QUALITY REPORT

LFM-0122-200-056

ReportNumber:	01	ProjectNumber:	LFM-0122-200-056
PartNumber:	LFM-0122-200-056	InquiryNumber:	LFM-0122-200-056.001
Requirements:	DO-01	DrawingNumber:	LFM-0122-200-056.idw
PartTitle:	Tube honeycomb	Visual testing date:	04.05.2022

Testing information

Test standards:	DIN EN 13018	Printing process:	FDM (metal)
Test instruction:	internal	Order specifications:	Sintered (external)
Test scope:	100%	Acceptance rule:	internal
Test device:	Digital vernier caliper	Testing aids:	Lamp, Camera, Lens
Illuminance meter:	Voltcraft LX-10	Lux measured:	455
Measuring device no.:	1662853		

Test results

Exam area		Target [mm]	Scope [1] / Actual [mm]	Visual inspection - documentation according to DIN EN 13018																								Evaluation [2]		Remark
				100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	118-a	118-b	201	202	301	302	303	A	NA	
Part properties																														
1	Outer sphere		ES100	x	x				x		x									x										x	But further processing for paper
2	Drilling		ES100	x																										x	But further processing for paper
3	Initial layer		ES100	x	x																									x	But further processing for paper
Part dimensions																														
D1	Overall diameter		24,80																										x		
D2	Overall height		15,13																										x		
D3	Hole diameter		6,32																										x		

Legend:

[1] ES … Exterior surfaces (e.g. ES100%)
S … Support (e.g. S0%, S100%)

2) A … Requirements are accepted
NA … Requirements are **not** accepted

Surface irregularities:

100 General
101 Rough surface
102 Blobs on surface
103 Over extrusion
104 Under extrusion
105 Gaps in Walls
106 Stringing
107 Layer delamination
108 Curling
109 Warping
110 Overheating
111 Layershifting
112 Bad support structures
113 Missing support
114 Bad corners
115 Bad overhangs
116 Waves on surfaces
117 z-seam on surfaces
118 Dimensional issue
118-a Undersize
118-b Oversize

Infill irregularities:

201 False infill
202 Defect infill

Other irregularities:

301 Clogged extruder
302 Broken filament
303 No print bed adhesion

Appendix ☒ YES / ☐ NO *(Description/Pages)*	General test instructions, acceptance rule, part properties/ 2 pages
Remarks:	• Parts were safely packed • Clear defects visible after sintering • Some elements broke off during sintering • Further processing of defective parts for validation of the documentation process

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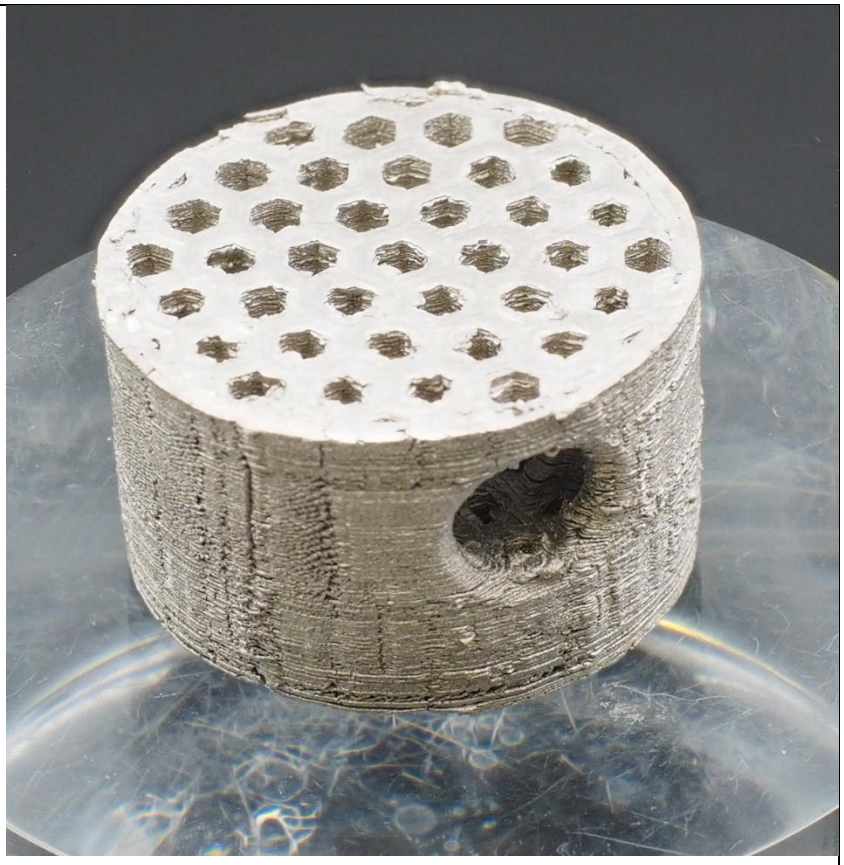
Checked		Rated		Customer release (if requested)	
Name:	Inspector #1	Name:	Production manager	Name:	
Test location:	Test area				
Date:	04.05.2022	Date:	04.05.2022	Date:	
Signature:	xxx	Signature:	xxx	Signature:	

Appendix

Test instruction	• The assessment and evaluation must be carried out by experienced and trained personnel. • Visual inspection after receiving the part from the sintering service provider. • The surfaces must be free of any coating, dirt, dust, powder etc. • The testing/ inspection is carried out in daylight or under artificial light. The illuminance during the test must be at least 350lx, 500lx is recommended.
Acceptance rule	• There is currently no existing standard for 3D printing that defines the possible irregularities and limits for evaluation. • For this reason, only internal evaluation standards can be used. • The acceptance of the examinations here is based on the individual assessment of the examiner.
Part images for final quality control	
General view after receiving the parts	

View under test conditions	
View of the defects (if occurred)	
Rough surface with defects, waves and gaps