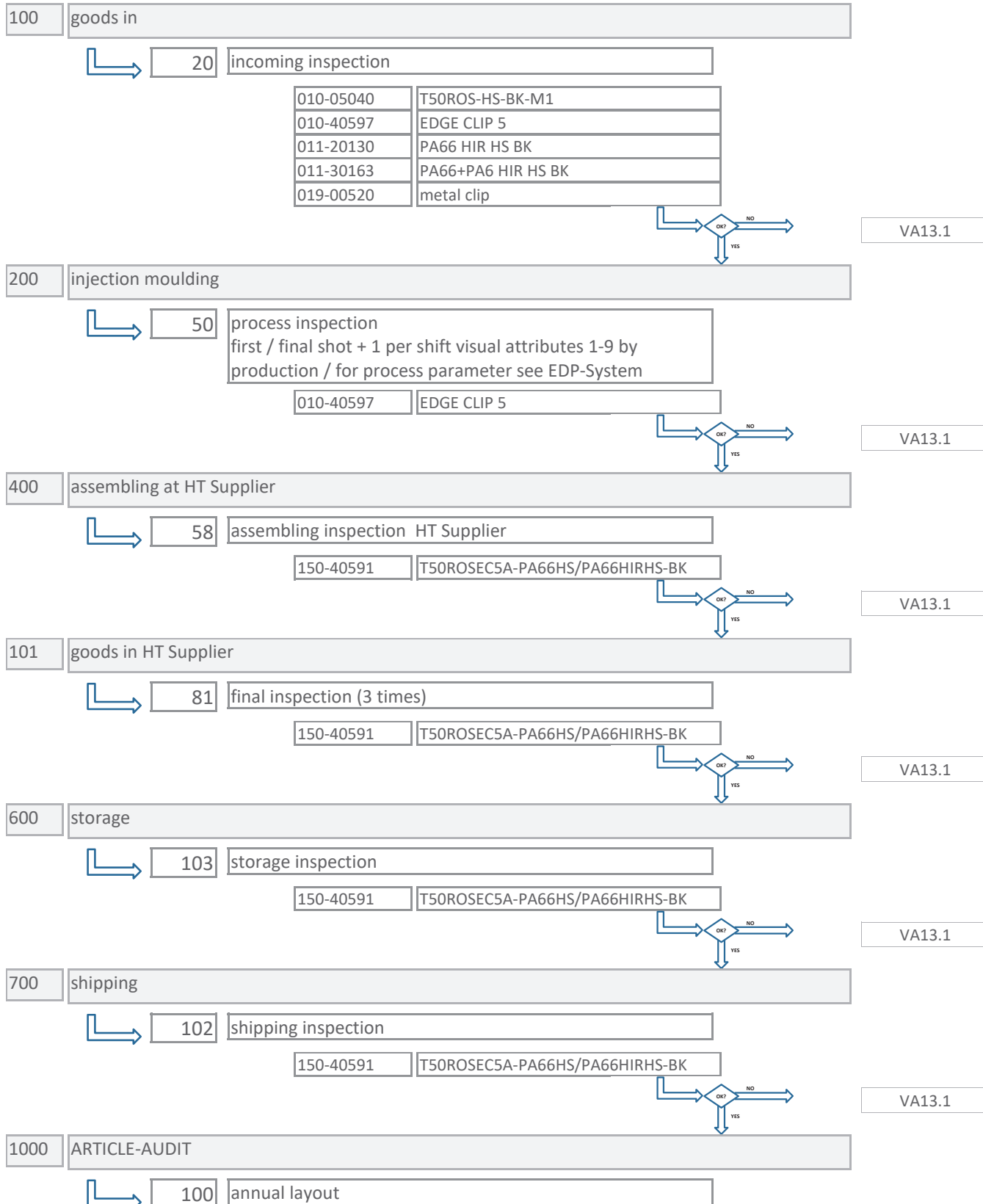
Due to confidentially reasons all further pages of this Process-FMEA need to remain internally, they should not be distributed to external!

In case of entitled interests this documents can be reviewed upon request and on site.

Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK	KEY CONTACT PHONE:	+49 4122 701 330	DATE REVIEWED:	01.07.2022
DRAWING :	2M5T-14197-MA	CUSTOMER APPROVAL:			
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch		

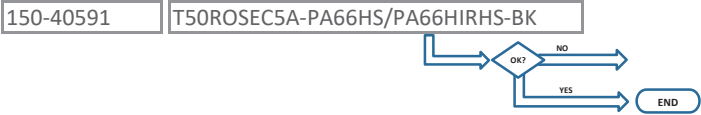
Process / test procedure	document
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Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Process / test procedure	document
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Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
19		identification check				VA13.1
011-20130		PA66 HIR HS BK				
107		box / palette label		100%	900000 Barcode-Scanner	
019-00520		metal clip				
107		box / palette label		100%	900000 Barcode-Scanner	
20		incoming inspection				VA13.1
010-05040		T50ROS-HS-BK-M1				
116		compare with master sample	1 bag	1 / delivery	420000 sample / visual	
010-40597		EDGE CLIP 5				
116		compare with master sample	1 pcs	1 / delivery	420000 sample / visual	
011-20130		PA66 HIR HS BK				
302		COC residual moisture	1 bag	1 / delivery	410000 manual / visual	
304		COC notch impact strength	1 bag	1 / delivery	410000 manual / visual	
305		COC yield stress	1 bag	1 / delivery	410000 manual / visual	
011-30163		PA66+PA6 HIR HS BK				
302		COC residual moisture	1 bag	1 / delivery	410000 manual / visual	
306		COC meld volume index	1 bag	1 / delivery	410000 manual / visual	
019-00520		metal clip				
40-1		dimension	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-2		dimension	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-3		dimension	5 pcs	SKIP LOT PLAN	140000 profile projector	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
20 incoming inspection						VA13.1
019-00520 metal clip						
40-4 dimension		3,9 - 4,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-5 dimension		7,75 - 8,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
54 expanding test			50 pcs	SKIP LOT PLAN	80243 check gauge	
116 compare with master sample			5 pcs	SKIP LOT PLAN	500353 Master Samples, visual	
307 COC hardness		410 - 520 HV10	1	SKIP LOT PLAN	410000 manual / visual	
1007 pull out force		min 70 N / HTQS-Blech	20 pcs	SKIP LOT PLAN	10000 Tensile tester	
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
1 sink marks			1 shot	1 / day	500338 Master Samples, visual	
2 shortage			1 shot	1 / day	500338 Master Samples, visual	
3 Flashes			1 shot	1 / day	500338 Master Samples, visual	
4 mould mis alignment			1 shot	1 / day	500338 Master Samples, visual	
5 moulding lines			1 shot	1 / day	500338 Master Samples, visual	
6 burnings			1 shot	1 / day	500338 Master Samples, visual	
7 dirt			1 shot	1 / day	500338 Master Samples, visual	
8 deformation			1 shot	1 / day	500338 Master Samples, visual	
9 inclusions			1 shot	1 / day	500338 Master Samples, visual	
54 expanding test			1 shot	1 / day	80066 check gauge 80136 check gauge	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
65 shot weight		see test procedure	1 shot	1 / day	20000 balance	
58 assembling inspection HT Supplier						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
59 assembling				100%	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts				100%	500886 Master Samples, visual 420000 sample / visual	
81 final inspection (3 times)						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
18 quantity			1 bag	1 / delivery	430000 scale counter / manual	
45 mixed parts in pack unit			1 bag	1 / delivery	410000 manual / visual	
59 assembling			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
103 storage inspection						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
102 shipping inspection						VA13.1

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR	
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330	
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022	
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:		

Part / Prozess No / Characteristic		SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
102	shipping inspection						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
100	annual layout						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	1200 requalification / product audit acc. DRW-spec incl. packageing (1 part-No for mentioned part group)				1 / year acc. AUDITPLAN		

Capability study (ppk)

partname: **EDGE CLIP 5**
GPN: **97-0405**

Date: **08.07.2022**

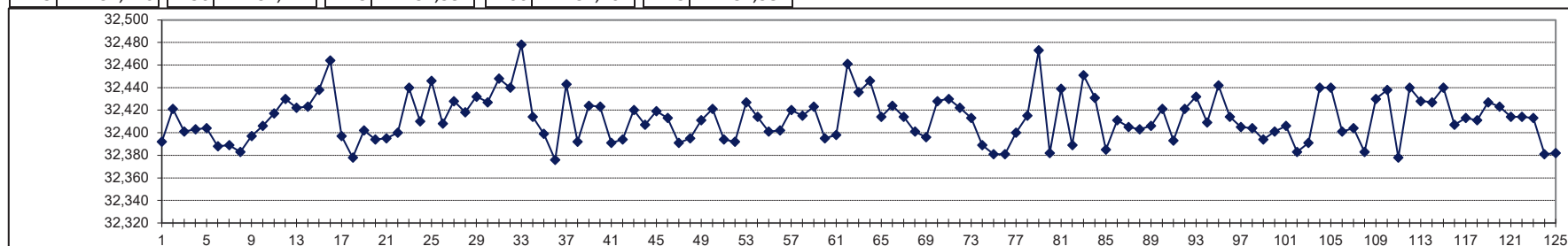
No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)
1	32,392	26	32,408	51	32,394	76	32,381	101	32,406
2	32,421	27	32,428	52	32,392	77	32,400	102	32,383
3	32,401	28	32,418	53	32,427	78	32,415	103	32,391
4	32,403	29	32,432	54	32,414	79	32,473	104	32,440
5	32,404	30	32,427	55	32,401	80	32,382	105	32,440
6	32,388	31	32,448	56	32,402	81	32,439	106	32,401
7	32,389	32	32,440	57	32,420	82	32,389	107	32,404
8	32,383	33	32,478	58	32,415	83	32,451	108	32,383
9	32,397	34	32,414	59	32,423	84	32,431	109	32,430
10	32,406	35	32,399	60	32,395	85	32,385	110	32,438
11	32,417	36	32,376	61	32,398	86	32,411	111	32,378
12	32,430	37	32,443	62	32,461	87	32,405	112	32,440
13	32,422	38	32,392	63	32,436	88	32,403	113	32,428
14	32,423	39	32,424	64	32,446	89	32,406	114	32,427
15	32,438	40	32,423	65	32,414	90	32,421	115	32,440
16	32,464	41	32,391	66	32,424	91	32,393	116	32,407
17	32,397	42	32,394	67	32,414	92	32,421	117	32,413
18	32,378	43	32,420	68	32,401	93	32,432	118	32,411
19	32,402	44	32,407	69	32,396	94	32,409	119	32,427
20	32,394	45	32,419	70	32,428	95	32,442	120	32,423
21	32,395	46	32,413	71	32,430	96	32,414	121	32,414
22	32,400	47	32,391	72	32,422	97	32,405	122	32,414
23	32,440	48	32,395	73	32,413	98	32,404	123	32,413
24	32,410	49	32,411	74	32,389	99	32,394	124	32,381
25	32,446	50	32,421	75	32,381	100	32,401	125	32,382

acceptable tolerance (+/-) **5** [‰]

max	32,4780
min	32,3760
R	0,1020
S	0,0209
X/	32,4129
LT	32,2508
UT	32,5749
valid +/-	0,1621

ppk 2,58

(demand: >= 1.67)



REPEATABILITY AND REPRODUCIBILITY ANALYSIS REPORT

acc. to MSA 4th Edition

NON DESTRUCTIVE TEST

Specimen : Plastic reference part (GPN20-1304)	Gage type : Weight scale	Plant : Tornesch
Part. No. : 01021304	Gage number : PMN 02-0111	Date : 31.01.2022
Characteristic : Shot weight ($\pm 3,5\%$)	performed by: Name: Tobias Cohrt	approved by: Jens Feil
Tolerance : 0,064 Units gramm	Signature: 	

of operators: 3 # of trials: 3 # of parts: 10

OPERATOR		A: Victor Salogin			B: Stefan Specker			C: Frank Werner							
TRIAL #		P			A			R			T			RESULTS	
		1	2	3	4	5	6	7	8	9	10	AVG			
A	1	8,086	8,096	8,092	8,094	8,097	8,090	8,088	8,091	8,094	8,093	A ₁			
	2	8,087	8,095	8,093	8,094	8,097	8,090	8,088	8,092	8,094	8,093	A ₂			
	3	8,086	8,096	8,093	8,095	8,098	8,091	8,089	8,091	8,093	8,095	A ₃			
	Average	8,086	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,094	X _A	8,0924		
	Range	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	R _A	0,0011		
B	1	8,087	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,093	B ₁			
	2	8,087	8,097	8,093	8,094	8,097	8,091	8,087	8,092	8,093	8,093	B ₂			
	3	8,086	8,098	8,093	8,095	8,097	8,092	8,089	8,090	8,094	8,093	B ₃			
	Average	8,087	8,097	8,093	8,094	8,097	8,091	8,088	8,091	8,094	8,093	X _B	8,0925		
	Range	0,001	0,002	0,000	0,001	0,000	0,002	0,002	0,002	0,001	0,000	R _B	0,0011		
C	1	8,087	8,097	8,092	8,095	8,097	8,091	8,089	8,091	8,093	8,093	C ₁			
	2	8,086	8,098	8,095	8,095	8,096	8,091	8,089	8,091	8,094	8,094	C ₂			
	3	8,088	8,097	8,093	8,094	8,097	8,090	8,088	8,092	8,095	8,093	C ₃			
	Average	8,087	8,097	8,093	8,095	8,097	8,091	8,089	8,091	8,094	8,093	X _C	8,0927		
	Range	0,002	0,001	0,003	0,001	0,001	0,001	0,001	0,001	0,002	0,001	R _C	0,0014		
PART		8,0867	8,0967	8,0930	8,0944	8,0970	8,0907	8,0883	8,0912	8,0938	8,0933	R _{PART} = 0,0103			
R = R _A + R _B + R _C / No of operators		0,0011			+	0,0011			+	0,0014			/	3	R = 0,0012
X _{DIFF} = [Max (X) _{ABC}] - [Min (X) _{ABC<td colspan="3">8,0927</td><td>-</td><td colspan="3">8,0924</td><td colspan="6">X_{DIFF} = 0,0003</td>}		8,0927			-	8,0924			X _{DIFF} = 0,0003						
UCL _R = R * D ₄		0,0012			*	2,58			UCL _R = 0,0031						
D ₄ =		3,27 for 2 trials			2,58			for 3 trials							

Measurement Unit Analysis				Total Variation Method		Tolerance Method	
Repeatability : Equipment Variation (EV)							
EV = R * K ₁		Trials	K₁	% EV = 100[EV/TV]		% EV = 100[EV/(tol/6)]	
EV = 0,0007		3	0,5908	% EV = 21,29		% EV = 6,65	
Reproducibility : Appraiser Variation (AV)				(n parts, r trials)			
AV = [(X _{DIFF} * K ₂) ² - (EV ² / nr)] ^{1/2}		Oper	K₂	% AV = 100[AV/TV]		% AV = 100[AV/(tol/6)]	
AV = 0,0001		3	0,5231	% AV = 3,51		% AV = 1,10	
Repeatability & Reproducibility (GRR)							
GRR = (EV ² + AV ²) ^{1/2}				%GRR=100[GRR/TV]		%GRR=100[GRR/(tol/6)]	
GRR = 0,0007				%GRR = 21,58		%GRR= 6,74	
Part Variation (PV)							
PV = R _{PART} * K ₃		Parts	K₃	% PV = 100[PV/TV]			
PV = 0,0033		10	0,3146	% PV = 97,64			
Total Variation (TV)				CONCLUSION:			
TV = (GRR ² + PV ²) ^{1/2}							
TV = 0,0033							
Number of Distinct Categories (ndc)				Gage system is satisfactory.			
ndc = 1.41(PV / GRR)							
ndc = 6,37938							

CONCLUSION:

Gage system is satisfactory.

- Under 10% error Gage system is satisfactory.
- 10% to 30% error May be acceptable based upon importance of application, cost of gage, cost of repairs, etc.
- Over 30% error Gage system is not satisfactory. Identify the causes and take corrective action.

Remarks:

Intended For Welded Screw Ø
Pour Goujon Soudé à Filets Couchés Ø
Aufnahme fuer Schweissbolzen Ø

Tensile Force (N)
Tenue au serrage (N)
Schlaufenhaltekraft (N)
siehe Tabelle/
see table

Hole Size
Trou Ø
Loch Ø

Panel Thickness
Épaisseur Support
Blechdicke

Bundle Ø
Toron Ø
Buendel Ø
siehe Tabelle/
see table

Material
Matière
Werkstoff

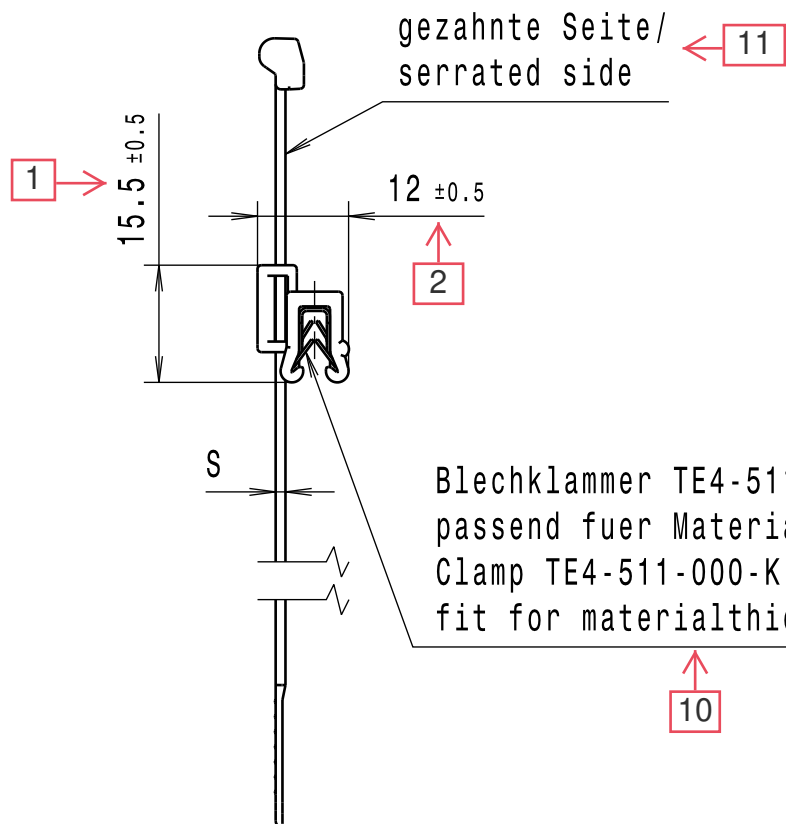
a:
PA 6.6

b:
PA 6.6

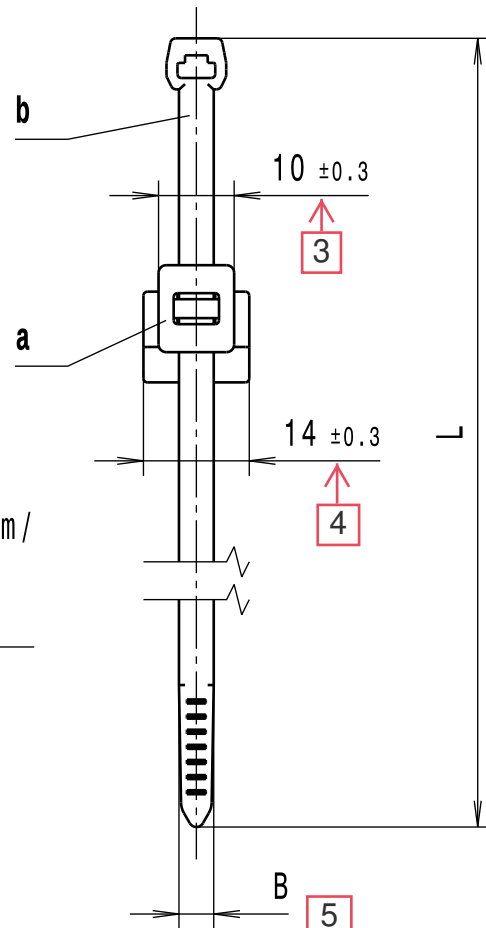
Tolerances
Dimension without tolerances
details to:
Tolérances
Cotes sans tolérances:
Toleranzen
Masse ohne
Toleranzangaben nach:

PERFORMANCE
SPECIFICATION
AUSFUEHRUNG
SPEZIFIKATION

Durch das Herstellverfahren bedingte Geometrieaenderungen (Anspritung, Auswerfermarkierungen, etc.) zulaessig. Einzelheiten der Ausfuehrung bleiben dem Hersteller ueberlassen. The manufacturing-related geometry changes (injection point, ejectors marks, etc.) allowed. Design of the details are left to suppliers discretion.

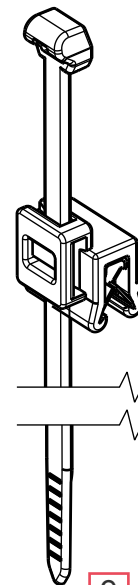


Blechklammer TE4-511-000-K
passend fuer Materialdicke 1-3mm/
Clamp TE4-511-000-K
fit for materialthickness 1-3mm



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ISO
1:1



Bezeichnungsbeispiel: ① ②
a: Sockel EC5A und
b: Kabelbinder T50ROS
ist: Befestigungsbinder T50R0SEC5A
Example of designation:
a: Socket EC5A and
b: Cable tie T50ROS
being: Fixing tie T50R0SEC5A

deutscher Text ist verbindlich /
german text is valid

Revision level Indice Aenderungsstand		Revision Record Désignation Beschreibung der Aenderung	Changed Modifié Geändert	Date Datum	Approved Approuvé Geprueft	Date Datum
Drawing Dessin Zeichnung	Part Pièce Solid					
1	0	Bezeichnung ...EC5A war ...EC5B	Steiner	16.11.00	Mueller	16.11.00
2	0	T50S0SEC5A in Tabelle hinzu, Bezeichnung -MC5-BK entfaellt	Steiner	23.04.01	Wien	23.04.01
3	0	Buendel Ø 31 mm war Ø 45 mm	Mueller	26.04.02	Wien	26.04.02
4	0	Farbe natur und Schlaufenhaltekraft hinzu, Mass 200 ±5 war 200 ±10, Rahmen neu, CAD-Systemwechsel	Langeloh	07.08.08	Spiesz	07.08.08
5	0	Materialangaben ueberarbeitet	Langeloh	24.10.11	Schiwek	24.10.11

Zeile/ line	Artikelbezeichnung/ product type	Laenge/ length L	Bandbreite/ strap width B	Dicke/ thickness S	Buendel/ bundle Ø	Schlaufenhaltekraft/ tensile force N min.
1	T50R0SEC5A	200 ±5	4.6 ±0.2	1.3 ±0.2	4-45	225
2	T50S0SEC5A	150 ±5	4.6 ±0.2	1.3 ±0.2	4-31	225

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Weitergabe sowie Vervielfaeltigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdruecklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte fuer den Fall der Patenterteilung oder Gebrauchsmuster-Eintragung vorbehalten.		HellermannTyton		Drawing-No Plan-No Zeichnungs-Nr		14.1478		
		Manchester Telephone: +44 (0) 161 945 4181 Facsimile: +44 (0) 161 947 2228		Trappes Téléphone: +33 (0) 1 30 13 80 00 Télécopie: +33 (0) 1 30 13 80 60		Tornesch Telefon: +49 (0) 41 22 / 701 - 1 Telefax: +49 (0) 41 22 / 701 - 400		Format D.Size A3
								Sheet Page Blatt 1 / 1

From: **Quality Assurance HellermannTyton GmbH**

Subject: PPAP Approval signature deadline

Dear customer:

As you are aware the PPAP process is an integral part of our business. With that in mind, we are informing our customers who are requesting a PPAP that there is a 30 day (calendar) deadline to which we are expecting your reply back with a signed copy of the PSW with a disposition regarding it's validity. It is important that we maintain compliance to the current AIAG PPAP manual.

As a part of compliance a signed and approved PSW is essential for our records.

We reserve the right to consider that PPAP valid and complete, if we do not receive a signed copy of the PSW within 30 days (calendar).

Once you have received our PPAP information please e-mail us a copy of your disposition with the appropriate signatures as soon as possible to the following person:

nescha.lohse@HellermannTyton.de

Quality Assistant

phone: +49 (0) 4122 701 5726

Your cooperation is greatly appreciated!

Respecting the procedure as described above, the documentation with HellermannTyton PB-No.:			
97971	with submission date	27.07.2022	will be considered as complete and valid auto-
atically on	26.08.2022	unless otherwise disposed!	

Part Submission Warrant

Part Name T50ROSEC5A Cust. Part Number 2048562
 Shown on Drawing No. 141478 Org. Part Number 15040591
 Engineering Change Level 5 Dated 24.10.2011
 Additional Engineering Changes n/a Dated n/a
 Safety and/or Government Regulation ☐ Yes ☒ No Purchase Order No. 15040591 Weight (kg) 0,0030
 Checking Aid No. n/a Checking Aid Engineering Change Level n/a Dated n/a

ORGANIZATION MANUFACTURING INFORMATION

HellermannTyton GmbH DUNS: 315430892

Organization Name & Supplier/Vendor Code

Großer Moorweg 45

Street Address

Tornesch

25436

Germany

City

Region

Postal Code

Country

CUSTOMER SUBMITTAL INFORMATION

REXEL Germany GmbH & Co. KG

(18141)

Customer Name/Division

Robert Grünert

Buyer/Buyer Code

various

Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported?

☒ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format:

-

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
usage of suitable material (Grilon TSZ1 instead of
Akromid A31S3) for supplies starting from 01.09.2022

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 design record requirements: ☒ Yes ☐ No (If "No" - Explanation Required)

Mold / Cavity / Production Process

injection moulding / serial mold

DECLARATION

I 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 confidential - pcs / 24 hours.

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

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered?

☐ Yes ☐ No ☒ n/a

Organization Authorized Signature i.A. V. Lohse

Date 27-Jul-22

Print Name i.A. N. Lohse

Phone No. +49 (0) 4122 701 5726

Fax No. +49 4122 701 241

Title Quality Assistant

E-mail nescha.lohse@HellermannTyton.de

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature _____ Date _____

Print Name _____ Customer Tracking Number (optional) _____

HellermannTyton

97971

Performance Test Results

Blanket statements of conformance are unacceptable for any test results.

<u>CREATOR</u>	<u>TITLE</u>	<u>DATE</u>
i.A. N. Lohse	Quality Assistant	27-Jul-22



HELLERMANN TYTON GMBH
GROSSER MOORWEG 45
TORNESCH, GERMANY 25436
Attention : AXEL LANG

Ascend Performance Materials Operations LLC
Nylon Plastics and Polymers
3000 Chemstrand Road
Cantonment, FL 32533
Telephone : (850)968-7000

Certificate Date : 11-Feb-22
Delivery No : 382604159
Shipped Qty : 47,450.000 Lbs
21,523.320 Kgs
Customer P.O. No: 4500155499/30
Container : 0000000000002085153

Certificate of Analysis

This certifies that Nylon Resin shipped to you from Ascend Performance Materials Operations LLC has been tested and found to meet required specifications.

This material was produced under a Quality System that meets ISO 9001:2015 and IATF 16949:2016 criteria.

If you have questions or concerns about this Certificate of Analysis, please contact Ascend Performance Materials Customer Operations at 1-888-927-2363.

This product meets the requirements of the following specifications: ASTM D4066 PA0121, ASTM D6779 PA0121, WSK-M4D648A (ESF-M4D 82A), MRS # 75, Rev. 7, Date 2-Jan-2019, GMP.PA66.018, CMP NY057 AA, MSDB 41 CPN 1076, MSDB 41 CPN 1899, FMVSS 302*, CPN3490, D4000 PA012, SAE J1639 PA0121, Ford WQ 100A, GMW16036P-PA66.

Material: VYDYNE 22HSP NT Material No: 10425537 Batch No: JK22VY05 Date of Mfg: 22-Nov-2021

Ascend Performance Materials Operations LLC Specification

<u>Lot Data Property</u>	<u>Test Method</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
Copper	STM 00667	80	100	88	PPM
Flex Modulus	ISO 178;2MM/MIN	2500		3056	MPa
Moisture	ASTM D6869	0.12	0.20	0.13	%
Nom. Str.@ Brk	ISO 527-1,2 / 1A	17.5	35.0	26.9	%
Notched Izod	ISO 180 / 1A	3.5	8.0	4.9	kJ/m^2
Relative Visc.	ASTM D789[9.34]	45.0	48.0	46.0	N/A
Strength @ Yld	ISO 527-1,2 / 1A	78	98	80	MPa
VISCOSITY NUM. SULFURIC	ISO 307	136.9	142.8	138.9	ml/g

Note: This certificate is generated and controlled by electronic means. No signature is required. This document may not be reproduced, except in full, without written consent of the Nylon Plastics and Polymers Department, Ascend Performance Materials Operations LLC.

All information contained in this letter is provided for informational purposes only and is not meant to alter or waive the appropriate contractual product specifications. Moisture values are representative of the product at the time it was sampled. If numerical flame spread ratings appear herein, they are not intended to reflect the hazards presented by this or any other material under actual fire conditions. Each end user should determine whether potential fire hazards are associated with the finished product, and whether this resin is suitable for the particular end use.

This Certificate of Analysis is provided by Ascend Performance Materials (or its authorized distributor) to its direct purchaser only and is intended for internal use. It is not valid if resold, conveyed or otherwise transferred to another party without Ascend's prior written consent. Ascend makes no warranties and assumes no liability for any product or certification obtained from an unauthorized source. Contact Ascend at +1 713-315-5700 to confirm the validity of any third party supplier. Ascend and Vydine are registered trademarks of Ascend Performance Materials Operations LLC.

Hellermann Tyton Sp.z.o.o.Kotunia 111
PL, 62-400, StupcaConfirmation EMS: 524976/01
Ord. no. customer: 4500130335
Packing List: 233878
Date of delivery: 04.01.2021**To:**
Fax No.: +48632237110**Product:**

Grilon TSZ 1 schwarz 9835 (Sackware 25kg) 112

Quantity [kg]:
10500**Production Number Position:**
0131307 067, 068, 069, 070, 071, 072, 073, 074, 075, 076
, 077, 078, 079, 080

			Production Number:			
Properties	Method	Unit	0131307			
Moisture content 160°C Karl-Fischer	ISO15512	%	0.03			
MVR at 275°C 5 kg	ISO1133	ml/10min	120			

Gross-Umstadt, 05.01.2021
K. Hryniewicz , Quality Assurance

We hereby certify that the material fully corresponds to the agreed properties and condition. The applicable procedures such as sampling, test plan and methods are described in our quality system in accordance with IATF 16949 and certified by SQS. The test results have been determined to the best of our knowledge. Our company does not accept any liability for properties of parts manufactured from this material. In addition, the qualification of the product for a given application cannot be derived from the data and must be ascertained by the customer. The certificate does not release the customer from a received material inspection. The general sales terms and conditions of purchase of EMS-CHEMIE (Deutschland) GmbH apply. These can be downloaded at www.emsgrivory.com. This document is issued electronically and is valid without signature.



HFP BANDSTAHL
HUEHOCO GROUP

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Eingegangen
29.06.2021

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

21003616

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067
Zu Auftrag Lieferplan AL-21000412

vom: 28.06.2021
vom: 23.10.2020

Seite: 1
(FB_036)

Bestellnummer: E 20 00659 Bestelldatum: 21.10.2020 Lieferant: 1690000
Kundennummer: 10009 Fax-Nr.: +49 2754 375364 eMail: nadine.schuppert@osterrath.de
Abruf-Nr.: 9. Abruf 22.06.2021

Artikelnummer	Kundenartikel	Menge ME
0400003500101832 0,4B x 35,0 C75S +A _ GK G DIN/EN/Norm 10132-4 / 10140 ** Im Übrigen wie bestätigt ** Lieferzustand geölt	BC-04003530 MA-RL	12.561 kg

Schmelzanalyse *									
Schmelzen-Nr.	C	Si	Mn	P	S	Cr	Mo	Ni	
Soll min	0,700	0,150	0,600						
Soll max	0,800	0,350	0,900	0,025	0,025	0,400	0,100	0,400	
582228	0,710	0,240	0,690	0,007	0,001	0,220	0,004	0,030	

Maßtoleranzen		Soll Dicke	0,4	-0,03 /
		Soll Breite	35,0	/ +0,2

Mechanische Werte *					
Packstück	Dicke (mm)	PA-Nr.	Rp (MPa)	Rm (MPa)	A (%) A80
Soll min	0,370				15,0
Soll max	0,400		510	640	

Abruf-Nr.: 9. Abruf 22.06.2021

UP201777	0,379	21002060-5	409	557	25,2
UP201778	0,385	21002060-5	388	547	25,1
UP201779	0,379	21002060-5	409	557	25,2
UP201793	0,388	21002060-5	383	541	25,0
UP201794	0,388	21002060-5	383	541	25,0
UP201799	0,388	21002060-5	383	541	25,0
UP201816	0,379	21002060-5	409	557	25,2
UP201817	0,379	21002060-5	409	557	25,2
UP201820	0,388	21002060-5	383	541	25,0
UP201826	0,388	21002060-5	383	541	25,0
UP201830	0,385	21002060-5	388	547	25,1
UP201832	0,385	21002060-5	388	547	25,1

HFP Bandstahl GmbH | Ein Unternehmen der HUEHOCO GRUPPE | WE MAKE PRODUCTS PROUD

Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

Telefon
0049 3695 663-0
Telefax
0049 3695 663-105
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jena HRB 306033
UID-Nr.
DE289746684

GEPRÜFT
10.07.2021
Sebastian Damm



Management
System
LATE 16040.2016
www.tuv.com
ID: 310603740

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055060
IBAN: DE6784055050000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0480255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF520
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE8EXXX



HFP BANDSTAHL

HUEHOCO GROUP

21003616

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Kunde:

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067

vom: 28.06.2021

Seite: 2

Zu Auftrag Lieferplan AL-21000412

vom: 23.10.2020

(FB_036)

Bestellnummer: E 20 00659

Bestelldatum:

21.10.2020 Lieferant: 1690000

Es wird bestätigt, dass die Lieferungen den Anforderungen der Lieferbedingung entsprechen.

Diese durch ein geeignetes Datenverarbeitungssystem erstellte Bescheinigung ist gemäß EN 10204, Abschnitt 5, ohne Unterschrift gültig.

Abnahmebeauftragter
Sebastian Specht

GEPRÜFT
10.07.2021
Sebastian Damm

HFP Bandstahl GmbH | Ein Unternehmen der HUEHOCO GRUPPE | WE MAKE PRODUCTS PROUD

Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

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0049 3695 663-0
Telefax
0049 3695 663-106
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Web
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Register
Jona HRB 306033
UID-Nr.
DE289746684

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055050
IBAN: DE57840550500000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0460255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF520
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE33XXX



Management
System
ISO 9001:2015
www.tuv.com
ID 9108637546

Barth Galvanik GmbH | In den Schwarzwiesen 4 | 61440 Oberursel (Taunus) |

Osterrath GmbH & Co.KG
Wahlbachsmühle 3

57334 Bad Laasphe

Sammel-Prüfprotokoll

Lieferschein 450720

vom 03.08.2021

Kundennummer 17800

Prüfprotokoll Nr.:462141

Auftragsnr.: 641209-1

Chargennr.: 141-200 / S2103347

Bestellmenge

891,000 kg

Artikel

Blechklammer
vergüten

613944156049

Ihr Auftrag

Ihre BestellNr

LSHT02803

Ihr LS-Datum

30.07.2021

Merkmal 1	6001 Härteprüfung KH HV10					
Messwerte	Einheit: HV10					1 Stichprobe

Auswertung über: 1 Stichprobe

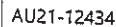
Fehler	UTG	OTG	Min	Max	Mittel
0	410,00	520,00	478,00	484,00	481,25

Messwerte der Stichproben:

Nr.	Messwerte									
1	481,00	478,00	480,00	483,00	484,00	483,00	480,00	481,00		

Die beiliegenden Teile wurden in unserem Betrieb nach den entsprechenden Normen bzw. gemäß Kundenvorschrift gewissenhaft bearbeitet und geprüft. Unsere Qualitätssicherung entbindet Sie aber nicht von der Notwendigkeit, die Teile vor der Weiterverarbeitung entsprechenden Kontrollen und Prüfungen zu unterziehen.

Dieses Protokoll wurde maschinell erstellt und ist ohne Unterschrift gültig.



USt-IdNr.: DE126174991
Gerichtsstand: Ludenscheld

P-FMEA	D-02	Project- No GPN / NT Nr.	variable	Revision date Überarbeitungsdatum	04.05.2022
Product Group Produkt Gruppe	assembling edge clips (Montage Edge Clips)	Installation location Verbautort des Bauteils		Revision by Überarbeitet durch:	M. Michel
Part No Artikel Nr.	variable	Drawing number Zeichnung Nr.	variable	Review Date Überprüfungsdatum	04.05.2023
Part Description Artikel Bezeichnung	variable	Ind. Of Drwg. / date Zg. Index / Datum	variable	Reviewed by Überprüft durch	M. Michel
Core Team FMEA Team	M.Michel Prod., O.Pracht QS, H.Spieß PE, Ch. Sievert NT-PM				
Process Responsibility Prozessverantwortung bei	HT-Tornesch	Version of FMEA Version der FMEA	15	This FMEA is generated and administrated electronically. Valid without signature. Diese FMEA ist elektronisch erstellt und verwaltet. Gültig ohne Unterschrift.	
Prepared by Erstellt von	Marco Michel	Original Issue Date Erstausgabe Datum	01.07.2010		

We confirm that we have process FMEA's available - They are valid for the parts belonging to the Product Group mentioned above.

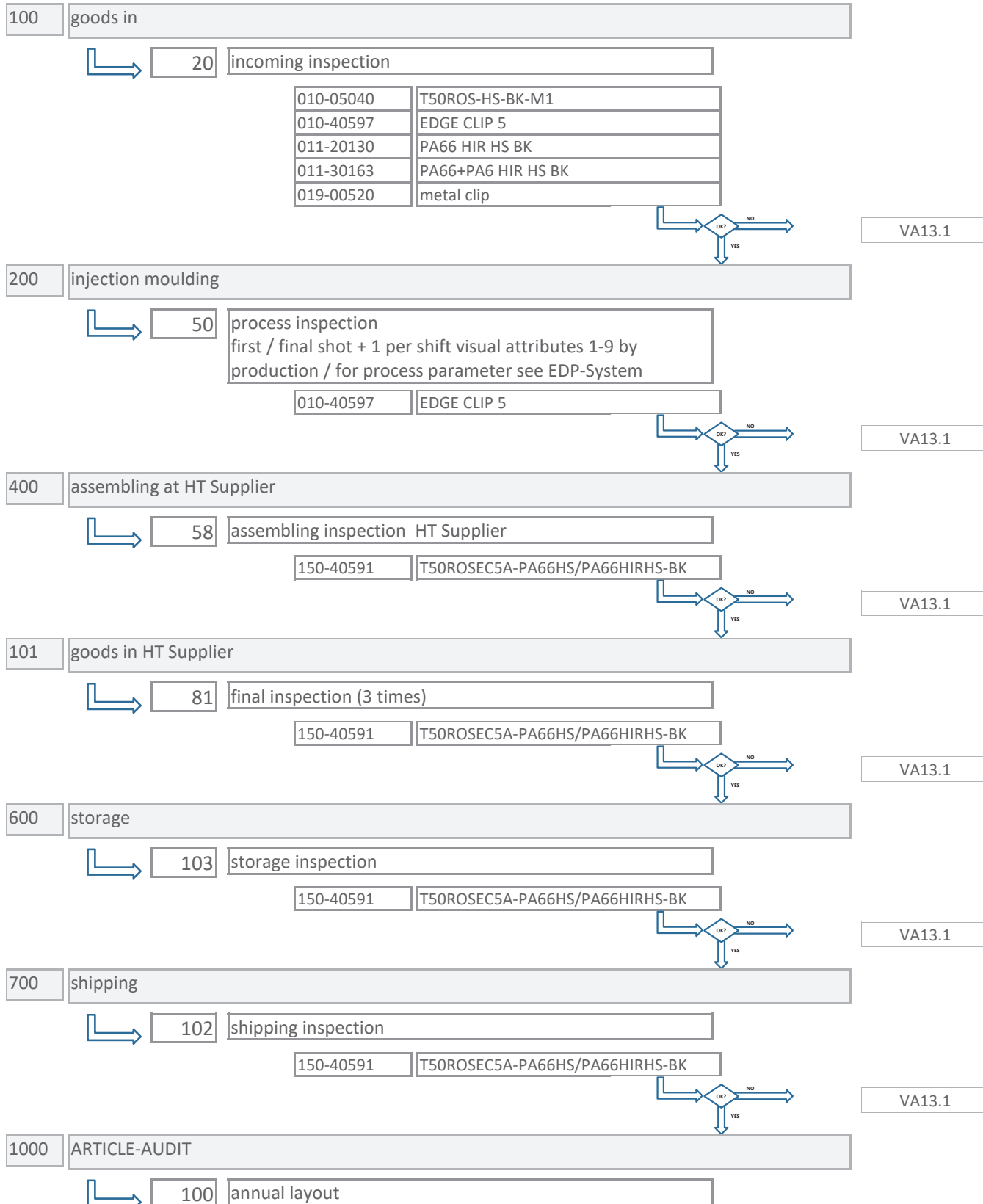
Due to confidentially reasons all further pages of this Process-FMEA need to remain internally, they should not be distributed to external!

In case of entitled interests this documents can be reviewed upon request and on site.

Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK	KEY CONTACT PHONE:	+49 4122 701 330	DATE REVIEWED:	01.07.2022
DRAWING :	2M5T-14197-MA	CUSTOMER APPROVAL:			
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch		

Process / test procedure	document
--------------------------	----------

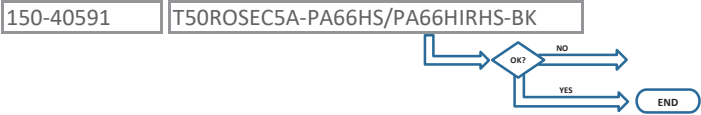


Process Flow Chart

rev: 08.04.2022

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Process / test procedure	document
--------------------------	----------



Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
19	identification check					VA13.1
011-20130	PA66 HIR HS BK					
107	box / palette label			100%	900000 Barcode-Scanner	
019-00520	metal clip					
107	box / palette label			100%	900000 Barcode-Scanner	
20	incoming inspection					VA13.1
010-05040	T50ROS-HS-BK-M1					
116	compare with master sample		1 bag	1 / delivery	420000 sample / visual	
010-40597	EDGE CLIP 5					
116	compare with master sample		1 pcs	1 / delivery	420000 sample / visual	
011-20130	PA66 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
304	COC notch impact strength		1 bag	1 / delivery	410000 manual / visual	
305	COC yield stress		1 bag	1 / delivery	410000 manual / visual	
011-30163	PA66+PA6 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
306	COC meld volume index		1 bag	1 / delivery	410000 manual / visual	
019-00520	metal clip					
40-1	dimension	5 - 6,5 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-2	dimension	0 - 0,4 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-3	dimension	0 - 0,6 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
20 incoming inspection						VA13.1
019-00520 metal clip						
40-4 dimension		3,9 - 4,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-5 dimension		7,75 - 8,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
54 expanding test			50 pcs	SKIP LOT PLAN	80243 check gauge	
116 compare with master sample			5 pcs	SKIP LOT PLAN	500353 Master Samples, visual	
307 COC hardness		410 - 520 HV10	1	SKIP LOT PLAN	410000 manual / visual	
1007 pull out force		min 70 N / HTQS-Blech	20 pcs	SKIP LOT PLAN	10000 Tensile tester	
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
1 sink marks			1 shot	1 / day	500338 Master Samples, visual	
2 shortage			1 shot	1 / day	500338 Master Samples, visual	
3 Flashes			1 shot	1 / day	500338 Master Samples, visual	
4 mould mis alignment			1 shot	1 / day	500338 Master Samples, visual	
5 moulding lines			1 shot	1 / day	500338 Master Samples, visual	
6 burnings			1 shot	1 / day	500338 Master Samples, visual	
7 dirt			1 shot	1 / day	500338 Master Samples, visual	
8 deformation			1 shot	1 / day	500338 Master Samples, visual	
9 inclusions			1 shot	1 / day	500338 Master Samples, visual	
54 expanding test			1 shot	1 / day	80066 check gauge 80136 check gauge	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
65 shot weight		see test procedure	1 shot	1 / day	20000 balance	
58 assembling inspection HT Supplier						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
59 assembling				100%	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts				100%	500886 Master Samples, visual 420000 sample / visual	
81 final inspection (3 times)						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
18 quantity			1 bag	1 / delivery	430000 scale counter / manual	
45 mixed parts in pack unit			1 bag	1 / delivery	410000 manual / visual	
59 assembling			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
103 storage inspection						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
102 shipping inspection						VA13.1

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR	
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330	
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022	
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:		

Part / Prozess No / Characteristic		SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
102	shipping inspection						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
100	annual layout						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	1200 requalification / product audit acc. DRW-spec incl. packageing (1 part-No for mentioned part group)				1 / year acc. AUDITPLAN		

Capability study (ppk)

partname: **EDGE CLIP 5**
GPN: **97-0405**

Date: **08.07.2022**

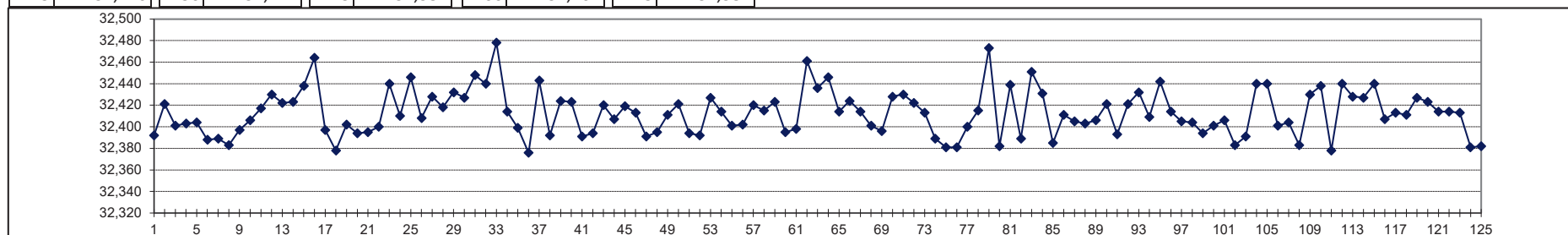
No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)
1	32,392	26	32,408	51	32,394	76	32,381	101	32,406
2	32,421	27	32,428	52	32,392	77	32,400	102	32,383
3	32,401	28	32,418	53	32,427	78	32,415	103	32,391
4	32,403	29	32,432	54	32,414	79	32,473	104	32,440
5	32,404	30	32,427	55	32,401	80	32,382	105	32,440
6	32,388	31	32,448	56	32,402	81	32,439	106	32,401
7	32,389	32	32,440	57	32,420	82	32,389	107	32,404
8	32,383	33	32,478	58	32,415	83	32,451	108	32,383
9	32,397	34	32,414	59	32,423	84	32,431	109	32,430
10	32,406	35	32,399	60	32,395	85	32,385	110	32,438
11	32,417	36	32,376	61	32,398	86	32,411	111	32,378
12	32,430	37	32,443	62	32,461	87	32,405	112	32,440
13	32,422	38	32,392	63	32,436	88	32,403	113	32,428
14	32,423	39	32,424	64	32,446	89	32,406	114	32,427
15	32,438	40	32,423	65	32,414	90	32,421	115	32,440
16	32,464	41	32,391	66	32,424	91	32,393	116	32,407
17	32,397	42	32,394	67	32,414	92	32,421	117	32,413
18	32,378	43	32,420	68	32,401	93	32,432	118	32,411
19	32,402	44	32,407	69	32,396	94	32,409	119	32,427
20	32,394	45	32,419	70	32,428	95	32,442	120	32,423
21	32,395	46	32,413	71	32,430	96	32,414	121	32,414
22	32,400	47	32,391	72	32,422	97	32,405	122	32,414
23	32,440	48	32,395	73	32,413	98	32,404	123	32,413
24	32,410	49	32,411	74	32,389	99	32,394	124	32,381
25	32,446	50	32,421	75	32,381	100	32,401	125	32,382

acceptable tolerance (+/-) **5** [‰]

max	32,4780
min	32,3760
R	0,1020
S	0,0209
X/	32,4129
LT	32,2508
UT	32,5749
valid +/-	0,1621

ppk 2,58

(demand: >= 1.67)



REPEATABILITY AND REPRODUCIBILITY ANALYSIS REPORT

acc. to MSA 4th Edition

NON DESTRUCTIVE TEST

Specimen : Plastic reference part (GPN20-1304)	Gage type : Weight scale	Plant : Tornesch									
Part. No. : 01021304	Gage number : PMN 02-0111	Date : 31.01.2022									
Characteristic : Shot weight ($\pm 3,5\%$)	performed by:	approved by:									
Tolerance : 0,064 Units gramm	Name: Tobias Cohrt	Jens Feil									
Signature:											
# of operators: 3	# of trials: 3	# of parts: 10									
OPERATOR											
A: Victor Salogin											
B: Stefan Specker											
C: Frank Werner											
TRIAL #	P	A	R	T	RESULTS						
	1	2	3	4	5	6	7	8	9	10	AVG
A 1	8,086	8,096	8,092	8,094	8,097	8,090	8,088	8,091	8,094	8,093	A ₁
A 2	8,087	8,095	8,093	8,094	8,097	8,090	8,088	8,092	8,094	8,093	A ₂
A 3	8,086	8,096	8,093	8,095	8,098	8,091	8,089	8,091	8,093	8,095	A ₃
Average	8,086	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,094	X _A 8,0924
Range	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	R _A 0,0011
B 1	8,087	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,093	B ₁
B 2	8,087	8,097	8,093	8,094	8,097	8,091	8,087	8,092	8,093	8,093	B ₂
B 3	8,086	8,098	8,093	8,095	8,097	8,092	8,089	8,090	8,094	8,093	B ₃
Average	8,087	8,097	8,093	8,094	8,097	8,091	8,088	8,091	8,094	8,093	X _B 8,0925
Range	0,001	0,002	0,000	0,001	0,000	0,002	0,002	0,002	0,001	0,000	R _B 0,0011
C 1	8,087	8,097	8,092	8,095	8,097	8,091	8,089	8,091	8,093	8,093	C ₁
C 2	8,086	8,098	8,095	8,095	8,096	8,091	8,089	8,091	8,094	8,094	C ₂
C 3	8,088	8,097	8,093	8,094	8,097	8,090	8,088	8,092	8,095	8,093	C ₃
Average	8,087	8,097	8,093	8,095	8,097	8,091	8,089	8,091	8,094	8,093	X _C 8,0927
Range	0,002	0,001	0,003	0,001	0,001	0,001	0,001	0,001	0,002	0,001	R _C 0,0014
PART	8,0867	8,0967	8,0930	8,0944	8,0970	8,0907	8,0883	8,0912	8,0938	8,0933	R _{PART} = 0,0103
R = R _A + R _B + R _C / No of operators											R = 0,0012
X _{DIFF} = [Max (X) _{ABC}] - [Min (X) _{ABC}] = 8,0927 - 8,0924											X _{DIFF} = 0,0003
UCL _R = R * D ₄ = 0,0012 * 2,58											UCL _R = 0,0031
D ₄ = 3,27 for 2 trials											2,58 for 3 trials
Measurement Unit Analysis						Total Variation Method		Tolerance Method			
Repeatability : Equipment Variation (EV)											
EV = R * K ₁						Trials		K ₁			
EV = 0,0007						3		0,5908			
						% EV = 100[EV/TV]		% EV = 100[EV/(tol/6)]			
						% EV = 21,29		% EV = 6,65			
Reproducibility : Appraiser Variation (AV)						(n parts, r trials)					
AV = [(X _{DIFF} * K ₂) ² - (EV ² / nr)] ^{1/2}						Oper		K ₂			
AV = 0,0001						3		0,5231			
						% AV = 100[AV/TV]		% AV = 100[AV/(tol/6)]			
						% AV = 3,51		% AV = 1,10			
Repeatability & Reproducibility (GRR)											
GRR = (EV ² + AV ²) ^{1/2}						%GRR=100[GRR/TV]		%GRR=100[GRR/(tol/6)]			
GRR = 0,0007						%GRR = 21,58		%GRR= 6,74			
Part Variation (PV)											
PV = R _{PART} * K ₃						Parts		K ₃			
PV = 0,0033						10		0,3146			
						% PV = 100[PV/TV]		% PV = 97,64			
Total Variation (TV)											
TV = (GRR ² + PV ²) ^{1/2}						CONCLUSION:					
TV = 0,0033											
Number of Distinct Categories (ndc)											
ndc = 1.41(PV / GRR)											
ndc = 6,37938											
Gage system is satisfactory.											

Remarks:	

Intended For Welded Screw Ø
Pour Goujon Soudé à Filets Couchés Ø
Aufnahme fuer Schweissbolzen Ø

Tensile Force (N)
Tenue au serrage (N)
Schlaufenhaltekraft (N)
siehe Tabelle/
see table

Hole Size
Trou Ø
Loch Ø

Panel Thickness
Épaisseur Support
Blechdicke

Bundle Ø
Toron Ø
Buendel Ø
siehe Tabelle/
see table

Material
Matière
Werkstoff

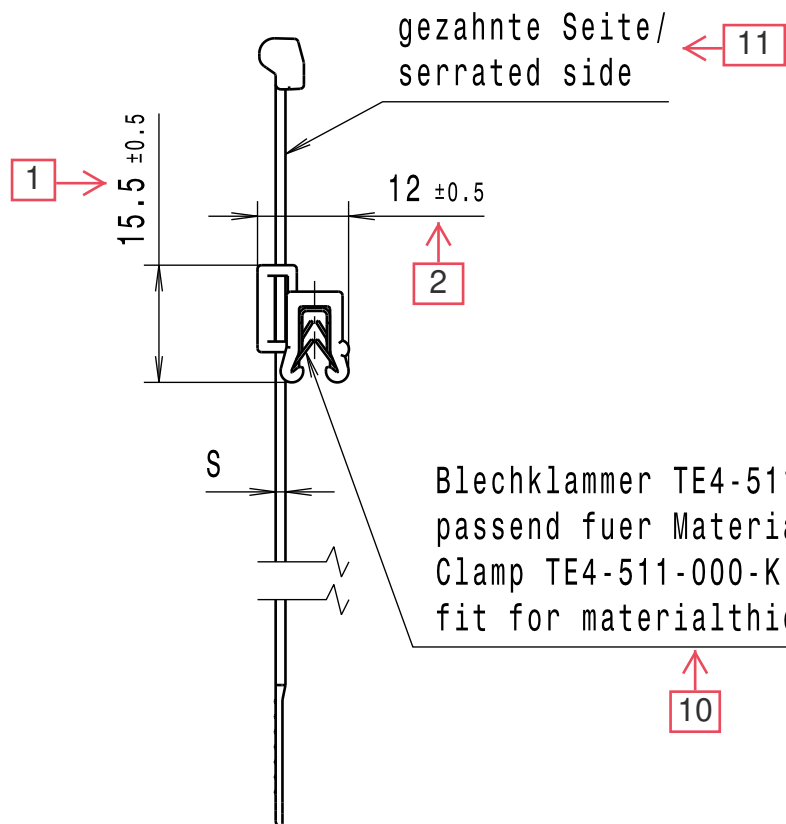
a:
PA 6.6

b:
PA 6.6

Tolerances
Dimension without tolerances
details to:
Tolérances
Cotes sans tolérances:
Toleranzen
Masse ohne
Toleranzangaben nach:

PERFORMANCE
SPECIFICATION
AUSFUEHRUNG
SPEZIFIKATION

Durch das Herstellverfahren bedingte Geometrieaenderungen (Anspritung, Auswerfermarkierungen, etc.) zulaessig. Einzelheiten der Ausfuehrung bleiben dem Hersteller ueberlassen. The manufacturing-related geometry changes (injection point, ejectors marks, etc.) allowed. Design of the details are left to suppliers discretion.

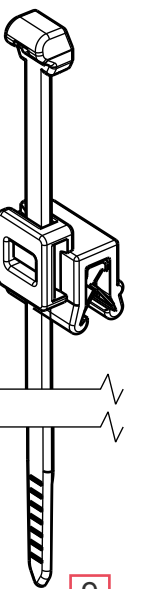


gezahnte Seite/
serrated side

Blechklammer TE4-511-000-K
passend fuer Materialdicke 1-3mm/
Clamp TE4-511-000-K
fit for materialthickness 1-3mm

Ausdruck nur zur Information /
Printed copy for information only

ISO
1:1



Bezeichnungsbeispiel: ① ②
a: Sockel EC5A und
b: Kabelbinder T50ROS
ist: Befestigungsbinder T50R0SEC5A
Example of designation:
a: Socket EC5A and
b: Cable tie T50ROS
being: Fixing tie T50R0SEC5A

deutscher Text ist verbindlich /
german text is valid

Revision level Indice Aenderungsstand		Revision Record Désignation Beschreibung der Aenderung	Changed Modifié Geändert	Date Datum	Approved Approuvé Geprueft	Date Datum
Drawing Dessin Zeichnung	Part Pièce Solid					
1	0	Bezeichnung ...EC5A war ...EC5B	Steiner	16.11.00	Mueller	16.11.00
2	0	T50S0SEC5A in Tabelle hinzu, Bezeichnung -MC5-BK entfaellt	Steiner	23.04.01	Wien	23.04.01
3	0	Buendel Ø 31 mm war Ø 45 mm	Mueller	26.04.02	Wien	26.04.02
4	0	Farbe natur und Schlaufenhaltekraft hinzu, Mass 200 ±5 war 200 ±10, Rahmen neu, CAD-Systemwechsel	Langeloh	07.08.08	Spiesz	07.08.08
5	0	Materialangaben ueberarbeitet	Langeloh	24.10.11	Schiwek	24.10.11

Zeile/ line	Artikelbezeichnung/ product type	Laenge/ length L	Bandbreite/ strap width B	Dicke/ thickness S	Buendel/ bundle Ø	Schlaufenhaltekraft/ tensile force N min.
1	T50R0SEC5A	200 ±5	4.6 ±0.2	1.3 ±0.2	4-45	225
2	T50S0SEC5A	150 ±5	4.6 ±0.2	1.3 ±0.2	4-31	225

The copyright of this drawing is reserved by HELLERMANNTYTON. It is issued on condition that it is not reproduced, copied or disclosed to a third party, either wholly or in part, without the consent of HELLERMANNTYTON.	Drawn Dessiné Par Gezeichnet	Steiner	27.09.00	Scale Echelle Maszstab	1:1	Project Number Numéro de projet Projektnummer	NT 405-97
	Approved Approuvé Par Geprueft	Spiesz	27.09.00	Title Titre Benennung Befestigungsbinder/Fixing tie ...EC5A ①			
	HellermannTyton						
La propriété de ce plan est réservée à la société HELLERMANNTYTON. Il est distribué à condition qu'il ne soit pas reproduit, communiqué ou révélé à une tierce partie, soit complètement ou en partie, sans le consentement de la société HELLERMANNTYTON.				Drawing-No Plan-No Zeichnungs-Nr	Format D.Size A3		
Weitergabe sowie Vervielfaeltigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdruecklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte fuer den Fall der Patenterteilung oder Gebrauchsmuster-Eintragung vorbehalten.	<u>Manchester</u> <u>Trappes</u> <u>Tornesch</u>	Telephone: +44 (0) 161 945 4181 Facsimile: +44 (0) 161 947 2228 Téléphone: +33 (0) 1 30 13 80 00 Télécopie: +33 (0) 1 30 13 80 60 Telefon: +49 (0) 41 22 / 701 - 1 Telefax: +49 (0) 41 22 / 701 - 400			14.1478 Sheet Page Blatt 1 / 1		

From: **Quality Assurance HellermannTyton GmbH**

Subject: PPAP Approval signature deadline

Dear customer:

As you are aware the PPAP process is an integral part of our business. With that in mind, we are informing our customers who are requesting a PPAP that there is a 30 day (calendar) deadline to which we are expecting your reply back with a signed copy of the PSW with a disposition regarding it's validity. It is important that we maintain compliance to the current AIAG PPAP manual.

As a part of compliance a signed and approved PSW is essential for our records.

We reserve the right to consider that PPAP valid and complete, if we do not receive a signed copy of the PSW within 30 days (calendar).

Once you have received our PPAP information please e-mail us a copy of your disposition with the appropriate signatures as soon as possible to the following person:

nescha.lohse@HellermannTyton.de

Quality Assistant

phone: +49 (0) 4122 701 5726

Your cooperation is greatly appreciated!

Respecting the procedure as described above, the documentation with HellermannTyton PB-No.:			
97972	with submission date	27.07.2022	will be considered as complete and valid auto-
atically on	26.08.2022	unless otherwise disposed!	

Part Submission Warrant

Part Name T50ROSEC5A Cust. Part Number 2048562
 Shown on Drawing No. 141478 Org. Part Number 15040591
 Engineering Change Level 5 Dated 24.10.2011
 Additional Engineering Changes n/a Dated n/a
 Safety and/or Government Regulation ☐ Yes ☒ No Purchase Order No. 15040591 Weight (kg) 0,0030
 Checking Aid No. n/a Checking Aid Engineering Change Level n/a Dated n/a

ORGANIZATION MANUFACTURING INFORMATION

HellermannTyton GmbH DUNS: 315430892

Organization Name & Supplier/Vendor Code

Großer Moorweg 45

Street Address

Tornesch

25436

Germany

City

Region

Postal Code

Country

CUSTOMER SUBMITTAL INFORMATION

REXEL Germany GmbH & Co. KG (21190)

Customer Name/Division

Robert Grünert

Buyer/Buyer Code

various

Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported?

☒ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format:

-

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
usage of suitable material (Grilon TSZ1 instead of Akromid A31S3) for supplies starting from 01.09.2022

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 design record requirements: ☒ Yes ☐ No (If "No" - Explanation Required)

Mold / Cavity / Production Process

injection moulding / serial mold

DECLARATION

I 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 confidential - pcs / 24 hours.

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

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered?

☐ Yes ☐ No ☒ n/a

Organization Authorized Signature i.A. V. Solze

Date 27-Jul-22

Print Name i.A. N. Lohse

Phone No. +49 (0) 4122 701 5726

Fax No. +49 4122 701 241

Title Quality Assistant

E-mail nescha.lohse@HellermannTyton.de

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature

Date

Print Name

Customer Tracking Number (optional)

HellermannTyton

97972

Performance Test Results

Blanket statements of conformance are unacceptable for any test results.

<u>CREATOR</u>	<u>TITLE</u>	<u>DATE</u>
i.A. N. Lohse	Quality Assistant	27-Jul-22

Internal PB-No.: **97972**

Rev #: 01
Rev. Date: 25.07.2012

Hellermann Tyton Sp.z.o.o.Kotunia 111
PL, 62-400, StupcaConfirmation EMS: 524976/01
Ord. no. customer: 4500130335
Packing List: 233878
Date of delivery: 04.01.2021**To:**
Fax No.: +48632237110**Product:**

Grilon TSZ 1 schwarz 9835 (Sackware 25kg) 112

Quantity [kg]:
10500**Production Number Position:**
0131307 067, 068, 069, 070, 071, 072, 073, 074, 075, 076
, 077, 078, 079, 080

			Production Number:			
Properties	Method	Unit	0131307			
Moisture content 160°C Karl-Fischer	ISO15512	%	0.03			
MVR at 275°C 5 kg	ISO1133	ml/10min	120			

Gross-Umstadt, 05.01.2021
K. Hryniewicz , Quality Assurance

We hereby certify that the material fully corresponds to the agreed properties and condition. The applicable procedures such as sampling, test plan and methods are described in our quality system in accordance with IATF 16949 and certified by SQS. The test results have been determined to the best of our knowledge. Our company does not accept any liability for properties of parts manufactured from this material. In addition, the qualification of the product for a given application cannot be derived from the data and must be ascertained by the customer. The certificate does not release the customer from a received material inspection. The general sales terms and conditions of purchase of EMS-CHEMIE (Deutschland) GmbH apply. These can be downloaded at www.emsgrivory.com. This document is issued electronically and is valid without signature.



HELLERMANN TYTON GMBH
GROSSER MOORWEG 45
TORNESCH, GERMANY 25436
Attention : AXEL LANG

Ascend Performance Materials Operations LLC
Nylon Plastics and Polymers
3000 Chemstrand Road
Cantonment, FL 32533
Telephone : (850)968-7000

Certificate Date : 11-Feb-22
Delivery No : 382604159
Shipped Qty : 47,450.000 Lbs
21,523.320 Kgs
Customer P.O. No: 4500155499/30
Container : 0000000000002085153

Certificate of Analysis

This certifies that Nylon Resin shipped to you from Ascend Performance Materials Operations LLC has been tested and found to meet required specifications.

This material was produced under a Quality System that meets ISO 9001:2015 and IATF 16949:2016 criteria.

If you have questions or concerns about this Certificate of Analysis, please contact Ascend Performance Materials Customer Operations at 1-888-927-2363.

This product meets the requirements of the following specifications: ASTM D4066 PA0121, ASTM D6779 PA0121, WSK-M4D648A (ESF-M4D 82A), MRS # 75, Rev. 7, Date 2-Jan-2019, GMP.PA66.018, CMP NY057 AA, MSDB 41 CPN 1076, MSDB 41 CPN 1899, FMVSS 302*, CPN3490, D4000 PA012, SAE J1639 PA0121, Ford WQ 100A, GMW16036P-PA66.

Material: VYDYNE 22HSP NT Material No: 10425537 Batch No: JK22VY05 Date of Mfg: 22-Nov-2021

Ascend Performance Materials Operations LLC Specification

<u>Lot Data Property</u>	<u>Test Method</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
Copper	STM 00667	80	100	88	PPM
Flex Modulus	ISO 178;2MM/MIN	2500		3056	MPa
Moisture	ASTM D6869	0.12	0.20	0.13	%
Nom. Str.@ Brk	ISO 527-1,2 / 1A	17.5	35.0	26.9	%
Notched Izod	ISO 180 / 1A	3.5	8.0	4.9	kJ/m^2
Relative Visc.	ASTM D789[9.34]	45.0	48.0	46.0	N/A
Strength @ Yld	ISO 527-1,2 / 1A	78	98	80	MPa
VISCOSITY NUM. SULFURIC	ISO 307	136.9	142.8	138.9	ml/g

Note: This certificate is generated and controlled by electronic means. No signature is required. This document may not be reproduced, except in full, without written consent of the Nylon Plastics and Polymers Department, Ascend Performance Materials Operations LLC.

All information contained in this letter is provided for informational purposes only and is not meant to alter or waive the appropriate contractual product specifications. Moisture values are representative of the product at the time it was sampled. If numerical flame spread ratings appear herein, they are not intended to reflect the hazards presented by this or any other material under actual fire conditions. Each end user should determine whether potential fire hazards are associated with the finished product, and whether this resin is suitable for the particular end use.

This Certificate of Analysis is provided by Ascend Performance Materials (or its authorized distributor) to its direct purchaser only and is intended for internal use. It is not valid if resold, conveyed or otherwise transferred to another party without Ascend's prior written consent. Ascend makes no warranties and assumes no liability for any product or certification obtained from an unauthorized source. Contact Ascend at +1 713-315-5700 to confirm the validity of any third party supplier. Ascend and Vydine are registered trademarks of Ascend Performance Materials Operations LLC.



HFP BANDSTAHL
HUEHOCO GROUP

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Eingegangen
29.06.2021

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

21003616

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067
Zu Auftrag Lieferplan AL-21000412

vom: 28.06.2021
vom: 23.10.2020

Seite: 1
(FB_036)

Bestellnummer: E 20 00659 Bestelldatum: 21.10.2020 Lieferant: 1690000
Kundennummer: 10009 Fax-Nr.: +49 2754 375364 eMail: nadine.schuppert@osterrath.de
Abruf-Nr.: 9. Abruf 22.06.2021

Artikelnummer	Kundenartikel	Menge ME
0400003500101832 0,4B x 35,0 C75S +A _ GK G DIN/EN/Norm 10132-4 / 10140 ** Im Übrigen wie bestätigt ** Lieferzustand geölt	BC-04003530 MA-RL	12.561 kg

Schmelzanalyse *									
Schmelzen-Nr.	C	Si	Mn	P	S	Cr	Mo	Ni	
Soll min	0,700	0,150	0,600						
Soll max	0,800	0,350	0,900	0,025	0,025	0,400	0,100	0,400	
582228	0,710	0,240	0,690	0,007	0,001	0,220	0,004	0,030	

Maßtoleranzen		Soll Dicke	0,4	-0,03 /
		Soll Breite	35,0	/ +0,2

Mechanische Werte *					
Packstück	Dicke (mm)	PA-Nr.	Rp (MPa)	Rm (MPa)	A (%) A80
Soll min	0,370				15,0
Soll max	0,400		510	640	

Abruf-Nr.: 9. Abruf 22.06.2021

UP201777	0,379	21002060-5	409	557	25,2
UP201778	0,385	21002060-5	388	547	25,1
UP201779	0,379	21002060-5	409	557	25,2
UP201793	0,388	21002060-5	383	541	25,0
UP201794	0,388	21002060-5	383	541	25,0
UP201799	0,388	21002060-5	383	541	25,0
UP201816	0,379	21002060-5	409	557	25,2
UP201817	0,379	21002060-5	409	557	25,2
UP201820	0,388	21002060-5	383	541	25,0
UP201826	0,388	21002060-5	383	541	25,0
UP201830	0,385	21002060-5	388	547	25,1
UP201832	0,385	21002060-5	388	547	25,1

HFP Bandstahl GmbH | Ein Unternehmen der HUEHOCO GRUPPE | WE MAKE PRODUCTS PROUD

Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

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0049 3695 663-0
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0049 3695 663-105
E-Mail
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Web
www.hfp-bandstahl.de

Register
Jena HRB 306033
UID-Nr.
DE289746684

GEPRÜFT
10.07.2021
Sebastian Damm



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IATF 16949:2016
www.tuv.com
ID: 310603740

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055060
IBAN: DE6784055050000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0480255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF520
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE8EXXX



HFP BANDSTAHL

HUEHOCO GROUP

21003616

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Kunde:

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067

vom: 28.06.2021

Seite: 2

Zu Auftrag Lieferplan AL-21000412

vom: 23.10.2020

(FB_036)

Bestellnummer: E 20 00659

Bestelldatum:

21.10.2020 Lieferant: 1690000

Es wird bestätigt, dass die Lieferungen den Anforderungen der Lieferbedingung entsprechen.

Diese durch ein geeignetes Datenverarbeitungssystem erstellte Bescheinigung ist gemäß EN 10204, Abschnitt 5, ohne Unterschrift gültig.

Abnahmebeauftragter
Sebastian Specht

GEPRÜFT
10.07.2021
Sebastian Damm

HFP Bandstahl GmbH | Ein Unternehmen der HUEHOCO GRUPPE | WE MAKE PRODUCTS PROUD

Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

Telefon
0049 3695 663-0
Telefax
0049 3695 663-106
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jona HRB 306033
UID-Nr.
DE289746684

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055050
IBAN: DE57840550500000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0460255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF330
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE33XXX



Management
System
ISO 9001:2015
www.tuv.com
ID 9108637546

Barth Galvanik GmbH | In den Schwarzwäldern 4 | 61440 Oberursel (Taunus) |

Osterrath GmbH & Co.KG
Wahlbachsmühle 3

57334 Bad Laasphe

Sammel-Prüfprotokoll

Lieferschein 450720

vom 03.08.2021

Kundennummer 17800

Prüfprotokoll Nr.:462141

Auftragsnr.: 641209-1

Chargenr.: 141-200 / S2103347

Bestellmenge

Artikel

891,000 kg

Blechklammer
vergüten

613944156049

Ihr Auftrag

Ihre BestellNr

LSHT02803

Ihr LS-Datum

30.07.2021

Merkmal 1	6001 Härteprüfung KH HV10				
Messwerte	Einheit: HV10				
1 Stichprobe					

Auswertung über: 1 Stichprobe

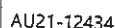
Fehler	UTG	OTG	Min	Max	Mittel
0	410,00	520,00	478,00	484,00	481,25

Messwerte der Stichproben:

Nr.	Messwerte									
1	481,00	478,00	480,00	483,00	484,00	483,00	480,00	481,00		

Die beiliegenden Teile wurden in unserem Betrieb nach den entsprechenden Normen bzw. gemäß Kundenvorschrift gewissenhaft bearbeitet und geprüft. Unsere Qualitätssicherung entbindet Sie aber nicht von der Notwendigkeit, die Teile vor der Weiterverarbeitung entsprechenden Kontrollen und Prüfungen zu unterziehen.

Dieses Protokoll wurde maschinell erstellt und ist ohne Unterschrift gültig.



Kunde:	Osterrath GmbH & Co.KG
Artikel:	Stahl-Klammer 61-3944-15/6049
	10004221F
Menge:	891kg
Auftragsnummer:	AU21-12434
Beschichtungsdatum:	19.08.21
Beschichtung / coating:	microcor 500 silber GZ TL245 t647
Schichtstärke/thickness (middle)	18µm (ZnPHS,Protekt KL 100, VH301GZ)
Korrosionsbeständigkeit / corrosion protection : DIN EN ISO 9227 NSS :	
Rostgrad / rust grade DIN EN ISO 4628-3:	840h (VW TL 245 t647)
	Ri0

Chargen: 2103347

Datum: 19.08.21

QM: QMB Herr Schäfer

USL-IdNr.: DE126174991
Gerichtsstand: Ludenscheld

P-FMEA	D-02	Project- No GPN / NT Nr.	variable	Revision date Überarbeitungsdatum	04.05.2022
Product Group Produkt Gruppe	assembling edge clips (Montage Edge Clips)	Installation location Verbautort des Bauteils		Revision by Überarbeitet durch:	M. Michel
Part No Artikel Nr.	variable	Drawing number Zeichnung Nr.	variable	Review Date Überprüfungsdatum	04.05.2023
Part Description Artikel Bezeichnung	variable	Ind. Of Drwg. / date Zg. Index / Datum	variable	Reviewed by Überprüft durch	M. Michel
Core Team FMEA Team	M.Michel Prod., O.Pracht QS, H.Spieß PE, Ch. Sievert NT-PM				
Process Responsibility Prozessverantwortung bei	HT-Tornesch	Version of FMEA Version der FMEA	15	This FMEA is generated and administrated electronically. Valid without signature. Diese FMEA ist elektronisch erstellt und verwaltet. Gültig ohne Unterschrift.	
Prepared by Erstellt von	Marco Michel	Original Issue Date Erstausgabe Datum	01.07.2010		

We confirm that we have process FMEA's available - They are valid for the parts belonging to the Product Group mentioned above.

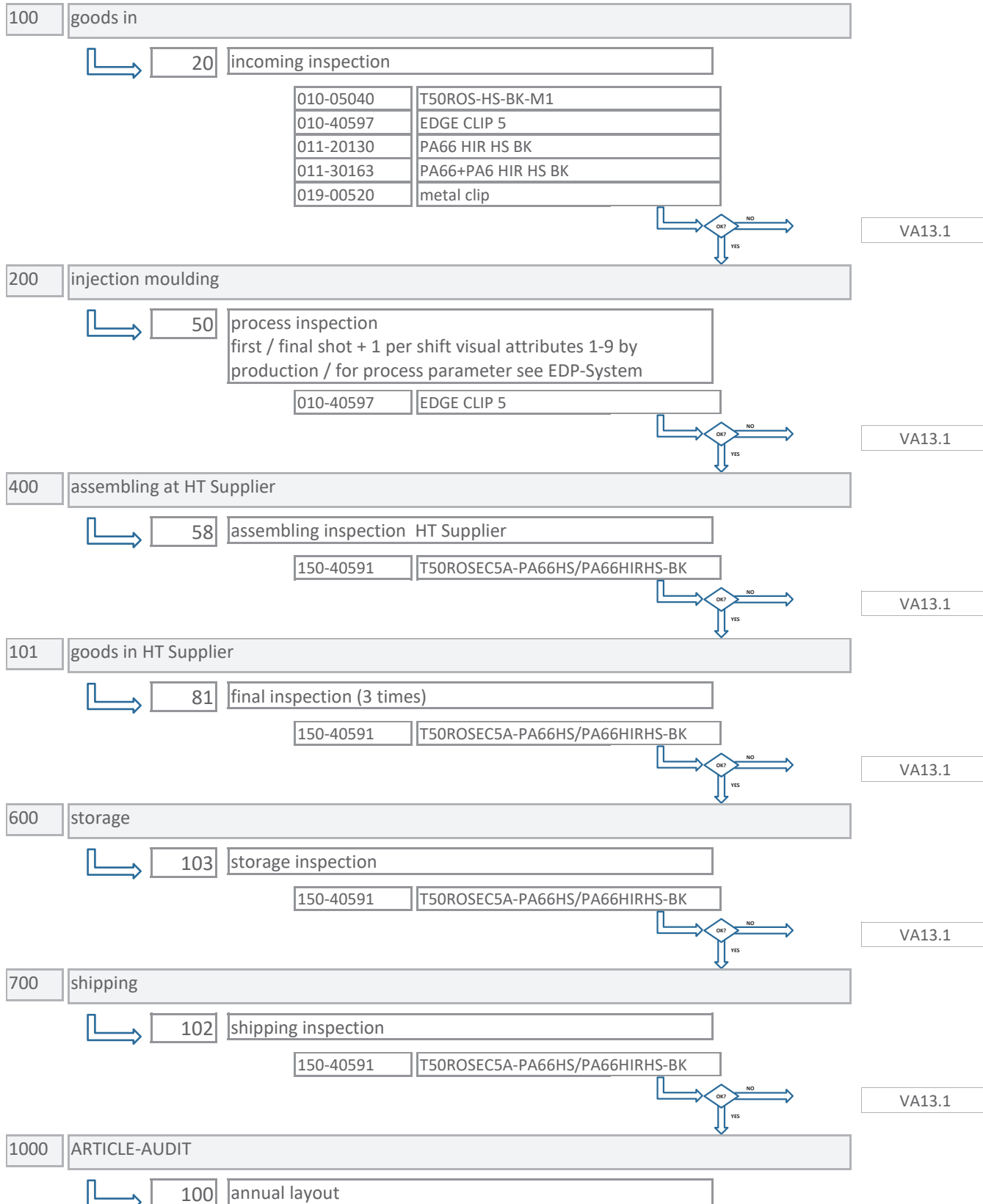
Due to confidentially reasons all further pages of this Process-FMEA need to remain internally, they should not be distributed to external!

In case of entitled interests this documents can be reviewed upon request and on site.

Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK	KEY CONTACT PHONE:	+49 4122 701 330	DATE REVIEWED:	01.07.2022
DRAWING :	2M5T-14197-MA	CUSTOMER APPROVAL:			
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch		

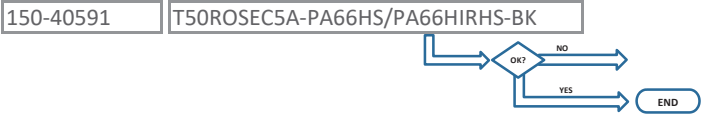
Process / test procedure	document
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Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Process / test procedure	document
--------------------------	----------



Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
19	identification check					VA13.1
011-20130	PA66 HIR HS BK					
107	box / palette label			100%	900000 Barcode-Scanner	
019-00520	metal clip					
107	box / palette label			100%	900000 Barcode-Scanner	
20	incoming inspection					VA13.1
010-05040	T50ROS-HS-BK-M1					
116	compare with master sample		1 bag	1 / delivery	420000 sample / visual	
010-40597	EDGE CLIP 5					
116	compare with master sample		1 pcs	1 / delivery	420000 sample / visual	
011-20130	PA66 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
304	COC notch impact strength		1 bag	1 / delivery	410000 manual / visual	
305	COC yield stress		1 bag	1 / delivery	410000 manual / visual	
011-30163	PA66+PA6 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
306	COC meld volume index		1 bag	1 / delivery	410000 manual / visual	
019-00520	metal clip					
40-1	dimension	5 - 6,5 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-2	dimension	0 - 0,4 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-3	dimension	0 - 0,6 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
20 incoming inspection						VA13.1
019-00520 metal clip						
40-4 dimension		3,9 - 4,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-5 dimension		7,75 - 8,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
54 expanding test			50 pcs	SKIP LOT PLAN	80243 check gauge	
116 compare with master sample			5 pcs	SKIP LOT PLAN	500353 Master Samples, visual	
307 COC hardness		410 - 520 HV10	1	SKIP LOT PLAN	410000 manual / visual	
1007 pull out force		min 70 N / HTQS-Blech	20 pcs	SKIP LOT PLAN	10000 Tensile tester	
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
1 sink marks			1 shot	1 / day	500338 Master Samples, visual	
2 shortage			1 shot	1 / day	500338 Master Samples, visual	
3 Flashes			1 shot	1 / day	500338 Master Samples, visual	
4 mould mis alignment			1 shot	1 / day	500338 Master Samples, visual	
5 moulding lines			1 shot	1 / day	500338 Master Samples, visual	
6 burnings			1 shot	1 / day	500338 Master Samples, visual	
7 dirt			1 shot	1 / day	500338 Master Samples, visual	
8 deformation			1 shot	1 / day	500338 Master Samples, visual	
9 inclusions			1 shot	1 / day	500338 Master Samples, visual	
54 expanding test			1 shot	1 / day	80066 check gauge 80136 check gauge	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
65 shot weight		see test procedure	1 shot	1 / day	20000 balance	
58 assembling inspection HT Supplier						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
59 assembling				100%	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts				100%	500886 Master Samples, visual 420000 sample / visual	
81 final inspection (3 times)						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
18 quantity			1 bag	1 / delivery	430000 scale counter / manual	
45 mixed parts in pack unit			1 bag	1 / delivery	410000 manual / visual	
59 assembling			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
103 storage inspection						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
102 shipping inspection						VA13.1

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR	
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330	
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022	
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:		

Part / Prozess No / Characteristic		SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
102	shipping inspection						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
100	annual layout						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	1200 requalification / product audit acc. DRW-spec incl. packageing (1 part-No for mentioned part group)				1 / year acc. AUDITPLAN		

Capability study (ppk)

partname: **EDGE CLIP 5**
GPN: **97-0405**

Date: **08.07.2022**

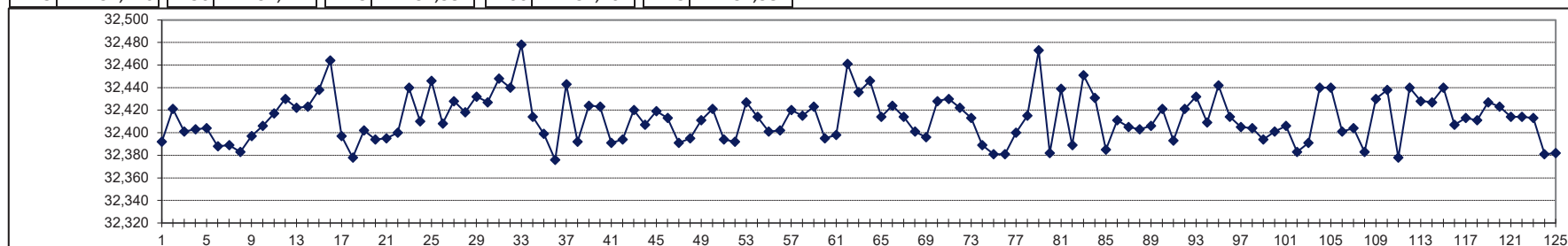
No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)
1	32,392	26	32,408	51	32,394	76	32,381	101	32,406
2	32,421	27	32,428	52	32,392	77	32,400	102	32,383
3	32,401	28	32,418	53	32,427	78	32,415	103	32,391
4	32,403	29	32,432	54	32,414	79	32,473	104	32,440
5	32,404	30	32,427	55	32,401	80	32,382	105	32,440
6	32,388	31	32,448	56	32,402	81	32,439	106	32,401
7	32,389	32	32,440	57	32,420	82	32,389	107	32,404
8	32,383	33	32,478	58	32,415	83	32,451	108	32,383
9	32,397	34	32,414	59	32,423	84	32,431	109	32,430
10	32,406	35	32,399	60	32,395	85	32,385	110	32,438
11	32,417	36	32,376	61	32,398	86	32,411	111	32,378
12	32,430	37	32,443	62	32,461	87	32,405	112	32,440
13	32,422	38	32,392	63	32,436	88	32,403	113	32,428
14	32,423	39	32,424	64	32,446	89	32,406	114	32,427
15	32,438	40	32,423	65	32,414	90	32,421	115	32,440
16	32,464	41	32,391	66	32,424	91	32,393	116	32,407
17	32,397	42	32,394	67	32,414	92	32,421	117	32,413
18	32,378	43	32,420	68	32,401	93	32,432	118	32,411
19	32,402	44	32,407	69	32,396	94	32,409	119	32,427
20	32,394	45	32,419	70	32,428	95	32,442	120	32,423
21	32,395	46	32,413	71	32,430	96	32,414	121	32,414
22	32,400	47	32,391	72	32,422	97	32,405	122	32,414
23	32,440	48	32,395	73	32,413	98	32,404	123	32,413
24	32,410	49	32,411	74	32,389	99	32,394	124	32,381
25	32,446	50	32,421	75	32,381	100	32,401	125	32,382

acceptable tolerance (+/-) **5** [‰]

max	32,4780
min	32,3760
R	0,1020
S	0,0209
X/	32,4129
LT	32,2508
UT	32,5749
valid +/-	0,1621

ppk 2,58

(demand: >= 1.67)



REPEATABILITY AND REPRODUCIBILITY ANALYSIS REPORT

acc. to MSA 4th Edition

NON DESTRUCTIVE TEST

Specimen : Plastic reference part (GPN20-1304)	Gage type : Weight scale	Plant : Tornesch																																																																																																																																																																																																																																																																																																																																																																																																		
Part. No. : 01021304	Gage number : PMN 02-0111	Date : 31.01.2022																																																																																																																																																																																																																																																																																																																																																																																																		
Characteristic : Shot weight ($\pm 3,5\%$)	performed by:	approved by:																																																																																																																																																																																																																																																																																																																																																																																																		
Tolerance : 0,064 Units gramm	Name: Tobias Cohrt	Jens Feil																																																																																																																																																																																																																																																																																																																																																																																																		
Signature:																																																																																																																																																																																																																																																																																																																																																																																																				
# of operators: 3	# of trials: 3	# of parts: 10																																																																																																																																																																																																																																																																																																																																																																																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">OPERATOR A: Victor Salogin</td> <td style="width: 33%;">B: Stefan Specker</td> <td style="width: 33%;">C: Frank Werner</td> </tr> </table>			OPERATOR A: Victor Salogin	B: Stefan Specker	C: Frank Werner																																																																																																																																																																																																																																																																																																																																																																																															
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Intended For Welded Screw Ø
Pour Goujon Soudé à Filets Couchés Ø
Aufnahme fuer Schweissbolzen Ø

Tensile Force (N)
Tenue au serrage (N)
Schlaufenhaltekraft (N)
siehe Tabelle/
see table

Hole Size
Trou Ø
Loch Ø

Panel Thickness
Épaisseur Support
Blechdicke

Bundle Ø
Toron Ø
Buendel Ø
siehe Tabelle/
see table

Material
Matière
Werkstoff

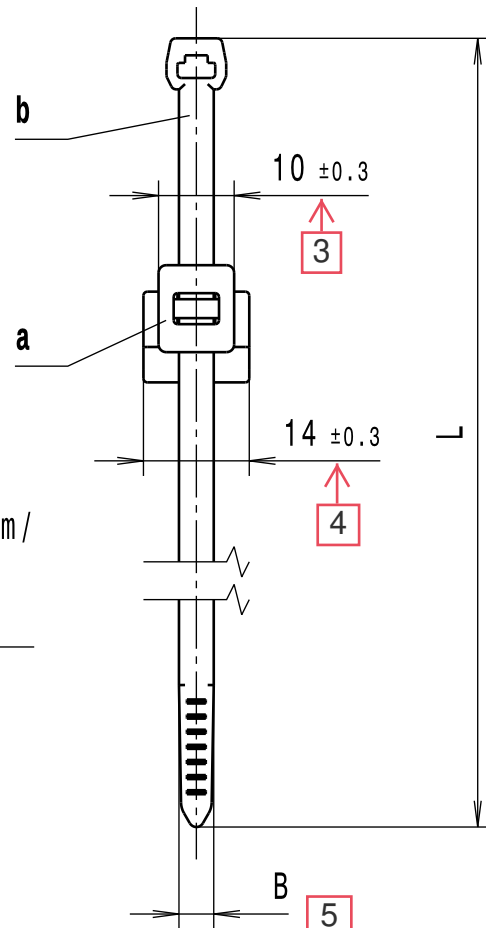
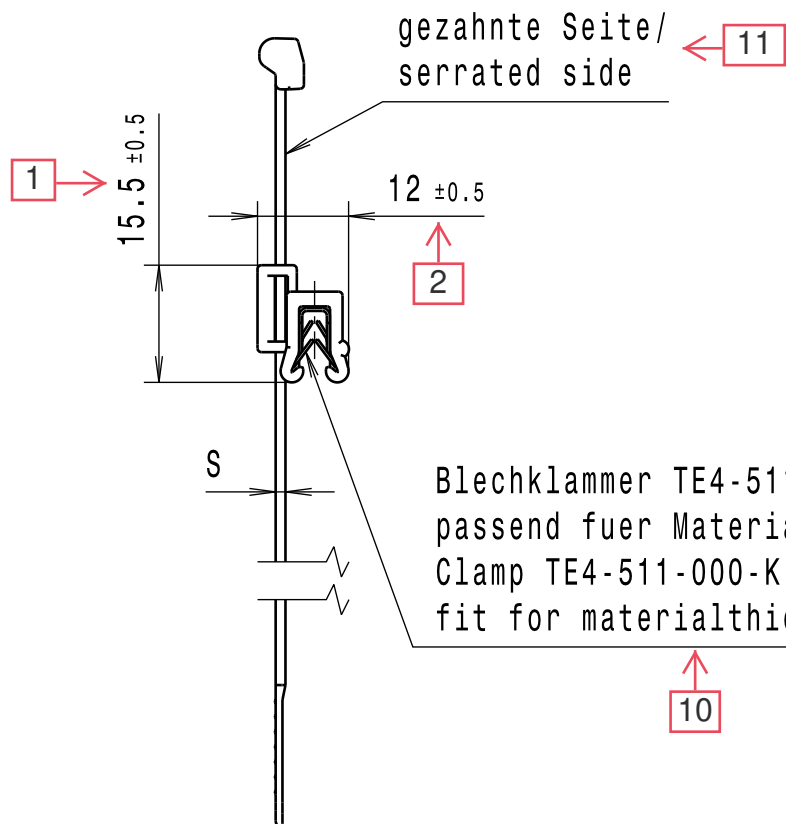
a:
PA 6.6

b:
PA 6.6

Tolerances
Dimension without tolerances
details to:
Tolérances
Cotes sans tolérances:
Toleranzen
Masse ohne
Toleranzangaben nach:

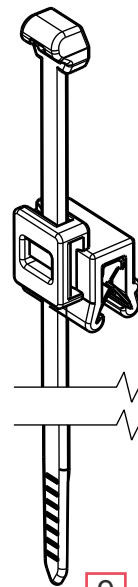
PERFORMANCE
SPECIFICATION
AUSFUEHRUNG
SPEZIFIKATION

Durch das Herstellverfahren bedingte Geometrieaenderungen (Anspritung, Auswerfermarkierungen, etc.) zulaessig. Einzelheiten der Ausfuehrung bleiben dem Hersteller ueberlassen. The manufacturing-related geometry changes (injection point, ejectors marks, etc.) allowed. Design of the details are left to suppliers discretion.



Ausdruck nur zur Information /
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ISO
1:1



Bezeichnungsbeispiel: ① ②
a: Sockel EC5A und
b: Kabelbinder T50ROS
ist: Befestigungsbinder T50R0SEC5A
Example of designation:
a: Socket EC5A and
b: Cable tie T50ROS
being: Fixing tie T50R0SEC5A

deutscher Text ist verbindlich /
german text is valid

Revision level Indice Aenderungsstand		Revision Record Désignation Beschreibung der Aenderung	Changed Modifié Geaendert	Date Datum	Approved Approuvé Geprueft	Date Datum
Drawing Dessin Zeichnung	Part Pièce Solid					
1	0	Bezeichnung ...EC5A war ...EC5B	Steiner	16.11.00	Mueller	16.11.00
2	0	T50S0SEC5A in Tabelle hinzu, Bezeichnung -MC5-BK entfaellt	Steiner	23.04.01	Wien	23.04.01
3	0	Buendel Ø 31 mm war Ø 45 mm	Mueller	26.04.02	Wien	26.04.02
4	0	Farbe natur und Schlaufenhaltekraft hinzu, Mass 200 ±5 war 200 ±10, Rahmen neu, CAD-Systemwechsel	Langeloh	07.08.08	Spiesz	07.08.08
5	0	Materialangaben ueberarbeitet	Langeloh	24.10.11	Schiwek	24.10.11

Zeile/ line	Artikelbezeichnung/ product type	Laenge/ length L	Bandbreite/ strap width B	Dicke/ thickness S	Buendel/ bundle Ø	Schlaufenhaltekraft/ tensile force N min.
1	T50R0SEC5A	200 ±5	4.6 ±0.2	1.3 ±0.2	4-45	225
2	T50S0SEC5A	150 ±5	4.6 ±0.2	1.3 ±0.2	4-31	225

The copyright of this drawing is reserved by HELLERMANN TYTON. It is issued on condition that it is not reproduced, copied or disclosed to a third party, either wholly or in part, without the consent of HELLERMANN TYTON.		Drawn Dessiné Par Gezeichnet	Steiner	27.09.00	Scale Echelle Maszstab	1:1	Project Number Numéro de projet Projektnummer	NT 405-97
La propriété de ce plan est réservée à la société HELLERMANN TYTON. Il est distribué à condition qu'il ne soit pas reproduit, communiqué ou révélé à une tierce partie, soit complètement ou en partie, sans le consentement de la société HELLERMANN TYTON.		Approved Approuvé Par Geprueft	Spiesz	27.09.00	Title Titre Benennung			Befestigungsbinder/Fixing tie ...EC5A ①
Weitergabe sowie Vervielfaeltigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdruecklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte fuer den Fall der Patenterteilung oder Gebrauchsmuster-Eintragung vorbehalten.		HellermannTyton		Drawing-No Plan-No Zeichnungs-Nr		14.1478		
		Manchester Telephone: +44 (0) 161 945 4181 Facsimile: +44 (0) 161 947 2228		Trappes Téléphone: +33 (0) 1 30 13 80 00 Télécopie: +33 (0) 1 30 13 80 60		Format D.Size		
		Tornesch Telefon: +49 (0) 41 22 / 701 - 1 Telefax: +49 (0) 41 22 / 701 - 400				Sheet Page Blatt		
						1 / 1		

From: **Quality Assurance HellermannTyton GmbH**

Subject: PPAP Approval signature deadline

Dear customer:

As you are aware the PPAP process is an integral part of our business. With that in mind, we are informing our customers who are requesting a PPAP that there is a 30 day (calendar) deadline to which we are expecting your reply back with a signed copy of the PSW with a disposition regarding it's validity. It is important that we maintain compliance to the current AIAG PPAP manual.

As a part of compliance a signed and approved PSW is essential for our records.

We reserve the right to consider that PPAP valid and complete, if we do not receive a signed copy of the PSW within 30 days (calendar).

Once you have received our PPAP information please e-mail us a copy of your disposition with the appropriate signatures as soon as possible to the following person:

nescha.lohse@HellermannTyton.de

Quality Assistant

phone: +49 (0) 4122 701 5726

Your cooperation is greatly appreciated!

Respecting the procedure as described above, the documentation with HellermannTyton PB-No.:			
97973	with submission date	27.07.2022	will be considered as complete and valid auto-
atically on	26.08.2022	unless otherwise disposed!	

Part Submission Warrant

Part Name T50ROSEC5A Cust. Part Number 2048562
 Shown on Drawing No. 141478 Org. Part Number 15040591
 Engineering Change Level 5 Dated 24.10.2011
 Additional Engineering Changes n/a Dated n/a
 Safety and/or Government Regulation ☐ Yes ☒ No Purchase Order No. 15040591 Weight (kg) 0,0030
 Checking Aid No. n/a Checking Aid Engineering Change Level n/a Dated n/a

ORGANIZATION MANUFACTURING INFORMATION

HellermannTyton GmbH DUNS: 315430892

Organization Name & Supplier/Vendor Code

Großer Moorweg 45

Street Address

Tornesch

25436

Germany

City

Region

Postal Code

Country

CUSTOMER SUBMITTAL INFORMATION

REXEL Germany GmbH & Co. KG

(61094)

Customer Name/Division

Robert Grünert

Buyer/Buyer Code

various

Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported?

☒ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format:

-

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
usage of suitable material (Grilon TSZ1 instead of Akromid A31S3) for supplies starting from 01.09.2022

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 design record requirements: ☒ Yes ☐ No (If "No" - Explanation Required)

Mold / Cavity / Production Process

injection moulding / serial mold

DECLARATION

I 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 confidential - pcs / 24 hours.

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

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered?

☐ Yes ☐ No ☒ n/a

Organization Authorized Signature i.A.

Date 27-Jul-22

Print Name i.A. N. Lohse

Phone No. +49 (0) 4122 701 5726

Fax No. +49 4122 701 241

Title Quality Assistant

E-mail nescha.lohse@HellermannTyton.de

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature

Date

Print Name

Customer Tracking Number (optional)

HellermannTyton

97973

Performance Test Results

Blanket statements of conformance are unacceptable for any test results.

<u>CREATOR</u>	<u>TITLE</u>	<u>DATE</u>
i.A. N. Lohse	Quality Assistant	27-Jul-22



Inspection certificate 21000189

according to: DIN EN 10204 3.1

Hellermann Tyton Sp.z.o.o.

Kotunia 111
PL, 62-400, Stupca

Confirmation EMS: 524976/01
Ord. no. customer: 4500130335
Packing List: 233878
Date of delivery: 04.01.2021

To:
Fax No.: +48632237110

Product:

Grilon TSZ 1 schwarz 9835 (Sackware 25kg) 112

Quantity [kg]:
10500

Production Number Position:
0131307 067, 068, 069, 070, 071, 072, 073, 074, 075, 076
, 077, 078, 079, 080

			Production Number:			
Properties	Method	Unit	0131307			
Moisture content 160°C Karl-Fischer	ISO15512	%	0.03			
MVR at 275°C 5 kg	ISO1133	ml/10min	120			

Gross-Umstadt, 05.01.2021
K. Hryniewicz , Quality Assurance

We hereby certify that the material fully corresponds to the agreed properties and condition. The applicable procedures such as sampling, test plan and methods are described in our quality system in accordance with IATF 16949 and certified by SQS. The test results have been determined to the best of our knowledge. Our company does not accept any liability for properties of parts manufactured from this material. In addition, the qualification of the product for a given application cannot be derived from the data and must be ascertained by the customer. The certificate does not release the customer from a received material inspection. The general sales terms and conditions of purchase of EMS-CHEMIE (Deutschland) GmbH apply. These can be downloaded at www.emsgrivory.com. This document is issued electronically and is valid without signature.



HELLERMANN TYTON GMBH
GROSSER MOORWEG 45
TORNESCH, GERMANY 25436
Attention : AXEL LANG

Ascend Performance Materials Operations LLC
Nylon Plastics and Polymers
3000 Chemstrand Road
Cantonment, FL 32533
Telephone : (850)968-7000

Certificate Date : 11-Feb-22
Delivery No : 382604159
Shipped Qty : 47,450.000 Lbs
21,523.320 Kgs
Customer P.O. No: 4500155499/30
Container : 0000000000002085153

Certificate of Analysis

This certifies that Nylon Resin shipped to you from Ascend Performance Materials Operations LLC has been tested and found to meet required specifications.

This material was produced under a Quality System that meets ISO 9001:2015 and IATF 16949:2016 criteria.

If you have questions or concerns about this Certificate of Analysis, please contact Ascend Performance Materials Customer Operations at 1-888-927-2363.

This product meets the requirements of the following specifications: ASTM D4066 PA0121, ASTM D6779 PA0121, WSK-M4D648A (ESF-M4D 82A), MRS # 75, Rev. 7, Date 2-Jan-2019, GMP.PA66.018, CMP NY057 AA, MSDB 41 CPN 1076, MSDB 41 CPN 1899, FMVSS 302*, CPN3490, D4000 PA012, SAE J1639 PA0121, Ford WQ 100A, GMW16036P-PA66.

Material: VYDYNE 22HSP NT Material No: 10425537 Batch No: JK22VY05 Date of Mfg: 22-Nov-2021

Ascend Performance Materials Operations LLC Specification

<u>Lot Data Property</u>	<u>Test Method</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
Copper	STM 00667	80	100	88	PPM
Flex Modulus	ISO 178;2MM/MIN	2500		3056	MPa
Moisture	ASTM D6869	0.12	0.20	0.13	%
Nom. Str.@ Brk	ISO 527-1,2 / 1A	17.5	35.0	26.9	%
Notched Izod	ISO 180 / 1A	3.5	8.0	4.9	kJ/m^2
Relative Visc.	ASTM D789[9.34]	45.0	48.0	46.0	N/A
Strength @ Yld	ISO 527-1,2 / 1A	78	98	80	MPa
VISCOSITY NUM. SULFURIC	ISO 307	136.9	142.8	138.9	ml/g

Note: This certificate is generated and controlled by electronic means. No signature is required. This document may not be reproduced, except in full, without written consent of the Nylon Plastics and Polymers Department, Ascend Performance Materials Operations LLC.

All information contained in this letter is provided for informational purposes only and is not meant to alter or waive the appropriate contractual product specifications. Moisture values are representative of the product at the time it was sampled. If numerical flame spread ratings appear herein, they are not intended to reflect the hazards presented by this or any other material under actual fire conditions. Each end user should determine whether potential fire hazards are associated with the finished product, and whether this resin is suitable for the particular end use.

This Certificate of Analysis is provided by Ascend Performance Materials (or its authorized distributor) to its direct purchaser only and is intended for internal use. It is not valid if resold, conveyed or otherwise transferred to another party without Ascend's prior written consent. Ascend makes no warranties and assumes no liability for any product or certification obtained from an unauthorized source. Contact Ascend at +1 713-315-5700 to confirm the validity of any third party supplier. Ascend and Vydine are registered trademarks of Ascend Performance Materials Operations LLC.



HFP BANDSTAHL
HUEHOCO GROUP

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Eingegangen
29.06.2021

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

21003616

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067
Zu Auftrag Lieferplan AL-21000412

vom: 28.06.2021
vom: 23.10.2020

Seite: 1
(FB_036)

Bestellnummer: E 20 00659 Bestelldatum: 21.10.2020 Lieferant: 1690000
Kundennummer: 10009 Fax-Nr.: +49 2754 375364 eMail: nadine.schuppert@osterrath.de
Abruf-Nr.: 9. Abruf 22.06.2021

Artikelnummer	Kundenartikel	Menge ME
0400003500101832 0,4B x 35,0 C75S +A _ GK G DIN/EN/Norm 10132-4 / 10140 ** Im Übrigen wie bestätigt ** Lieferzustand geölt	BC-04003530 MA-RL	12.561 kg

Schmelzanalyse *									
Schmelzen-Nr.	C	Si	Mn	P	S	Cr	Mo	Ni	
Soll min	0,700	0,150	0,600						
Soll max	0,800	0,350	0,900	0,025	0,025	0,400	0,100	0,400	
582228	0,710	0,240	0,690	0,007	0,001	0,220	0,004	0,030	

Maßtoleranzen		Soll Dicke	0,4	-0,03 /
		Soll Breite	35,0	/ +0,2

Mechanische Werte *					
Packstück	Dicke (mm)	PA-Nr.	Rp (MPa)	Rm (MPa)	A (%) A80
Soll min	0,370				15,0
Soll max	0,400		510	640	

Abruf-Nr.: 9. Abruf 22.06.2021

UP201777	0,379	21002060-5	409	557	25,2
UP201778	0,385	21002060-5	388	547	25,1
UP201779	0,379	21002060-5	409	557	25,2
UP201793	0,388	21002060-5	383	541	25,0
UP201794	0,388	21002060-5	383	541	25,0
UP201799	0,388	21002060-5	383	541	25,0
UP201816	0,379	21002060-5	409	557	25,2
UP201817	0,379	21002060-5	409	557	25,2
UP201820	0,388	21002060-5	383	541	25,0
UP201826	0,388	21002060-5	383	541	25,0
UP201830	0,385	21002060-5	388	547	25,1
UP201832	0,385	21002060-5	388	547	25,1

HFP Bandstahl GmbH | Ein Unternehmen der HUEHOCO GRUPPE | WE MAKE PRODUCTS PROUD

Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

Telefon
0049 3695 663-0
Telefax
0049 3695 663-105
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jena HRB 306033
UID-Nr.
DE289746684

GEPRÜFT
10.07.2021
Sebastian Damm



Management
System
LATE 16040.2016
www.tuv.com
ID: 310603740

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055060
IBAN: DE6784055050000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0480255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF520
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE8EXXX



HFP BANDSTAHL

HUEHOCO GROUP

21003616

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067

vom: 28.06.2021

Seite: 2

Zu Auftrag Lieferplan AL-21000412

vom: 23.10.2020

(FB_036)

Bestellnummer: E 20 00659

Bestelldatum:

21.10.2020 Lieferant: 1690000

Es wird bestätigt, dass die Lieferungen den Anforderungen der Lieferbedingung entsprechen.

Diese durch ein geeignetes Datenverarbeitungssystem erstellte Bescheinigung ist gemäß EN 10204, Abschnitt 5, ohne Unterschrift gültig.

Abnahmebeauftragter
Sebastian Specht

GEPRÜFT
10.07.2021
Sebastian Damm

HFP Bandstahl GmbH | Ein Unternehmen der HUEHOCO GRUPPE | WE MAKE PRODUCTS PROUD

Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

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0049 3695 663-0
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Register
Jona HRB 306033
UID-Nr.
DE289746684

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055050
IBAN: DE57840550500000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0460255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF330
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE33XXX



Management
System
ISO 9001:2015

www.tuv.com
ID 9108637546

Barth Galvanik GmbH | In den Schwarzwiesen 4 | 61440 Oberursel (Taunus) |

Osterrath GmbH & Co.KG
Wahlbachsmühle 3

57334 Bad Laasphe

Sammel-Prüfprotokoll

Lieferschein 450720

vom 03.08.2021

Kundennummer 17800

Prüfprotokoll Nr.:462141

Auftragsnr.: 641209-1

Chargennr.: 141-200 / S2103347

Bestellmenge

Artikel

891,000 kg

Blechklammer
vergüten

613944156049

Ihr Auftrag

Ihre BestellNr

LSHT02803

Ihr LS-Datum

30.07.2021

Merkmal 1	6001 Härteprüfung KH HV10					
Messwerte	Einheit: HV10					1 Stichprobe

Auswertung über: 1 Stichprobe

Fehler	UTG	OTG	Min	Max	Mittel
0	410,00	520,00	478,00	484,00	481,25

Messwerte der Stichproben:

Nr.	Messwerte									
1	481,00	478,00	480,00	483,00	484,00	483,00	480,00	481,00		

Die beiliegenden Teile wurden in unserem Betrieb nach den entsprechenden Normen bzw. gemäß Kundenvorschrift gewissenhaft bearbeitet und geprüft. Unsere Qualitätssicherung entbindet Sie aber nicht von der Notwendigkeit, die Teile vor der Weiterverarbeitung entsprechenden Kontrollen und Prüfungen zu unterziehen.

Dieses Protokoll wurde maschinell erstellt und ist ohne Unterschrift gültig.



AU21-12434

Prüfzeugnis/inspection certificat DIN EN 10204/3.1

Kunde:	Osterrath GmbH & Co.KG
Artikel:	Stahl-Klammer 61-3944-15/6049
	10004221F
Menge:	891kg
Auftragsnummer:	AU21-12434
Beschichtungsdatum:	19.08.21
Beschichtung / coating:	microcor 500 silber GZ TL245 t647
Schichtstärke/thickness (middle)	18µm (ZnPHS,Protekt KL 100, VH301GZ)
Korrosionsbeständigkeit / corrosion protection : DIN EN ISO 9227 NSS :	840h (VW TL 245 t647)
Rostgrad / rust grade DIN EN ISO 4628-3:	Ri0

Chargen: 2103347

Datum: 19.08.21

QM: QMB Herr Schäfer

P-FMEA	D-02	Project- No GPN / NT Nr.	variable	Revision date Überarbeitungsdatum	04.05.2022
Product Group Produkt Gruppe	assembling edge clips (Montage Edge Clips)	Installation location Verbautort des Bauteils		Revision by Überarbeitet durch:	M. Michel
Part No Artikel Nr.	variable	Drawing number Zeichnung Nr.	variable	Review Date Überprüfungsdatum	04.05.2023
Part Description Artikel Bezeichnung	variable	Ind. Of Drwg. / date Zg. Index / Datum	variable	Reviewed by Überprüft durch	M. Michel
Core Team FMEA Team	M.Michel Prod., O.Pracht QS, H.Spieß PE, Ch. Sievert NT-PM				
Process Responsibility Prozessverantwortung bei	HT-Tornesch	Version of FMEA Version der FMEA	15	This FMEA is generated and administrated electronically. Valid without signature. Diese FMEA ist elektronisch erstellt und verwaltet. Gültig ohne Unterschrift.	
Prepared by Erstellt von	Marco Michel	Original Issue Date Erstausgabe Datum	01.07.2010		

We confirm that we have process FMEA's available - They are valid for the parts belonging to the Product Group mentioned above.

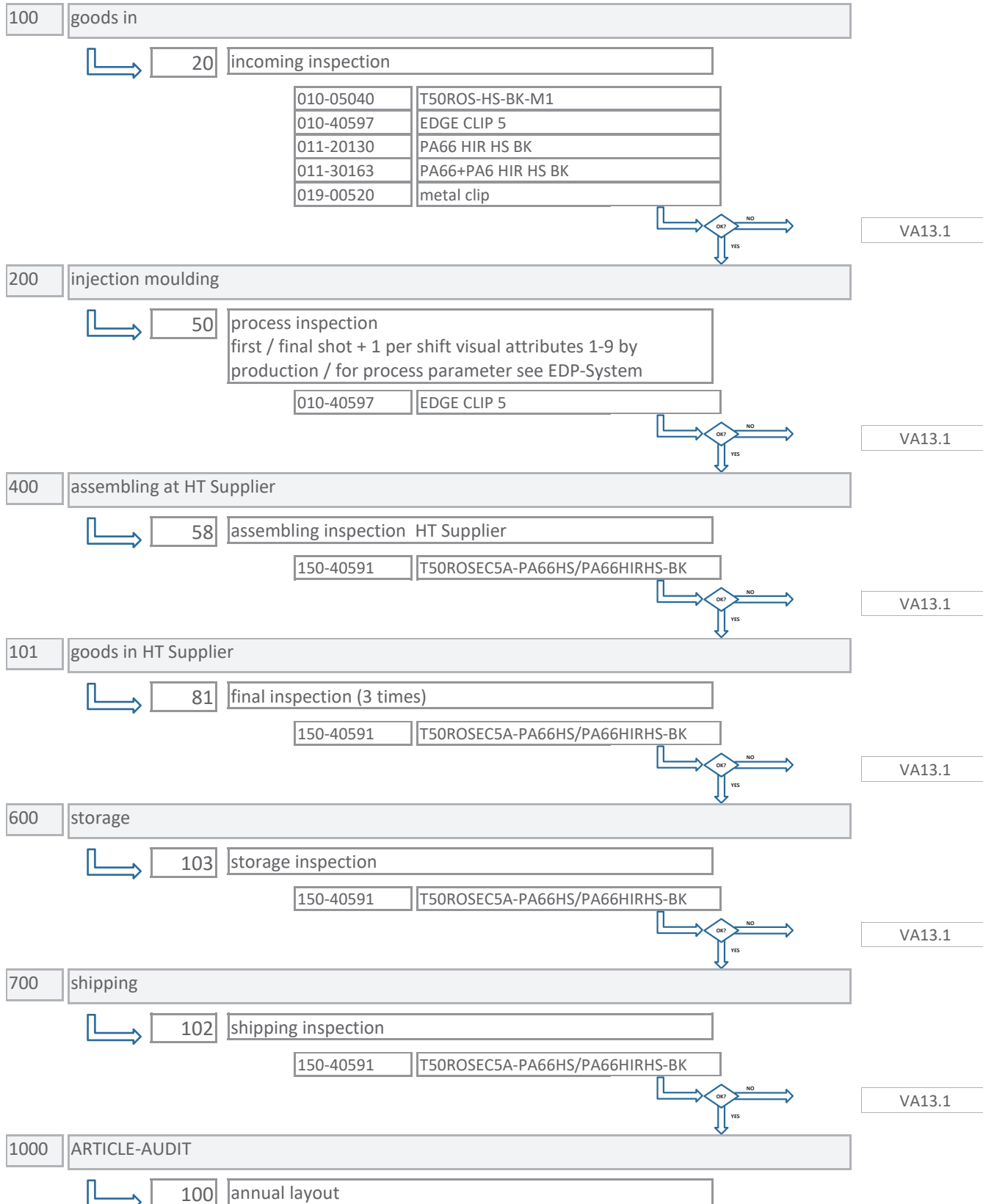
Due to confidentially reasons all further pages of this Process-FMEA need to remain internally, they should not be distributed to external!

In case of entitled interests this documents can be reviewed upon request and on site.

Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK	KEY CONTACT PHONE:	+49 4122 701 330	DATE REVIEWED:	01.07.2022
DRAWING :	2M5T-14197-MA	CUSTOMER APPROVAL:			
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch		

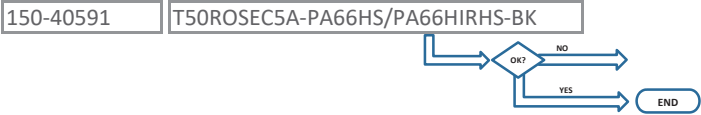
Process / test procedure	document
--------------------------	----------



Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Process / test procedure	document
--------------------------	----------



Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
19	identification check					VA13.1
011-20130	PA66 HIR HS BK					
107	box / palette label			100%	900000 Barcode-Scanner	
019-00520	metal clip					
107	box / palette label			100%	900000 Barcode-Scanner	
20	incoming inspection					VA13.1
010-05040	T50ROS-HS-BK-M1					
116	compare with master sample		1 bag	1 / delivery	420000 sample / visual	
010-40597	EDGE CLIP 5					
116	compare with master sample		1 pcs	1 / delivery	420000 sample / visual	
011-20130	PA66 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
304	COC notch impact strength		1 bag	1 / delivery	410000 manual / visual	
305	COC yield stress		1 bag	1 / delivery	410000 manual / visual	
011-30163	PA66+PA6 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
306	COC meld volume index		1 bag	1 / delivery	410000 manual / visual	
019-00520	metal clip					
40-1	dimension	5 - 6,5 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-2	dimension	0 - 0,4 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-3	dimension	0 - 0,6 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
20 incoming inspection						VA13.1
019-00520 metal clip						
40-4 dimension		3,9 - 4,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-5 dimension		7,75 - 8,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
54 expanding test			50 pcs	SKIP LOT PLAN	80243 check gauge	
116 compare with master sample			5 pcs	SKIP LOT PLAN	500353 Master Samples, visual	
307 COC hardness		410 - 520 HV10	1	SKIP LOT PLAN	410000 manual / visual	
1007 pull out force		min 70 N / HTQS-Blech	20 pcs	SKIP LOT PLAN	10000 Tensile tester	
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
1 sink marks			1 shot	1 / day	500338 Master Samples, visual	
2 shortage			1 shot	1 / day	500338 Master Samples, visual	
3 Flashes			1 shot	1 / day	500338 Master Samples, visual	
4 mould mis alignment			1 shot	1 / day	500338 Master Samples, visual	
5 moulding lines			1 shot	1 / day	500338 Master Samples, visual	
6 burnings			1 shot	1 / day	500338 Master Samples, visual	
7 dirt			1 shot	1 / day	500338 Master Samples, visual	
8 deformation			1 shot	1 / day	500338 Master Samples, visual	
9 inclusions			1 shot	1 / day	500338 Master Samples, visual	
54 expanding test			1 shot	1 / day	80066 check gauge 80136 check gauge	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
65 shot weight		see test procedure	1 shot	1 / day	20000 balance	
58 assembling inspection HT Supplier						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
59 assembling				100%	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts				100%	500886 Master Samples, visual 420000 sample / visual	
81 final inspection (3 times)						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
18 quantity			1 bag	1 / delivery	430000 scale counter / manual	
45 mixed parts in pack unit			1 bag	1 / delivery	410000 manual / visual	
59 assembling			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
103 storage inspection						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
102 shipping inspection						VA13.1

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR	
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330	
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022	
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:		

Part / Prozess No / Characteristic		SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
102	shipping inspection						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
100	annual layout						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	1200 requalification / product audit acc. DRW-spec incl. packageing (1 part-No for mentioned part group)				1 / year acc. AUDITPLAN		

Capability study (ppk)

partname: **EDGE CLIP 5**
GPN: 97-0405

Date: **08.07.2022**

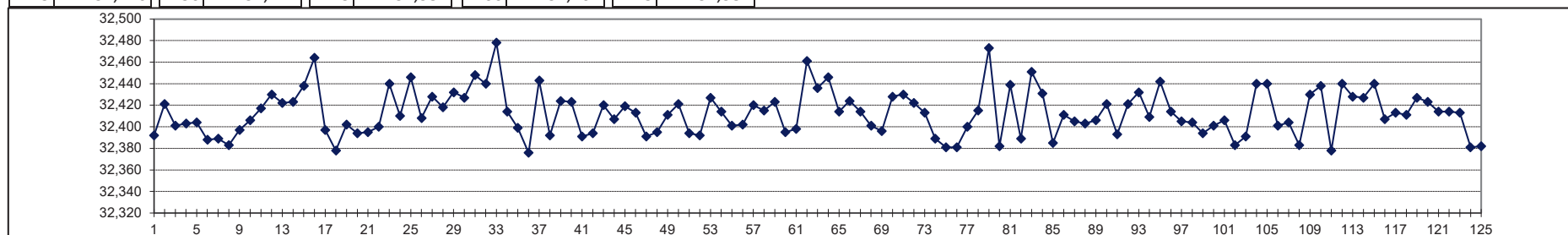
No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)
1	32,392	26	32,408	51	32,394	76	32,381	101	32,406
2	32,421	27	32,428	52	32,392	77	32,400	102	32,383
3	32,401	28	32,418	53	32,427	78	32,415	103	32,391
4	32,403	29	32,432	54	32,414	79	32,473	104	32,440
5	32,404	30	32,427	55	32,401	80	32,382	105	32,440
6	32,388	31	32,448	56	32,402	81	32,439	106	32,401
7	32,389	32	32,440	57	32,420	82	32,389	107	32,404
8	32,383	33	32,478	58	32,415	83	32,451	108	32,383
9	32,397	34	32,414	59	32,423	84	32,431	109	32,430
10	32,406	35	32,399	60	32,395	85	32,385	110	32,438
11	32,417	36	32,376	61	32,398	86	32,411	111	32,378
12	32,430	37	32,443	62	32,461	87	32,405	112	32,440
13	32,422	38	32,392	63	32,436	88	32,403	113	32,428
14	32,423	39	32,424	64	32,446	89	32,406	114	32,427
15	32,438	40	32,423	65	32,414	90	32,421	115	32,440
16	32,464	41	32,391	66	32,424	91	32,393	116	32,407
17	32,397	42	32,394	67	32,414	92	32,421	117	32,413
18	32,378	43	32,420	68	32,401	93	32,432	118	32,411
19	32,402	44	32,407	69	32,396	94	32,409	119	32,427
20	32,394	45	32,419	70	32,428	95	32,442	120	32,423
21	32,395	46	32,413	71	32,430	96	32,414	121	32,414
22	32,400	47	32,391	72	32,422	97	32,405	122	32,414
23	32,440	48	32,395	73	32,413	98	32,404	123	32,413
24	32,410	49	32,411	74	32,389	99	32,394	124	32,381
25	32,446	50	32,421	75	32,381	100	32,401	125	32,382

acceptable tolerance (+/-) **5** [‰]

max	32,4780
min	32,3760
R	0,1020
S	0,0209
X/	32,4129
LT	32,2508
UT	32,5749
valid +/-	0,1621

ppk 2,58

(demand: >= 1.67)



REPEATABILITY AND REPRODUCIBILITY ANALYSIS REPORT

acc. to MSA 4th Edition

NON DESTRUCTIVE TEST

Specimen : Plastic reference part (GPN20-1304)	Gage type : Weight scale	Plant : Tornesch																																																																																																																																																																																																																																																																																																																																																																																																		
Part. No. : 01021304	Gage number : PMN 02-0111	Date : 31.01.2022																																																																																																																																																																																																																																																																																																																																																																																																		
Characteristic : Shot weight ($\pm 3,5\%$)	performed by:	approved by:																																																																																																																																																																																																																																																																																																																																																																																																		
Tolerance : 0,064 Units gramm	Name: Tobias Cohrt	Jens Feil																																																																																																																																																																																																																																																																																																																																																																																																		
Signature:																																																																																																																																																																																																																																																																																																																																																																																																				
# of operators: 3	# of trials: 3	# of parts: 10																																																																																																																																																																																																																																																																																																																																																																																																		
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vertical-align: middle;"> CONCLUSION: Gage system is satisfactory. </td> </tr> <tr> <td colspan="11"> Number of Distinct Categories (ndc) $ndc = 1.41(PV / GRR)$ $ndc = 6,37938$ </td> </tr> <tr> <td colspan="12"> - Under 10% error Gage system is satisfactory. - 10% to 30% error May be acceptable based upon importance of application, cost of gage, cost of repairs, etc. - Over 30% error Gage system is not satisfactory. Identify the causes and take corrective action. </td> </tr> <tr> <td colspan="12">Remarks:</td> </tr> </table>											TRIAL #	P A R T										RESULTS	1	2	3	4	5	6	7	8	9	10	A 1	8,086	8,096	8,092	8,094	8,097	8,090	8,088	8,091	8,094	8,093	A ₁	2	8,087	8,095	8,093	8,094	8,097	8,090	8,088	8,092	8,094	8,093	A ₂	3	8,086	8,096	8,093	8,095	8,098	8,091	8,089	8,091	8,093	8,095	A ₃	Average	8,086	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,094	X _A 8,0924	Range	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	R _A 0,0011	B 1	8,087	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,093	B ₁	2	8,087	8,097	8,093	8,094	8,097	8,091	8,087	8,092	8,093	8,093	B ₂	3	8,086	8,098	8,093	8,095	8,097	8,092	8,089	8,090	8,094	8,093	B ₃	Average	8,087	8,097	8,093	8,094	8,097	8,091	8,088	8,091	8,094	8,093	X _B 8,0925	Range	0,001	0,002	0,000	0,001	0,000	0,002	0,002	0,002	0,001	0,000	R _B 0,0011	C 1	8,087	8,097	8,092	8,095	8,097	8,091	8,089	8,091	8,093	8,093	C ₁	2	8,086	8,098	8,095	8,095	8,096	8,091	8,089	8,091	8,094	8,094	C ₂	3	8,088	8,097	8,093	8,094	8,097	8,090	8,088	8,092	8,095	8,093	C ₃	Average	8,087	8,097	8,093	8,095	8,097	8,091	8,089	8,091	8,094	8,093	X _C 8,0927	Range	0,002	0,001	0,003	0,001	0,001	0,001	0,001	0,001	0,002	0,001	R _C 0,0014	PART	8,0867	8,0967	8,0930	8,0944	8,0970	8,0907	8,0883	8,0912	8,0938	8,0933	R _{PART} = 0,0103	$R = R_A + R_B + R_C / \text{No of operators} = 0,0011 + 0,0011 + 0,0014 / 3$											R = 0,0012	$X_{DIFF} = [\text{Max}(X)_{ABC}] - [\text{Min}(X)_{ABC}] = 8,0927 - 8,0924$											X _{DIFF} = 0,0003	$UCL_R = R * D_4 = 0,0012 * 2,58$											UCL _R = 0,0031	$D_4 = 3,27 \text{ for 2 trials} \quad 2,58 \text{ for 3 trials}$											Measurement Unit Analysis											Total Variation Method	Tolerance Method	Repeatability : Equipment Variation (EV) $EV = R * K_1$ $EV = 0,0007$											Trials 3 $K_1 = 0,5908$	$\% EV = 100[EV/TV]$ $\% EV = 21,29$	$\% EV = 100[EV/(tol/6)]$ $\% EV = 6,65$	Reproducibility : Appraiser Variation (AV) $AV = [(X_{DIFF} * K_2)^2 - (EV^2 / nr)]^{1/2}$ $AV = 0,0001$											(n parts, r trials) Oper 3 $K_2 = 0,5231$	$\% AV = 100[AV/TV]$ $\% AV = 3,51$	$\% AV = 100[AV/(tol/6)]$ $\% AV = 1,10$	Repeatability & Reproducibility (GRR) $GRR = (EV^2 + AV^2)^{1/2}$ $GRR = 0,0007$											$\% GRR = 100[GRR/TV]$ $\% GRR = 21,58$	$\% GRR = 100[GRR/(tol/6)]$ $\% GRR = 6,74$	Part Variation (PV) $PV = R_{PART} * K_3$ $PV = 0,0033$											Parts 10 $K_3 = 0,3146$	$\% PV = 100[PV/TV]$ $\% PV = 97,64$		Total Variation (TV) $TV = (GRR^2 + PV^2)^{1/2}$ $TV = 0,0033$											CONCLUSION: Gage system is satisfactory.			Number of Distinct Categories (ndc) $ndc = 1.41(PV / GRR)$ $ndc = 6,37938$											- Under 10% error Gage system is satisfactory. - 10% to 30% error May be acceptable based upon importance of application, cost of gage, cost of repairs, etc. - Over 30% error Gage system is not satisfactory. Identify the causes and take corrective action.												Remarks:											
TRIAL #	P A R T											RESULTS																																																																																																																																																																																																																																																																																																																																																																																								
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Average	8,086	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,094	X _A 8,0924																																																																																																																																																																																																																																																																																																																																																																																									
Range	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	R _A 0,0011																																																																																																																																																																																																																																																																																																																																																																																									
B 1	8,087	8,096	8,093	8,094	8,097	8,090	8,088	8,091	8,094	8,093	B ₁																																																																																																																																																																																																																																																																																																																																																																																									
2	8,087	8,097	8,093	8,094	8,097	8,091	8,087	8,092	8,093	8,093	B ₂																																																																																																																																																																																																																																																																																																																																																																																									
3	8,086	8,098	8,093	8,095	8,097	8,092	8,089	8,090	8,094	8,093	B ₃																																																																																																																																																																																																																																																																																																																																																																																									
Average	8,087	8,097	8,093	8,094	8,097	8,091	8,088	8,091	8,094	8,093	X _B 8,0925																																																																																																																																																																																																																																																																																																																																																																																									
Range	0,001	0,002	0,000	0,001	0,000	0,002	0,002	0,002	0,001	0,000	R _B 0,0011																																																																																																																																																																																																																																																																																																																																																																																									
C 1	8,087	8,097	8,092	8,095	8,097	8,091	8,089	8,091	8,093	8,093	C ₁																																																																																																																																																																																																																																																																																																																																																																																									
2	8,086	8,098	8,095	8,095	8,096	8,091	8,089	8,091	8,094	8,094	C ₂																																																																																																																																																																																																																																																																																																																																																																																									
3	8,088	8,097	8,093	8,094	8,097	8,090	8,088	8,092	8,095	8,093	C ₃																																																																																																																																																																																																																																																																																																																																																																																									
Average	8,087	8,097	8,093	8,095	8,097	8,091	8,089	8,091	8,094	8,093	X _C 8,0927																																																																																																																																																																																																																																																																																																																																																																																									
Range	0,002	0,001	0,003	0,001	0,001	0,001	0,001	0,001	0,002	0,001	R _C 0,0014																																																																																																																																																																																																																																																																																																																																																																																									
PART	8,0867	8,0967	8,0930	8,0944	8,0970	8,0907	8,0883	8,0912	8,0938	8,0933	R _{PART} = 0,0103																																																																																																																																																																																																																																																																																																																																																																																									
$R = R_A + R_B + R_C / \text{No of operators} = 0,0011 + 0,0011 + 0,0014 / 3$											R = 0,0012																																																																																																																																																																																																																																																																																																																																																																																									
$X_{DIFF} = [\text{Max}(X)_{ABC}] - [\text{Min}(X)_{ABC}] = 8,0927 - 8,0924$											X _{DIFF} = 0,0003																																																																																																																																																																																																																																																																																																																																																																																									
$UCL_R = R * D_4 = 0,0012 * 2,58$											UCL _R = 0,0031																																																																																																																																																																																																																																																																																																																																																																																									
$D_4 = 3,27 \text{ for 2 trials} \quad 2,58 \text{ for 3 trials}$																																																																																																																																																																																																																																																																																																																																																																																																				
Measurement Unit Analysis											Total Variation Method	Tolerance Method																																																																																																																																																																																																																																																																																																																																																																																								
Repeatability : Equipment Variation (EV) $EV = R * K_1$ $EV = 0,0007$											Trials 3 $K_1 = 0,5908$	$\% EV = 100[EV/TV]$ $\% EV = 21,29$	$\% EV = 100[EV/(tol/6)]$ $\% EV = 6,65$																																																																																																																																																																																																																																																																																																																																																																																							
Reproducibility : Appraiser Variation (AV) $AV = [(X_{DIFF} * K_2)^2 - (EV^2 / nr)]^{1/2}$ $AV = 0,0001$											(n parts, r trials) Oper 3 $K_2 = 0,5231$	$\% AV = 100[AV/TV]$ $\% AV = 3,51$	$\% AV = 100[AV/(tol/6)]$ $\% AV = 1,10$																																																																																																																																																																																																																																																																																																																																																																																							
Repeatability & Reproducibility (GRR) $GRR = (EV^2 + AV^2)^{1/2}$ $GRR = 0,0007$											$\% GRR = 100[GRR/TV]$ $\% GRR = 21,58$	$\% GRR = 100[GRR/(tol/6)]$ $\% GRR = 6,74$																																																																																																																																																																																																																																																																																																																																																																																								
Part Variation (PV) $PV = R_{PART} * K_3$ $PV = 0,0033$											Parts 10 $K_3 = 0,3146$	$\% PV = 100[PV/TV]$ $\% PV = 97,64$																																																																																																																																																																																																																																																																																																																																																																																								
Total Variation (TV) $TV = (GRR^2 + PV^2)^{1/2}$ $TV = 0,0033$											CONCLUSION: Gage system is satisfactory.																																																																																																																																																																																																																																																																																																																																																																																									
Number of Distinct Categories (ndc) $ndc = 1.41(PV / GRR)$ $ndc = 6,37938$																																																																																																																																																																																																																																																																																																																																																																																																				
- Under 10% error Gage system is satisfactory. - 10% to 30% error May be acceptable based upon importance of application, cost of gage, cost of repairs, etc. - Over 30% error Gage system is not satisfactory. Identify the causes and take corrective action.																																																																																																																																																																																																																																																																																																																																																																																																				
Remarks:																																																																																																																																																																																																																																																																																																																																																																																																				

Intended For Welded Screw Ø
Pour Goujon Soudé à Filets Couchés Ø
Aufnahme fuer Schweissbolzen Ø

Tensile Force (N)
Tenue au serrage (N)
Schlaufenhaltekraft (N)
siehe Tabelle/
see table

Hole Size
Trou Ø
Loch Ø

Panel Thickness
Épaisseur Support
Blechdicke

Bundle Ø
Toron Ø
Buendel Ø
siehe Tabelle/
see table

Material
Matière
Werkstoff

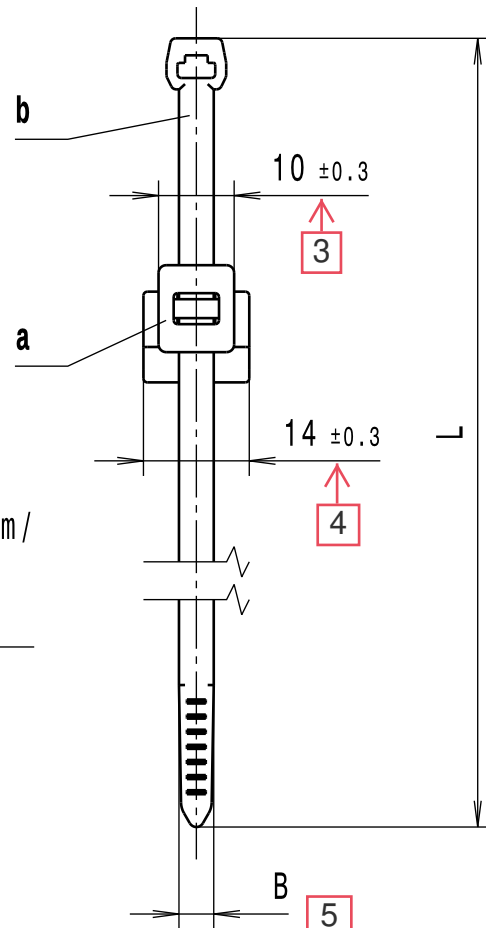
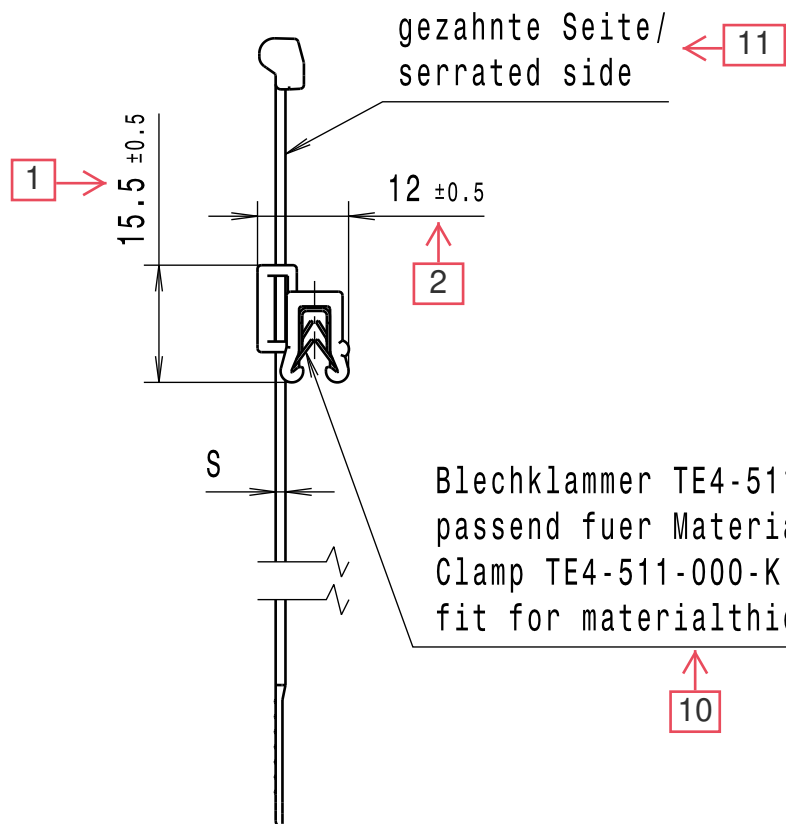
a:
PA 6.6

b:
PA 6.6

Tolerances
Dimension without tolerances
details to:
Tolérances
Cotes sans tolérances:
Toleranzen
Masse ohne
Toleranzangaben nach:

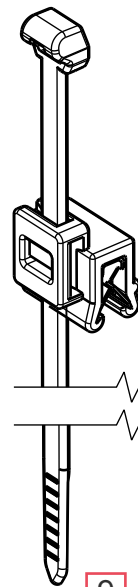
PERFORMANCE
SPECIFICATION
AUSFUEHRUNG
SPEZIFIKATION

Durch das Herstellverfahren bedingte Geometrieaenderungen (Anspritzen, Auswerfermarkierungen, etc.) zulaessig. Einzelheiten der Ausfuehrung bleiben dem Hersteller ueberlassen. The manufacturing-related geometry changes (injection point, ejectors marks, etc.) allowed. Design of the details are left to suppliers discretion.



Ausdruck nur zur Information /
Printed copy for information only

ISO
1:1



Bezeichnungsbeispiel: ① ②
a: Sockel EC5A und
b: Kabelbinder T50ROS
ist: Befestigungsbinder T50ROSEC5A
Example of designation:
a: Socket EC5A and
b: Cable tie T50ROS
being: Fixing tie T50ROSEC5A

deutscher Text ist verbindlich /
german text is valid

Revision level Indice Aenderungsstand		Revision Record Désignation Beschreibung der Aenderung	Changed Modifié Geändert	Date Datum	Approved Approuvé Geprueft	Date Datum
Drawing Dessin Zeichnung	Part Pièce Solid					
1	0	Bezeichnung ...EC5A war ...EC5B	Steiner	16.11.00	Mueller	16.11.00
2	0	T50SOSEC5A in Tabelle hinzu, Bezeichnung -MC5-BK entfaellt	Steiner	23.04.01	Wien	23.04.01
3	0	Buendel Ø 31 mm war Ø 45 mm	Mueller	26.04.02	Wien	26.04.02
4	0	Farbe natur und Schlaufenhaltekraft hinzu, Mass 200 ±5 war 200 ±10, Rahmen neu, CAD-Systemwechsel	Langeloh	07.08.08	Spiesz	07.08.08
5	0	Materialangaben ueberarbeitet	Langeloh	24.10.11	Schiwek	24.10.11

Zeile/ line	Artikelbezeichnung/ product type	Laenge/ length L	Bandbreite/ strap width B	Dicke/ thickness S	Buendel/ bundle Ø	Schlaufenhaltekraft/ tensile force N min.
1	T50ROSEC5A	200 ±5	4.6 ±0.2	1.3 ±0.2	4-45	225
2	T50SOSEC5A	150 ±5	4.6 ±0.2	1.3 ±0.2	4-31	225

The copyright of this drawing is reserved by HELLERMANN TYTON. It is issued on condition that it is not reproduced, copied or disclosed to a third party, either wholly or in part, without the consent of HELLERMANN TYTON.		Drawn Dessiné Par Gezeichnet	Steiner	27.09.00	Scale Echelle Maszstab	1:1	Project Number Numéro de projet Projektnummer	NT 405-97
La propriété de ce plan est réservée à la société HELLERMANN TYTON. Il est distribué à condition qu'il ne soit pas reproduit, communiqué ou révélé à une tierce partie, soit complètement ou en partie, sans le consentement de la société HELLERMANN TYTON.		Approved Approuvé Par Geprueft	Spiesz	27.09.00	Title Titre Benennung			Befestigungsbinder/Fixing tie ...EC5A ①
Weitergabe sowie Vervielfaeltigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdruerklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte fuer den Fall der Patenterteilung oder Gebrauchsmuster-Eintragung vorbehalten.		Manchester	Telephone: +44 (0) 161 945 4181 Facsimile: +44 (0) 161 947 2228	Drawing-No Plan-No Zeichnungs-Nr		14.1478		
		Trappes	Téléphone: +33 (0) 1 30 13 80 00 Télécopie: +33 (0) 1 30 13 80 60			Format D.Size		
		Tornesch	Telefon: +49 (0) 41 22 / 701 - 1 Telefax: +49 (0) 41 22 / 701 - 400			Sheet Page Blatt		
						A3		
						1 / 1		

From: **Quality Assurance HellermannTyton GmbH**

Subject: PPAP Approval signature deadline

Dear customer:

As you are aware the PPAP process is an integral part of our business. With that in mind, we are informing our customers who are requesting a PPAP that there is a 30 day (calendar) deadline to which we are expecting your reply back with a signed copy of the PSW with a disposition regarding it's validity. It is important that we maintain compliance to the current AIAG PPAP manual.

As a part of compliance a signed and approved PSW is essential for our records.

We reserve the right to consider that PPAP valid and complete, if we do not receive a signed copy of the PSW within 30 days (calendar).

Once you have received our PPAP information please e-mail us a copy of your disposition with the appropriate signatures as soon as possible to the following person:

nescha.lohse@HellermannTyton.de

Quality Assistant

phone: +49 (0) 4122 701 5726

Your cooperation is greatly appreciated!

Respecting the procedure as described above, the documentation with HellermannTyton PB-No.:			
97974	with submission date	27.07.2022	will be considered as complete and valid auto-
atically on	26.08.2022	unless otherwise disposed!	

Part Submission Warrant

Part Name T50ROSEC5A Cust. Part Number 2048562
 Shown on Drawing No. 141478 Org. Part Number 15040591
 Engineering Change Level 5 Dated 24.10.2011
 Additional Engineering Changes n/a Dated n/a
 Safety and/or Government Regulation ☐ Yes ☒ No Purchase Order No. 15040591 Weight (kg) 0,0030
 Checking Aid No. n/a Checking Aid Engineering Change Level n/a Dated n/a

ORGANIZATION MANUFACTURING INFORMATION

HellermannTyton GmbH DUNS: 315430892
 Organization Name & Supplier/Vendor Code
Großer Moorweg 45
 Street Address
Tornesch **25436** **Germany**
 City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

REXEL Germany GmbH & Co. KG (**61161**)
 Customer Name/Division
Robert Grünert
 Buyer/Buyer Code
 various
 Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported? ☒ Yes ☐ No ☐ n/a
 Submitted by IMDS or other customer format: -
 Are polymeric parts identified with appropriate ISO marking codes? ☐ Yes ☐ No ☒ n/a

REASON FOR SUBMISSION (Check at least one)

- ☐ Initial Submission ☐ Change to Optional Construction or Material
☐ Engineering Change(s) ☐ Supplier or Material Source Change
☐ Tooling: Transfer, Replacement, Refurbishment, or additional ☐ Change in Part Processing
☐ Correction of Discrepancy ☐ Parts Produced at Additional Location
☐ Tooling inactive > than 1 year ☒ Other - please specify below
usage of suitable material (Grilon TSZ1 instead of Akromid A31S3) for supplies starting from 01.09.2022

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 design record requirements: ☒ Yes ☐ No (If "No" - Explanation Required)
 Mold / Cavity / Production Process injection moulding / serial mold

DECLARATION

I 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 confidential - pcs / 24 hours.
 I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from this declaration below.

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered? ☐ Yes ☐ No ☒ n/a
 Organization Authorized Signature i.A. V. Lohse Date 27-Jul-22
 Print Name i.A. N. Lohse Phone No. +49 (0) 4122 701 5726 Fax No. +49 4122 701 241
 Title Quality Assistant E-mail nescha.lohse@HellermannTyton.de

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other _____
 Customer Signature _____ Date _____
 Print Name _____ Customer Tracking Number (optional) _____

HellermannTyton

97974

Performance Test Results

Blanket statements of conformance are unacceptable for any test results.

<u>CREATOR</u>	<u>TITLE</u>	<u>DATE</u>
i.A. N. Lohse	Quality Assistant	27-Jul-22

Internal PB-No.: **97974**

Rev #: 01
Rev. Date: 25.07.2012



Inspection certificate 21000189

according to: DIN EN 10204 3.1

Hellermann Tyton Sp.z.o.o.

Kotunia 111
PL, 62-400, Stupca

Confirmation EMS: 524976/01
Ord. no. customer: 4500130335
Packing List: 233878
Date of delivery: 04.01.2021

To:
Fax No.: +48632237110

Product:

Grilon TSZ 1 schwarz 9835 (Sackware 25kg) 112

Quantity [kg]:
10500

Production Number Position:
0131307 067, 068, 069, 070, 071, 072, 073, 074, 075, 076
, 077, 078, 079, 080

			Production Number:			
Properties	Method	Unit	0131307			
Moisture content 160°C Karl-Fischer	ISO15512	%	0.03			
MVR at 275°C 5 kg	ISO1133	ml/10min	120			

Gross-Umstadt, 05.01.2021
K. Hryniewicz , Quality Assurance

We hereby certify that the material fully corresponds to the agreed properties and condition. The applicable procedures such as sampling, test plan and methods are described in our quality system in accordance with IATF 16949 and certified by SQS. The test results have been determined to the best of our knowledge. Our company does not accept any liability for properties of parts manufactured from this material. In addition, the qualification of the product for a given application cannot be derived from the data and must be ascertained by the customer. The certificate does not release the customer from a received material inspection. The general sales terms and conditions of purchase of EMS-CHEMIE (Deutschland) GmbH apply. These can be downloaded at www.emsgrivory.com. This document is issued electronically and is valid without signature.



HELLERMANN TYTON GMBH
GROSSER MOORWEG 45
TORNESCH, GERMANY 25436
Attention : AXEL LANG

Ascend Performance Materials Operations LLC
Nylon Plastics and Polymers
3000 Chemstrand Road
Cantonment, FL 32533
Telephone : (850)968-7000

Certificate Date : 11-Feb-22
Delivery No : 382604159
Shipped Qty : 47,450.000 Lbs
21,523.320 Kgs
Customer P.O. No: 4500155499/30
Container : 0000000000002085153

Certificate of Analysis

This certifies that Nylon Resin shipped to you from Ascend Performance Materials Operations LLC has been tested and found to meet required specifications.

This material was produced under a Quality System that meets ISO 9001:2015 and IATF 16949:2016 criteria.

If you have questions or concerns about this Certificate of Analysis, please contact Ascend Performance Materials Customer Operations at 1-888-927-2363.

This product meets the requirements of the following specifications: ASTM D4066 PA0121, ASTM D6779 PA0121, WSK-M4D648A (ESF-M4D 82A), MRS # 75, Rev. 7, Date 2-Jan-2019, GMP.PA66.018, CMP NY057 AA, MSDB 41 CPN 1076, MSDB 41 CPN 1899, FMVSS 302*, CPN3490, D4000 PA012, SAE J1639 PA0121, Ford WQ 100A, GMW16036P-PA66.

Material: VYDYNE 22HSP NT Material No: 10425537 Batch No: JK22VY05 Date of Mfg: 22-Nov-2021

Ascend Performance Materials Operations LLC Specification

<u>Lot Data Property</u>	<u>Test Method</u>	<u>Min</u>	<u>Max</u>	<u>Result</u>	<u>Units</u>
Copper	STM 00667	80	100	88	PPM
Flex Modulus	ISO 178;2MM/MIN	2500		3056	MPa
Moisture	ASTM D6869	0.12	0.20	0.13	%
Nom. Str.@ Brk	ISO 527-1,2 / 1A	17.5	35.0	26.9	%
Notched Izod	ISO 180 / 1A	3.5	8.0	4.9	kJ/m^2
Relative Visc.	ASTM D789[9.34]	45.0	48.0	46.0	N/A
Strength @ Yld	ISO 527-1,2 / 1A	78	98	80	MPa
VISCOSITY NUM. SULFURIC	ISO 307	136.9	142.8	138.9	ml/g

Note: This certificate is generated and controlled by electronic means. No signature is required. This document may not be reproduced, except in full, without written consent of the Nylon Plastics and Polymers Department, Ascend Performance Materials Operations LLC.

All information contained in this letter is provided for informational purposes only and is not meant to alter or waive the appropriate contractual product specifications. Moisture values are representative of the product at the time it was sampled. If numerical flame spread ratings appear herein, they are not intended to reflect the hazards presented by this or any other material under actual fire conditions. Each end user should determine whether potential fire hazards are associated with the finished product, and whether this resin is suitable for the particular end use.

This Certificate of Analysis is provided by Ascend Performance Materials (or its authorized distributor) to its direct purchaser only and is intended for internal use. It is not valid if resold, conveyed or otherwise transferred to another party without Ascend's prior written consent. Ascend makes no warranties and assumes no liability for any product or certification obtained from an unauthorized source. Contact Ascend at +1 713-315-5700 to confirm the validity of any third party supplier. Ascend and Vydine are registered trademarks of Ascend Performance Materials Operations LLC.



HFP BANDSTAHL
HUEHOCO GROUP

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Eingegangen
29.06.2021

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

21003616

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067
Zu Auftrag Lieferplan AL-21000412

vom: 28.06.2021
vom: 23.10.2020

Seite: 1
(FB_036)

Bestellnummer: E 20 00659 Bestelldatum: 21.10.2020 Lieferant: 1690000
Kundennummer: 10009 Fax-Nr.: +49 2754 375364 eMail: nadine.schuppert@osterrath.de
Abruf-Nr.: 9. Abruf 22.06.2021

Artikelnummer	Kundenartikel	Menge ME
0400003500101832 0,4B x 35,0 C75S +A _ GK G DIN/EN/Norm 10132-4 / 10140 ** Im Übrigen wie bestätigt ** Lieferzustand geölt	BC-04003530 MA-RL	12.561 kg

Schmelzanalyse	* C	Si	Mn	P	S	Cr	Mo	Ni
Soll min	0,700	0,150	0,600					
Soll max	0,800	0,350	0,900	0,025	0,025	0,400	0,100	0,400
582228	0,710	0,240	0,690	0,007	0,001	0,220	0,004	0,030

Maßtoleranzen	Soll Dicke	0,4	-0,03 /
	Soll Breite	35,0	/ +0,2

Mechanische Werte	* Dicke (mm)	PA-Nr.	Rp (MPa)	Rm (MPa)	A (%) A80
Packstück					
Soll min	0,370				15,0
Soll max	0,400		510	640	

Abruf-Nr.: 9. Abruf 22.06.2021

UP201777	0,379	21002060-5	409	557	25,2
UP201778	0,385	21002060-5	388	547	25,1
UP201779	0,379	21002060-5	409	557	25,2
UP201793	0,388	21002060-5	383	541	25,0
UP201794	0,388	21002060-5	383	541	25,0
UP201799	0,388	21002060-5	383	541	25,0
UP201816	0,379	21002060-5	409	557	25,2
UP201817	0,379	21002060-5	409	557	25,2
UP201820	0,388	21002060-5	383	541	25,0
UP201826	0,388	21002060-5	383	541	25,0
UP201830	0,385	21002060-5	388	547	25,1
UP201832	0,385	21002060-5	388	547	25,1

HFP Bandstahl GmbH | Ein Unternehmen der HUEHOCO GRUPPE | WE MAKE PRODUCTS PROUD

Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

Telefon
0049 3695 663-0
Telefax
0049 3695 663-105
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jena HRB 306033
UID-Nr.
DE289746684

GEPRÜFT
10.07.2021
Sebastian Damm



Management
System
LATE 16040.2016
www.tuv.com
ID: 310603740

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055060
IBAN: DE6784055050000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0480255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF520
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE8EXXX



HFP BANDSTAHL

HUEHOCO GROUP

21003616

HFP Bandstahl GmbH | Postfach 1222 | DE-36422 Bad Salzungen

Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Kunde:
Osterrath GmbH & Co. KG
Wahlbachsmühle 3
57334 Bad Laasphe / OT Sassmannshausen

Abnahmeprüfzeugnis WZ-52106067

DIN EN 10204 3. (1.05) Datum: 28.06.2021

Zu Lieferschein LA-52106067

vom: 28.06.2021

Seite: 2

Zu Auftrag Lieferplan AL-21000412

vom: 23.10.2020

(FB_036)

Bestellnummer: E 20 00659

Bestelldatum:

21.10.2020 Lieferant: 1690000

Es wird bestätigt, dass die Lieferungen den Anforderungen der Lieferbedingung entsprechen.

Diese durch ein geeignetes Datenverarbeitungssystem erstellte Bescheinigung ist gemäß EN 10204, Abschnitt 5, ohne Unterschrift gültig.

Abnahmebeauftragter
Sebastian Specht

GEPRÜFT
10.07.2021
Sebastian Damm

HFP Bandstahl GmbH | Ein Unternehmen der HUEHOCO GRUPPE | WE MAKE PRODUCTS PROUD

Lieferanschrift
Schäfergasse 1
DE-36433 Bad Salzungen

Geschäftsführer
Michael Frank
Helmut Germann

Telefon
0049 3695 663-0
Telefax
0049 3695 663-106
E-Mail
info@hfp-bandstahl.de
Web
www.hfp-bandstahl.de

Register
Jona HRB 306033
UID-Nr.
DE289746684

Bankverbindung
Wartburg-Sparkasse Konto-Nr. 126080 BLZ 84055050
IBAN: DE57840550500000126080 SWIFT: HELADEF1WAK
Commerzbank Bad Hersfeld Konto-Nr. 0460255900 BLZ 52080080
IBAN: DE78520800800460255900 SWIFT: DRESDEFF330
Deutsche Bank Erfurt Konto-Nr. 5377148 BLZ 82070000
IBAN: DE2182070000537714800 SWIFT: DEUTDE33XXX



Management
System
ISO 9001:2015

www.tuv.com
ID 9108637546

Barth Galvanik GmbH | In den Schwarzwäldern 4 | 61440 Oberursel (Taunus) |

Osterrath GmbH & Co.KG
Wahlbachsmühle 3

57334 Bad Laasphe

Sammel-Prüfprotokoll

Lieferschein 450720

vom 03.08.2021

Kundennummer 17800

Prüfprotokoll Nr.:462141

Auftragsnr.: 641209-1

Chargenr.: 141-200 / S2103347

Bestellmenge

891,000 kg

Artikel

Blechklammer
vergüten

613944156049

Ihr Auftrag

Ihre BestellNr

LSHT02803

Ihr LS-Datum

30.07.2021

Merkmal 1	6001 Härteprüfung KH HV10				
Messwerte	Einheit: HV10				
1 Stichprobe					

Auswertung über: 1 Stichprobe

Fehler	UTG	OTG	Min	Max	Mittel
0	410,00	520,00	478,00	484,00	481,25

Messwerte der Stichproben:

Nr.	Messwerte									
1	481,00	478,00	480,00	483,00	484,00	483,00	480,00	481,00		

Die beiliegenden Teile wurden in unserem Betrieb nach den entsprechenden Normen bzw. gemäß Kundenvorschrift gewissenhaft bearbeitet und geprüft. Unsere Qualitätssicherung entbindet Sie aber nicht von der Notwendigkeit, die Teile vor der Weiterverarbeitung entsprechenden Kontrollen und Prüfungen zu unterziehen.

Dieses Protokoll wurde maschinell erstellt und ist ohne Unterschrift gültig.



AU21-12434

Prüfzeugnis/inspection certificat DIN EN 10204/3.1

Kunde:	Osterrath GmbH & Co.KG
Artikel:	Stahl-Klammer 61-3944-15/6049
	10004221F
Menge:	891kg
Auftragsnummer:	AU21-12434
Beschichtungsdatum:	19.08.21
Beschichtung / coating:	microcor 500 silber GZ TL245 t647
Schichtstärke/thickness (middle)	18µm (ZnPHS,Protekt KL 100, VH301GZ)
Korrosionsbeständigkeit / corrosion protection : DIN EN ISO 9227 NSS :	840h (VW TL 245 t647)
Rostgrad / rust grade DIN EN ISO 4628-3:	Ri0

Chargen: 2103347

Datum: 19.08.21

QM: QMB Herr Schäfer

P-FMEA	D-02	Project- No GPN / NT Nr.	variable	Revision date Überarbeitungsdatum	04.05.2022
Product Group Produkt Gruppe	assembling edge clips (Montage Edge Clips)	Installation location Verbautort des Bauteils		Revision by Überarbeitet durch:	M. Michel
Part No Artikel Nr.	variable	Drawing number Zeichnung Nr.	variable	Review Date Überprüfungsdatum	04.05.2023
Part Description Artikel Bezeichnung	variable	Ind. Of Drwg. / date Zg. Index / Datum	variable	Reviewed by Überprüft durch	M. Michel
Core Team FMEA Team	M.Michel Prod., O.Pracht QS, H.Spieß PE, Ch. Sievert NT-PM				
Process Responsibility Prozessverantwortung bei	HT-Tornesch	Version of FMEA Version der FMEA	15	This FMEA is generated and administrated electronically. Valid without signature. Diese FMEA ist elektronisch erstellt und verwaltet. Gültig ohne Unterschrift.	
Prepared by Erstellt von	Marco Michel	Original Issue Date Erstausgabe Datum	01.07.2010		

We confirm that we have process FMEA´s available - They are valid for the parts belonging to the Product Group mentioned above.

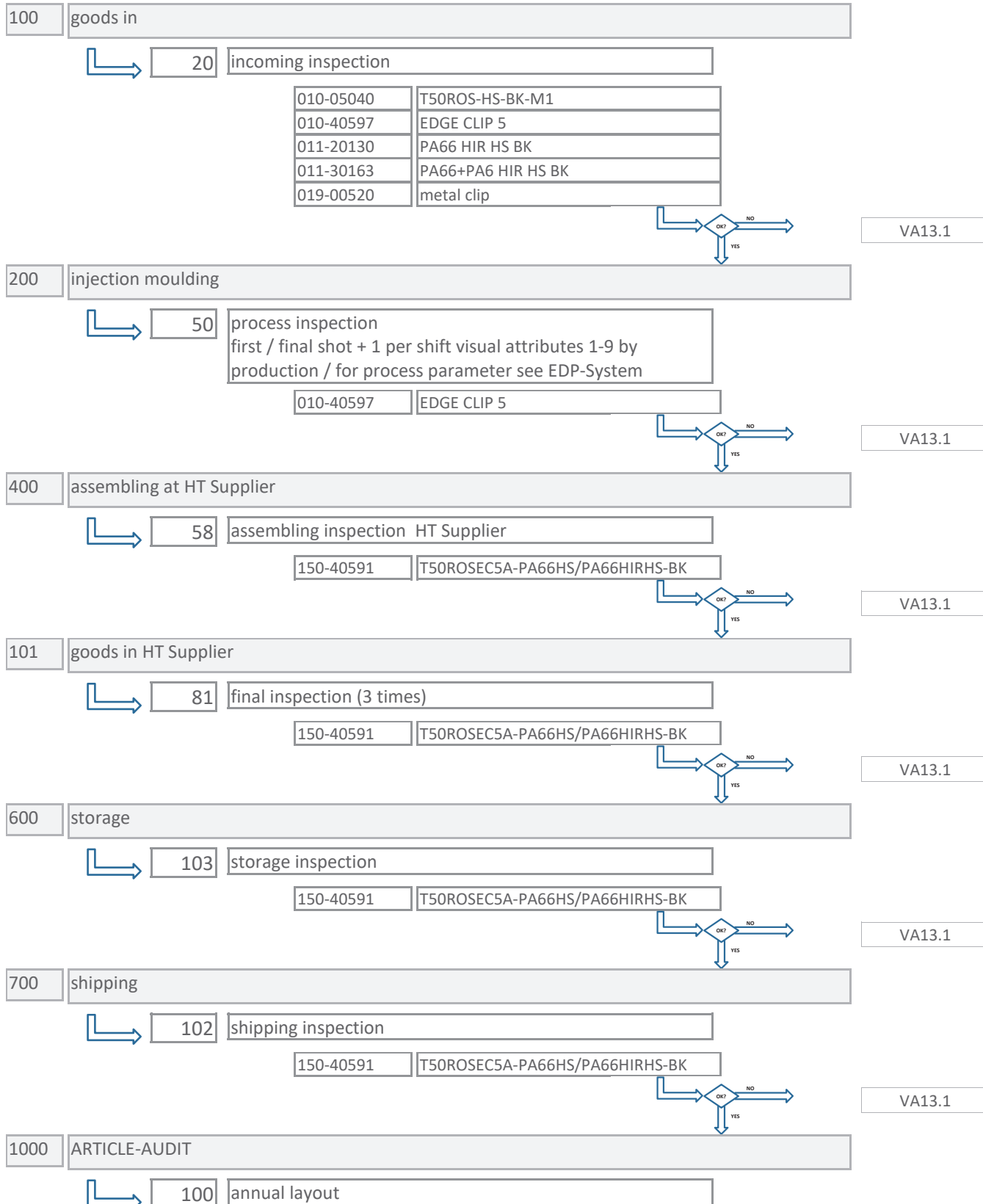
Due to confidentially reasons all further pages of this Process-FMEA need to remain internally, they should not be distributed to external!

In case of entitled interests this documents can be reviewed upon request and on site.

Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK	KEY CONTACT PHONE:	+49 4122 701 330	DATE REVIEWED:	01.07.2022
DRAWING :	2M5T-14197-MA	CUSTOMER APPROVAL:			
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch		

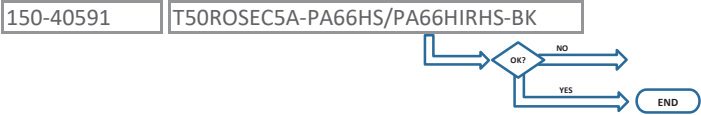
Process / test procedure	document
--------------------------	----------



Process Flow Chart

PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Process / test procedure	document
--------------------------	----------



Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
19	identification check					VA13.1
011-20130	PA66 HIR HS BK					
107	box / palette label			100%	900000 Barcode-Scanner	
019-00520	metal clip					
107	box / palette label			100%	900000 Barcode-Scanner	
20	incoming inspection					VA13.1
010-05040	T50ROS-HS-BK-M1					
116	compare with master sample		1 bag	1 / delivery	420000 sample / visual	
010-40597	EDGE CLIP 5					
116	compare with master sample		1 pcs	1 / delivery	420000 sample / visual	
011-20130	PA66 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
304	COC notch impact strength		1 bag	1 / delivery	410000 manual / visual	
305	COC yield stress		1 bag	1 / delivery	410000 manual / visual	
011-30163	PA66+PA6 HIR HS BK					
302	COC residual moisture		1 bag	1 / delivery	410000 manual / visual	
306	COC meld volume index		1 bag	1 / delivery	410000 manual / visual	
019-00520	metal clip					
40-1	dimension	5 - 6,5 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-2	dimension	0 - 0,4 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-3	dimension	0 - 0,6 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
20 incoming inspection						VA13.1
019-00520 metal clip						
40-4 dimension		3,9 - 4,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
40-5 dimension		7,75 - 8,2 mm	5 pcs	SKIP LOT PLAN	140000 profile projector	
54 expanding test			50 pcs	SKIP LOT PLAN	80243 check gauge	
116 compare with master sample			5 pcs	SKIP LOT PLAN	500353 Master Samples, visual	
307 COC hardness		410 - 520 HV10	1	SKIP LOT PLAN	410000 manual / visual	
1007 pull out force		min 70 N / HTQS-Blech	20 pcs	SKIP LOT PLAN	10000 Tensile tester	
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
1 sink marks			1 shot	1 / day	500338 Master Samples, visual	
2 shortage			1 shot	1 / day	500338 Master Samples, visual	
3 Flashes			1 shot	1 / day	500338 Master Samples, visual	
4 mould mis alignment			1 shot	1 / day	500338 Master Samples, visual	
5 moulding lines			1 shot	1 / day	500338 Master Samples, visual	
6 burnings			1 shot	1 / day	500338 Master Samples, visual	
7 dirt			1 shot	1 / day	500338 Master Samples, visual	
8 deformation			1 shot	1 / day	500338 Master Samples, visual	
9 inclusions			1 shot	1 / day	500338 Master Samples, visual	
54 expanding test			1 shot	1 / day	80066 check gauge 80136 check gauge	

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:	

Part / Prozess No / Characteristic	SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
50 process inspection						VA13.1
010-40597 EDGE CLIP 5						
65 shot weight		see test procedure	1 shot	1 / day	20000 balance	
58 assembling inspection HT Supplier						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
59 assembling				100%	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts				100%	500886 Master Samples, visual 420000 sample / visual	
81 final inspection (3 times)						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
18 quantity			1 bag	1 / delivery	430000 scale counter / manual	
45 mixed parts in pack unit			1 bag	1 / delivery	410000 manual / visual	
59 assembling			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
118 identification single parts			1 bag	1 / delivery	500886 Master Samples, visual 420000 sample / visual	
103 storage inspection						VA13.1
150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
102 shipping inspection						VA13.1

Control Plan

rev: 08.04.2022

☐ Prototyp ☐ Pre-Launch ☒ Production	PART NUMBER:	150-40591	GPN:	97-0405	CORE TEAM:	PE, NTPM, QM, PR	
	PART NAME:	T50ROSEC5A-PA66HS/PA66HIRHS-BK			KEY CONTACT PHONE:	+49 4122 701 330	
	DRAWING :	2M5T-14197-MA			DATE REVIEWED:	01.07.2022	
	PRODUCT GROUP:	D-02	PRODUCTION PLANT:	HT Tornesch	CUSTOMER APPROVAL:		

Part / Prozess No / Characteristic		SC	Part / Prozess Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Reaction Plan
102	shipping inspection						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	107 box / palette label				100%	900000 Barcode-Scanner 900000 Barcode-Scanner	
100	annual layout						VA13.1
	150-40591 T50ROSEC5A-PA66HS/PA66HIRHS-BK						
	1200 requalification / product audit acc. DRW-spec incl. packageing (1 part-No for mentioned part group)				1 / year acc. AUDITPLAN		

Capability study (ppk)

partname: **EDGE CLIP 5**
GPN: **97-0405**

Date: **08.07.2022**

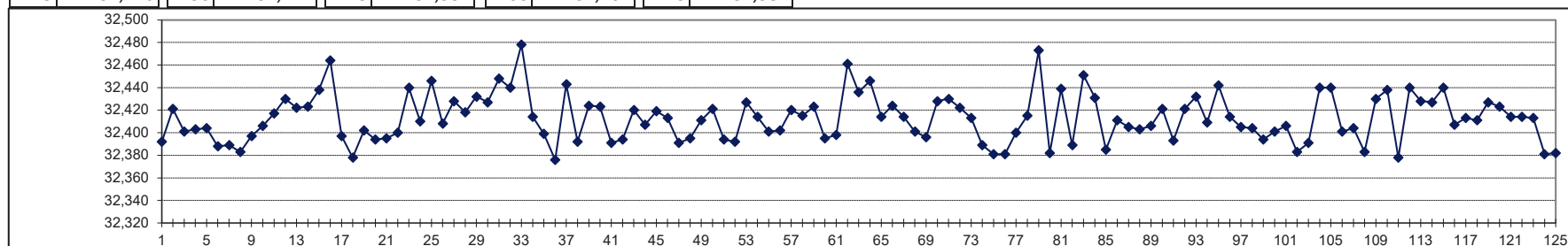
No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)
1	32,392	26	32,408	51	32,394	76	32,381	101	32,406
2	32,421	27	32,428	52	32,392	77	32,400	102	32,383
3	32,401	28	32,418	53	32,427	78	32,415	103	32,391
4	32,403	29	32,432	54	32,414	79	32,473	104	32,440
5	32,404	30	32,427	55	32,401	80	32,382	105	32,440
6	32,388	31	32,448	56	32,402	81	32,439	106	32,401
7	32,389	32	32,440	57	32,420	82	32,389	107	32,404
8	32,383	33	32,478	58	32,415	83	32,451	108	32,383
9	32,397	34	32,414	59	32,423	84	32,431	109	32,430
10	32,406	35	32,399	60	32,395	85	32,385	110	32,438
11	32,417	36	32,376	61	32,398	86	32,411	111	32,378
12	32,430	37	32,443	62	32,461	87	32,405	112	32,440
13	32,422	38	32,392	63	32,436	88	32,403	113	32,428
14	32,423	39	32,424	64	32,446	89	32,406	114	32,427
15	32,438	40	32,423	65	32,414	90	32,421	115	32,440
16	32,464	41	32,391	66	32,424	91	32,393	116	32,407
17	32,397	42	32,394	67	32,414	92	32,421	117	32,413
18	32,378	43	32,420	68	32,401	93	32,432	118	32,411
19	32,402	44	32,407	69	32,396	94	32,409	119	32,427
20	32,394	45	32,419	70	32,428	95	32,442	120	32,423
21	32,395	46	32,413	71	32,430	96	32,414	121	32,414
22	32,400	47	32,391	72	32,422	97	32,405	122	32,414
23	32,440	48	32,395	73	32,413	98	32,404	123	32,413
24	32,410	49	32,411	74	32,389	99	32,394	124	32,381
25	32,446	50	32,421	75	32,381	100	32,401	125	32,382

acceptable tolerance (+/-) **5** [‰]

max	32,4780
min	32,3760
R	0,1020
S	0,0209
X/	32,4129
LT	32,2508
UT	32,5749
valid +/-	0,1621

ppk 2,58

(demand: >= 1.67)



REPEATABILITY AND REPRODUCIBILITY ANALYSIS REPORT

acc. to MSA 4th Edition

NON DESTRUCTIVE TEST

Specimen : Plastic reference part (GPN20-1304)	Gage type : Weight scale	Plant : Tornesch																																																																																																																																																																																																																																																																																																																																																																																																
Part. No. : 01021304	Gage number : PMN 02-0111	Date : 31.01.2022																																																																																																																																																																																																																																																																																																																																																																																																
Characteristic : Shot weight ($\pm 3,5\%$)	performed by:	approved by:																																																																																																																																																																																																																																																																																																																																																																																																
Tolerance : 0,064 Units gramm	Name: Tobias Cohrt	Jens Feil																																																																																																																																																																																																																																																																																																																																																																																																
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# of operators: 3	# of trials: 3	# of parts: 10																																																																																																																																																																																																																																																																																																																																																																																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">OPERATOR A: Victor Salogin</td> <td style="width: 33%;">B: Stefan Specker</td> <td style="width: 34%;">C: Frank Werner</td> </tr> </table>			OPERATOR A: Victor Salogin	B: Stefan Specker	C: Frank Werner																																																																																																																																																																																																																																																																																																																																																																																													
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Intended For Welded Screw Ø
Pour Goujon Soudé à Filets Couchés Ø
Aufnahme fuer Schweissbolzen Ø

Tensile Force (N)
Tenue au serrage (N)
Schlaufenhaltekraft (N)
siehe Tabelle/
see table

Hole Size
Trou Ø
Loch Ø

Panel Thickness
Épaisseur Support
Blechdicke

Bundle Ø
Toron Ø
Buendel Ø
siehe Tabelle/
see table

Material
Matière
Werkstoff

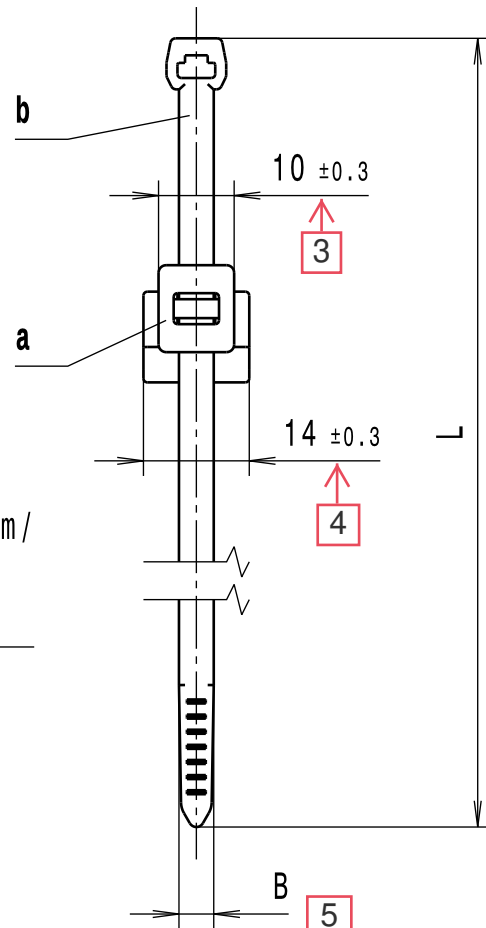
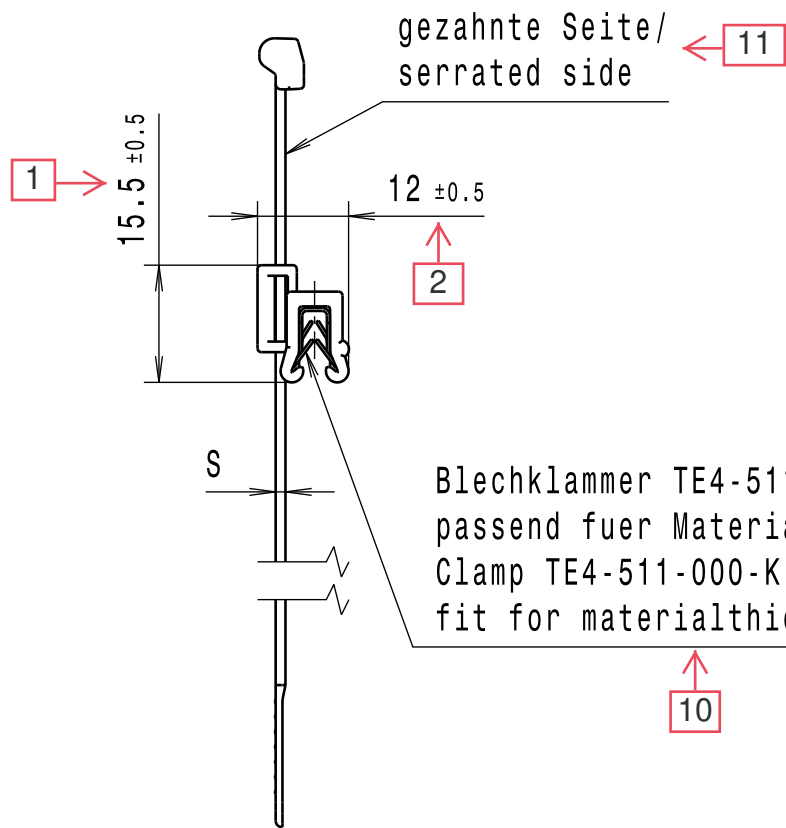
a:
PA 6.6

b:
PA 6.6

Tolerances
Dimension without tolerances
details to:
Tolérances
Cotes sans tolérances:
Toleranzen
Masse ohne
Toleranzangaben nach:

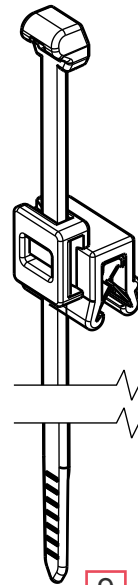
PERFORMANCE
SPECIFICATION
AUSFUEHRUNG
SPEZIFIKATION

Durch das Herstellverfahren bedingte Geometrieaenderungen (Anspritung, Auswerfermarkierungen, etc.) zulaessig. Einzelheiten der Ausfuehrung bleiben dem Hersteller ueberlassen. The manufacturing-related geometry changes (injection point, ejectors marks, etc.) allowed. Design of the details are left to suppliers discretion.



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ISO
1:1



Bezeichnungsbeispiel: ① ②
a: Sockel EC5A und
b: Kabelbinder T50ROS
ist: Befestigungsbinder T50ROSEC5A
Example of designation:
a: Socket EC5A and
b: Cable tie T50ROS
being: Fixing tie T50ROSEC5A

deutscher Text ist verbindlich /
german text is valid

Revision level Indice Aenderungsstand		Revision Record Désignation Beschreibung der Aenderung	Changed Modifié Geändert	Date Datum	Approved Approuvé Geprueft	Date Datum
Drawing Dessin Zeichnung	Part Pièce Solid					
1	0	Bezeichnung ...EC5A war ...EC5B	Steiner	16.11.00	Mueller	16.11.00
2	0	T50SOSEC5A in Tabelle hinzu, Bezeichnung -MC5-BK entfaellt	Steiner	23.04.01	Wien	23.04.01
3	0	Buendel Ø 31 mm war Ø 45 mm	Mueller	26.04.02	Wien	26.04.02
4	0	Farbe natur und Schlaufenhaltekraft hinzu, Mass 200 ±5 war 200 ±10, Rahmen neu, CAD-Systemwechsel	Langeloh	07.08.08	Spiesz	07.08.08
5	0	Materialangaben ueberarbeitet	Langeloh	24.10.11	Schiwek	24.10.11

Zeile/ line	Artikelbezeichnung/ product type	Laenge/ length L	Bandbreite/ strap width B	Dicke/ thickness S	Buendel/ bundle Ø	Schlaufenhaltekraft/ tensile force N min.
1	T50ROSEC5A	200 ±5	4.6 ±0.2	1.3 ±0.2	4-45	225
2	T50SOSEC5A	150 ±5	4.6 ±0.2	1.3 ±0.2	4-31	225

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	Approved Approuvé Par Geprueft	Spiesz	27.09.00	Title Titre Benennung	Befestigungsbinder/Fixing tie ...EC5A			
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