

NFRC SIMULATION IN ACCORDANCE WITH ANSI/NFRC 100, ANSI/NFRC 200 and NFRC 500

UL Laboratory Canada Inc.	Submitted to:	Reissued To:
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Report No.: NS-04184-1	MAXIMA PROFIL NORD SRL Sat. Barați - Com. Mărgineni 607316 Str.	N/A
Reissued Report No.: N/A	Alexandru Piru Nr. 113e Bacau, Romania	

Report Summary

Operation Type:	DATT	Product Line ID Number:	N/A
Series/Model:	Dual Action Window	Product Type:	Initial Certification
Report Date:	2025-08-11	Simulation Date :	2025-08-11
Revision Date:	N/A	Number of Pages:	6

Reissue Information

Model:	N/A	Date of Reissue:	N/A
Reason for submittal:	N/A	Revision Date:	N/A
Product Line ID Number:	N/A		

Baseline Product

The individual product selected as the baseline product shall have a simulated U-factor within 0.60 W/m2K (0.10 Btu/h·ft2·°F) or 20% of the lowest simulated U-factor, whichever is greater. If more than one product type is being validated with a single test, then the baseline product shall be selected from the product lines in the validation test matrix.

Validation Test Matrix

Product	UL Laboratory Canada Inc. Report No.	Product Tested
Dual Action Window	NS-04184-1	<input checked="" type="checkbox"/>

Note: Reference must be made to UL Laboratory Canada Inc. complete report for specimen description and detailed simulation results

Simulated by:



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NFRC SIMULATION IN ACCORDANCE WITH: ANSI/NFRC 100, ANSI/NFRC 200 AND NFRC 500

1 INTRODUCTION

UL Laboratory Canada Inc. has been retained by MAXIMA PROFIL NORD SRL to evaluate a *tilt turn window* in accordance with ANSI/NFRC 100 Procedure for Determining Fenestration Product U-Factors, ANSI/NFRC 200 Solar Heat Gain Coefficient and Visible Transmittance and NFRC 500 Procedure for Determining Fenestration Product Condensation Resistance Values. The product components and manufacturing details are documented in section 4 of this report. Rounding is per NFRC 601 NFRC Unit and Measurement Policy. All imperial values are for reference only. Appendix A of this report includes drawings and information of the product.

Rating values included in this report are for submittals to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those options identified on a valid Certification Authorization (CA) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes.

The Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation, and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening.

Simulations were conducted in full compliance with NFRC requirements.

2 SPECIFICATION

ANSI/NFRC 100-2023:	Procedure for Determining Fenestration Product U-Factors
ANSI/NFRC 200-2023:	Solar Heat Gain Coefficient and Visible Transmittance
NFRC 101-2023:	Procedure for Determining Thermophysical Properties of Materials for Use in NFRC-Approved Software
NFRC 500-2017:	Procedure for Determining Fenestration Product Condensation Resistance Values
IGDB v. 106.0	International Glazing Database by Lawrence Berkeley National Laboratory

3 DISCLAIMER

Data required for this evaluation were taken from the best available sources and every effort was taken to accurately perform the simulation documented in this report. Because of the large amount of input data and analysis it is possible that errors or omissions could occur. Neither UL Laboratory Canada Inc. nor any of its employees shall be held responsible for any loss or damage resulting directly or indirectly from any default, error or omission.

4 PRODUCT DESCRIPTION

4.1 OPERATOR TYPE:

DATT, Tilt Turn

4.2 SERIES/MODEL:

Dual Action Window

4.3 FRAME:

- | | | |
|-------|----------------------|---|
| 4.3.1 | Material: | VR, Vinyl w/ Reinforcement |
| 4.3.2 | Finish: | Vinyl |
| 4.3.3 | Reinforcement: | Galvanized Steel reinforcement at all perimeter |
| 4.3.4 | Weatherstripping: | Compression weatherstripping at all perimeter |
| 4.3.5 | Continuous Hardware: | No hardware was required to be modeled |
| 4.3.6 | Overall dimensions: | 1200 mm W. x 1500 mm H. (47.24 "x 59.06") |

4.4 SASH(ES)

- | | | |
|---------|----------------------|---|
| 4.4.1 | Material: | VR, Vinyl w/ Reinforcement |
| 4.4.2 | Sash 1: | |
| 4.4.2.1 | Finish: | Vinyl |
| 4.4.2.2 | Reinforcement(s): | Galvanized Steel reinforcement at all perimeter |
| 4.4.2.3 | Weatherstripping(s): | Compression weatherstripping at all perimeter |
| 4.4.2.4 | Continuous Hardware: | No hardware was required to be modeled |
| 4.4.3 | Sash 2: | N/A |
| 4.4.4 | Sash 3: | N/A |
| 4.4.5 | Sash 4: | N/A |

4.5 GLAZING METHOD:

- | | | |
|-------|----------------|-------------|
| 4.5.1 | Exterior face: | EPDM gasket |
| 4.5.2 | Interior face: | EPDM gasket |

4.6 SPACER:

Spacer type	Material	Primary sealant	Secondary sealant
Swisspacer Ultimate(TP-D)	Thermo-plastic	Hot-Melt Butyl	Polyurethane

4.7 GRID:

4.7.1	Grid:	None
4.7.2	Material and finish:	N/A
4.7.3	Standard NFRC Grid Pattern:	N/A

4.8 GLAZING:

4.8.1	Filling Technique:	Single probe
4.8.2	Capillary tube:	No
4.8.3	Gas fill percentage:	90% Argon, 10% Air
4.8.4	Comment:	None

5 SIMULATION RESULTS

Table 1: Center of glazing results

ID	Name	Insulating Glass Unit												U factor		SHGC	VT
		Emissivities	Glass 1		Gap 1		Glass 2		Gap 2		Glass 3		Tint				
			Type	mm	mm	gas	Type	mm	mm	gas	Type	mm		W/m2-K	Btu/hr-ft2-F		
1	ClrGIG/PVB038/ClrGIG-Arg90-PTXN#3-Arg90-8071/PVB038/ClrGIG	0.054 (#3), 0.082 (#5)	LAM ClrGIG/PVB038/ClrGIG	6.3	14.0	Arg90	Planitherm XN	4.0	14.0	Arg90	LAM 8071/PVB038 /ClrGIG	6.3	CL	0.74	0.13	0.50	0.69
2	ClrGIG-Arg90-PTXN#3-Arg90-PTXN/PVB038/ClrGIG	0.054 (#3), 0.054 (#5)	Clear	4.0	15.0	Arg90	Planitherm XN	4.0	15.0	Arg90	LAM PTXN/PVB038 /ClrGIG	6.4	CL	0.72	0.13	0.51	0.71
3	ClrGIG-Arg90-PTXN/PVB038/ClrGIG	0.054 (#3)	Clear	4.0	22.0	Arg90	LAM PTXN/PVB038/ClrGIG	6.4					CL	1.55	0.27	0.60	0.79
4	StapidClr-Arg90-PTXN/PVB038/ClrGIG	0.054 (#3)	SGG STADIP CLEAR 33-1	6.4	22.0	Arg90	LAM PTXN/PVB038/ClrGIG	6.4					CL	1.54	0.27	0.59	0.79

Laminated glass options in Table 1 was built in Optics v.6.0 with following properties:

LAM ClrGIG/PVB038/ClrGIG :

- 3mm Float Glass (ID#3013 IGDB) by Guardian (GIG)
- GPVB 0.38mm Interlayer (Extra Clear pvb 0.38mm.gpp) by Gutmann PVB Plastic Sheets Manufacturing LLC
- 3mm Float Glass (ID#3013 IGDB) by Guardian (GIG)

LAM 8071/PVB038/ClrGIG:

- 3mm ClimaGuard 80/71 (ID# 3258 IGDB) by Guardian (GIG)
- GPVB 0.38mm Interlayer (Extra Clear pvb 0.38mm.gpp) by Gutmann PVB Plastic Sheets Manufacturing LLC
- 3mm Float Glass (ID#3013 IGDB) by Guardian (GIG)

LAM PTXN/PVB038/ClrGIG :

- 3mm PLANITHERM XN (ID# 21433 IGDB) by Saint-Gobain Glass (SGG)
- GPVB 0.38mm Interlayer (Extra Clear pvb 0.38mm.gpp) by Gutmann PVB Plastic Sheets Manufacturing LLC
- 3mm Float Glass (ID#3013 IGDB) by Guardian (GIG)

Report No: **NS-04184-1**, Reissued: **N/A**

Dual Action Window

Simulation in accordance with ANSI/NFRC 100, 200, NFRC 500

The results in this report relate only to the items evaluated. This report shall not be reproduced except in full, without the written approval of UL Laboratory Canada Inc.

Table 2: Overall fenestration products results

ID	Option Name	Insulating Glass Unit					Overall Product				
		W7 COG ID	Spacer	Grid	Grid Size	Tint	U Factor		SHGC	VT	CR
							W/m2-K	Btu/hr-ft2-F			
1	SU_ClrGIG-Arg90-PTXN/PVB038/ClrGIG	3	TP-D	N		CL	1.48	0.26	0.40	0.52	62
2	SU_StapidClr-Arg90-PTXN/PVB038/ClrGIG	4	TP-D	N		CL	1.48	0.26	0.39	0.52	62
3	SU_ClrGIG/PVB038/ClrGIG-Arg90-PTXN#3-Arg90-8071/PVB038/ClrGIG	1	TP-D	N		CL	0.94	0.17	0.34	0.45	80
4	SU_ClrGIG-Arg90-PTXN#3-Arg90-PTXN/PVB038/ClrGIG	2	TP-D	N		CL	0.92	0.16	0.34	0.47	80

Report No: **NS-04184-1**, Reissued: **N/A**

Dual Action Window

Simulation in accordance with ANSI/NFRC 100, 200, NFRC 500

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6 REVISION LOG

Revision Number	Revision Date	Description
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Report No: **NS-04184-1**, Reissued: **N/A**

Dual Action Window

Simulation in accordance with ANSI/NFRC 100, 200, NFRC 500

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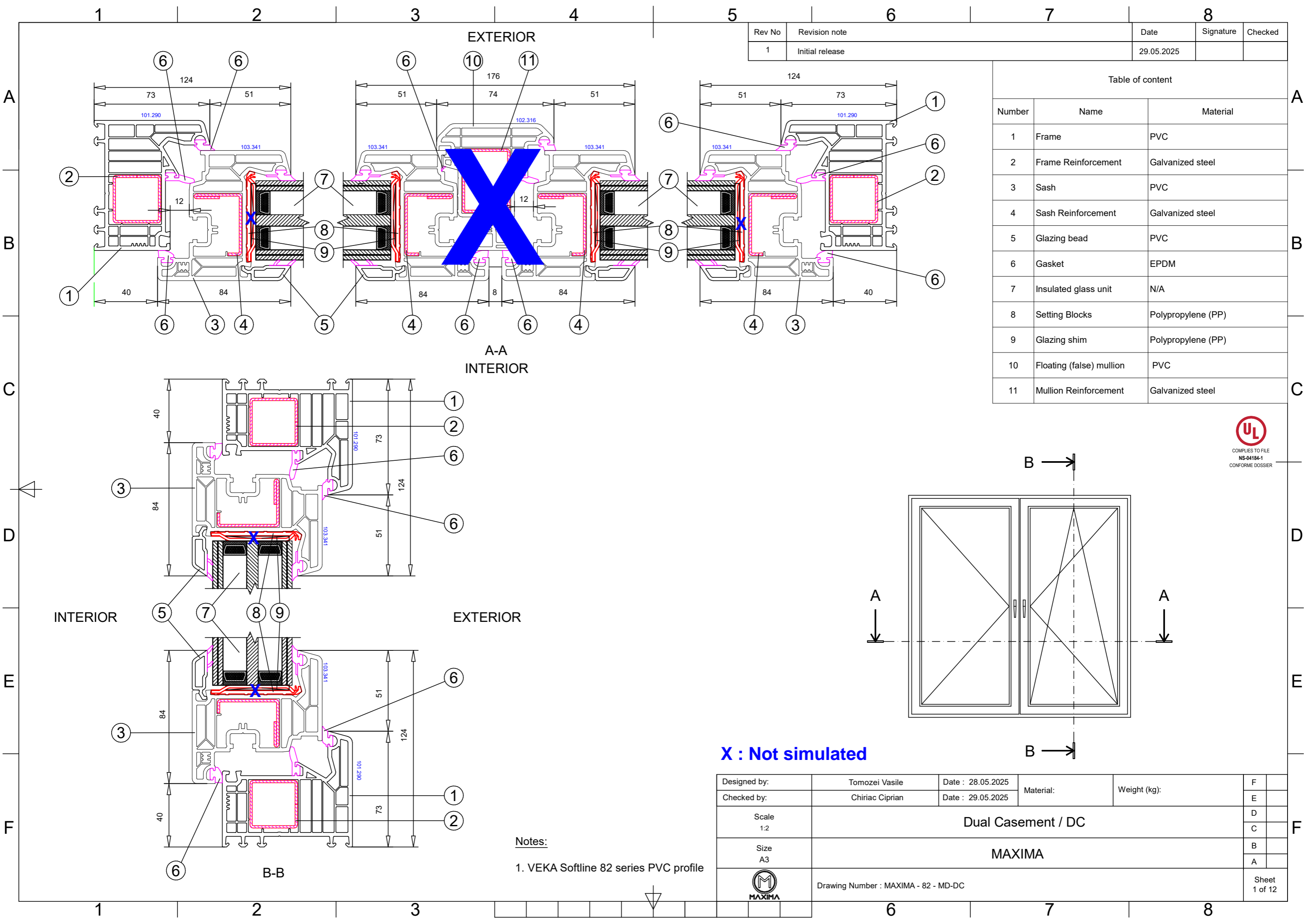
Page 6 of 6

APPENDIX A: DRAWINGS AND PRODUCT INFORMATION

Report No: **NS-04184-1**, Reissued: **N/A**

Simulation in accordance with ANSI/NFRC 100, 200, NFRC 500

The results in this report relate only to the items evaluated. This report shall not be reproduced except in full, without the written approval of UL Laboratory Canada Inc.




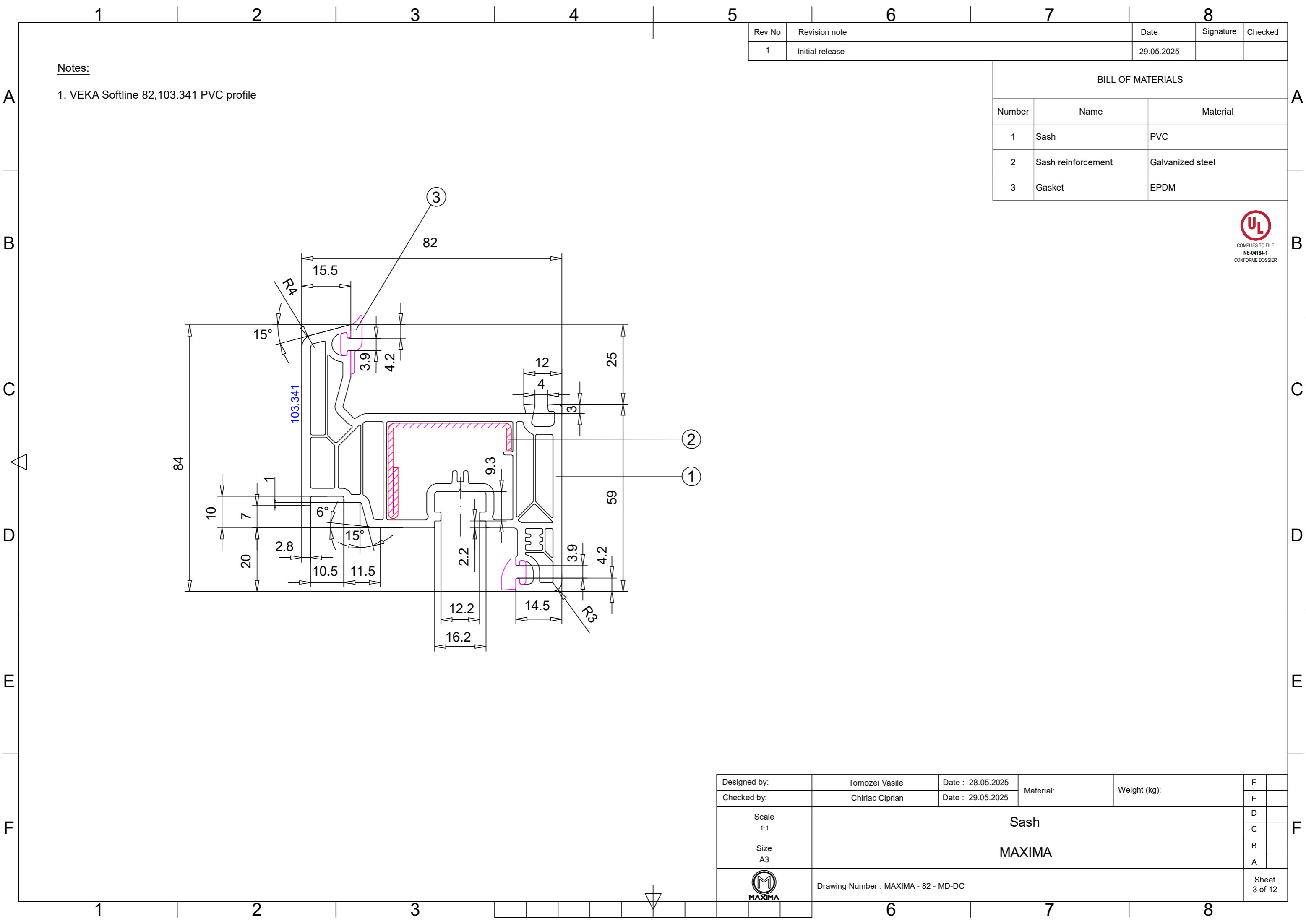
Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		

Table of content		
Number	Name	Material
1	Frame	PVC
2	Frame Reinforcement	Galvanized steel
3	Sash	PVC
4	Sash Reinforcement	Galvanized steel
5	Glazing bead	PVC
6	Gasket	EPDM
7	Insulated glass unit	N/A
8	Setting Blocks	Polypropylene (PP)
9	Glazing shim	Polypropylene (PP)
10	Floating (false) mullion	PVC
11	Mullion Reinforcement	Galvanized steel



X : Not simulated

Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 1:2	Dual Casement / DC				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 1 of 12	




Notes:

1. VEKA Softline 82,103.341 PVC profile

Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		

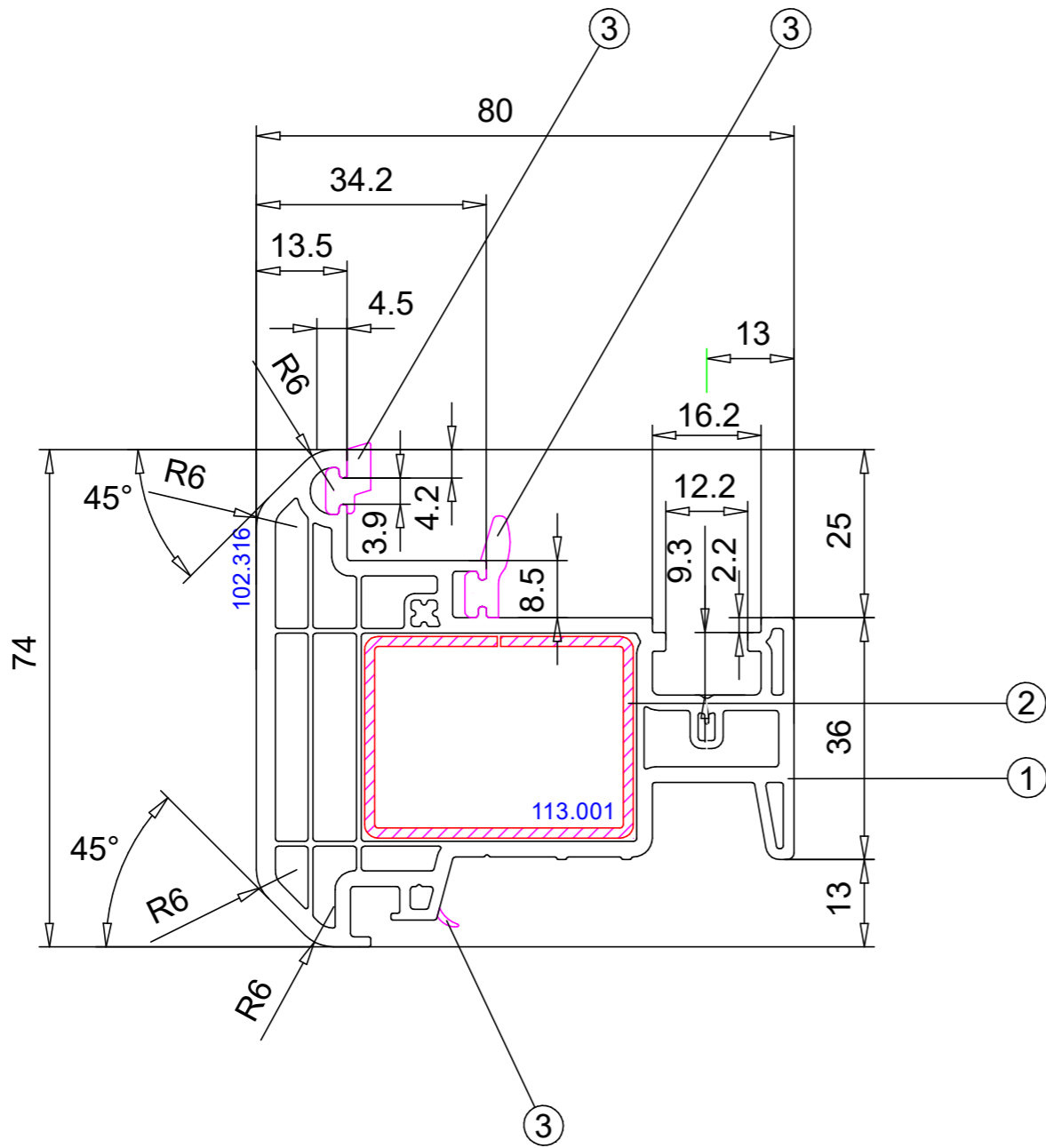
BILL OF MATERIALS		
Number	Name	Material
1	Sash	PVC
2	Sash reinforcement	Galvanized steel
3	Gasket	EPDM



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 1:1	Sash				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 3 of 12	

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Notes:
1. VEKA Softline 82, 102.316 PVC profile



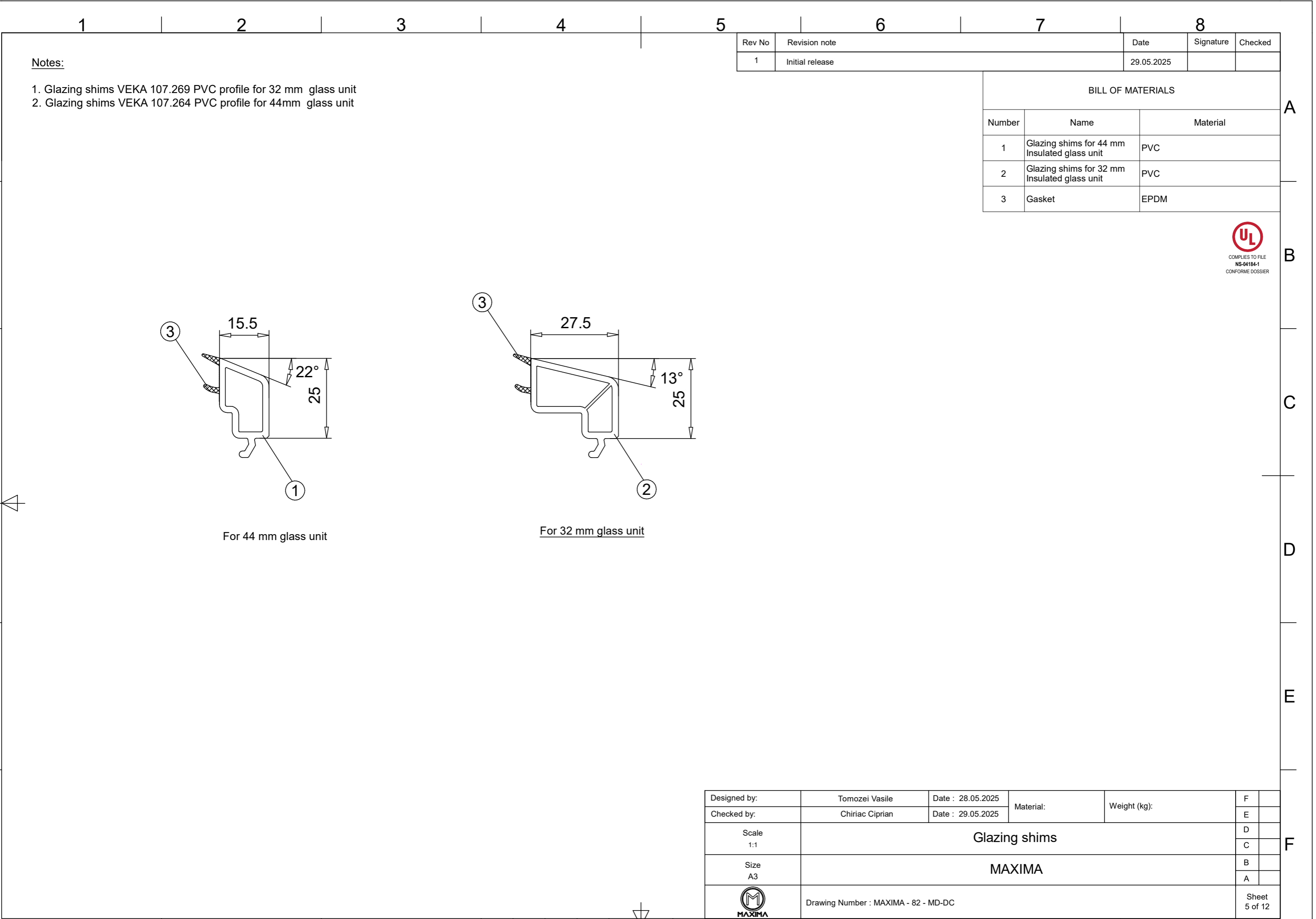
Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		

BILL OF MATERIALS		
Number	Name	Material
1	Floating (false) mullion	PVC
2	Mullion Reinforcement	Galvanized steel
3	Gasket	EPDM



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 1:1	Floating (false) mullion				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 4 of 12	

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C
D
E
F




Notes:

- 1. Glazing shims VEKA 107.269 PVC profile for 32 mm glass unit
- 2. Glazing shims VEKA 107.264 PVC profile for 44mm glass unit

Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		

BILL OF MATERIALS		
Number	Name	Material
1	Glazing shims for 44 mm Insulated glass unit	PVC
2	Glazing shims for 32 mm Insulated glass unit	PVC
3	Gasket	EPDM



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 1:1	Glazing shims				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 5 of 12	

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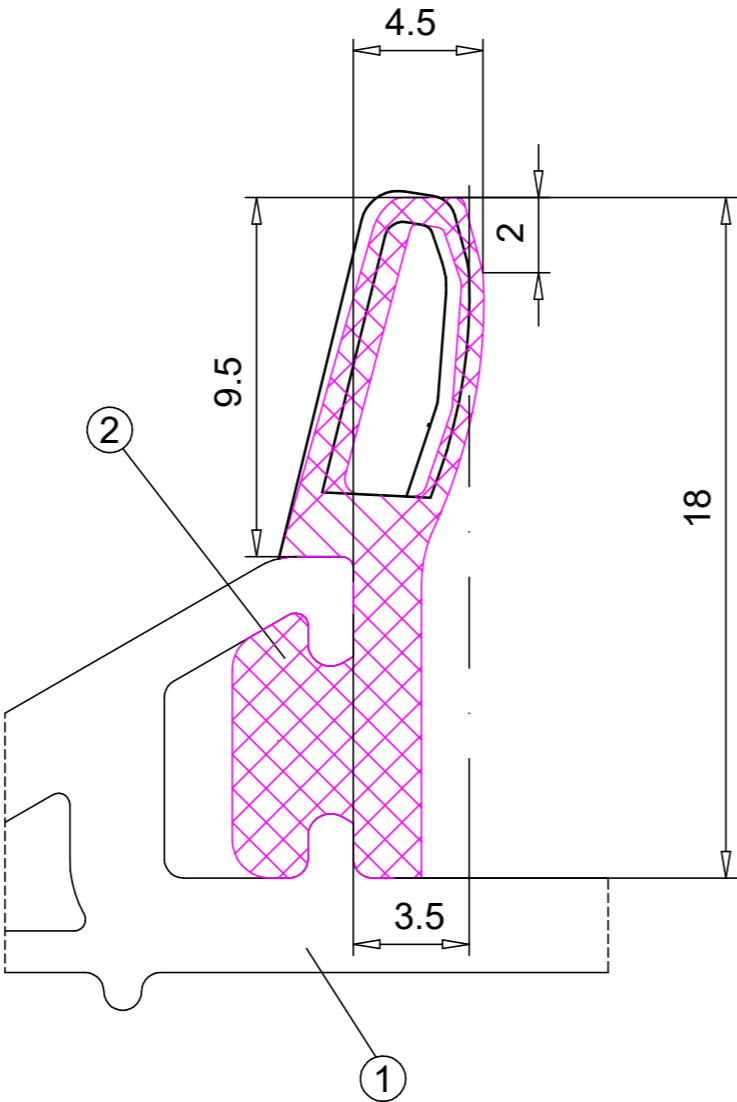
Notes:


- 1. VEKA P/N 112.391 - factory extruded
- 2. 3.5 mm after contact with sash

Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		

BILL OF MATERIALS

Number	Name	Material
1	Frame	PVC
2	Gasket	EPDM



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 5:1	Center seal for frame / T-profile				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 6 of 12	

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Notes:

- 1. VEKA P/N 112.423 - factory extruded
- 2. 3.5 mm after contact with sash
- 3. Used also on Floating (false) mullion

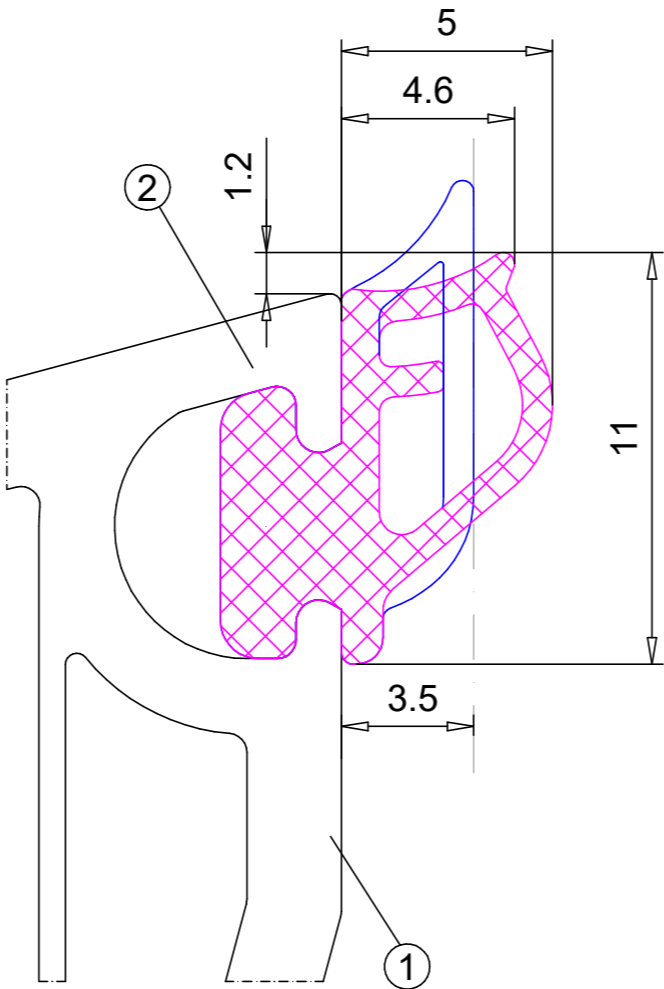
Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		


BILL OF MATERIALS

Number	Name	Material
1	Frame	PVC
2	Gasket	EPDM



COMPLIES TO FILE
NS-04184-1
CONFORME DOSSIER



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 5:1	Frame seal				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 7 of 12	

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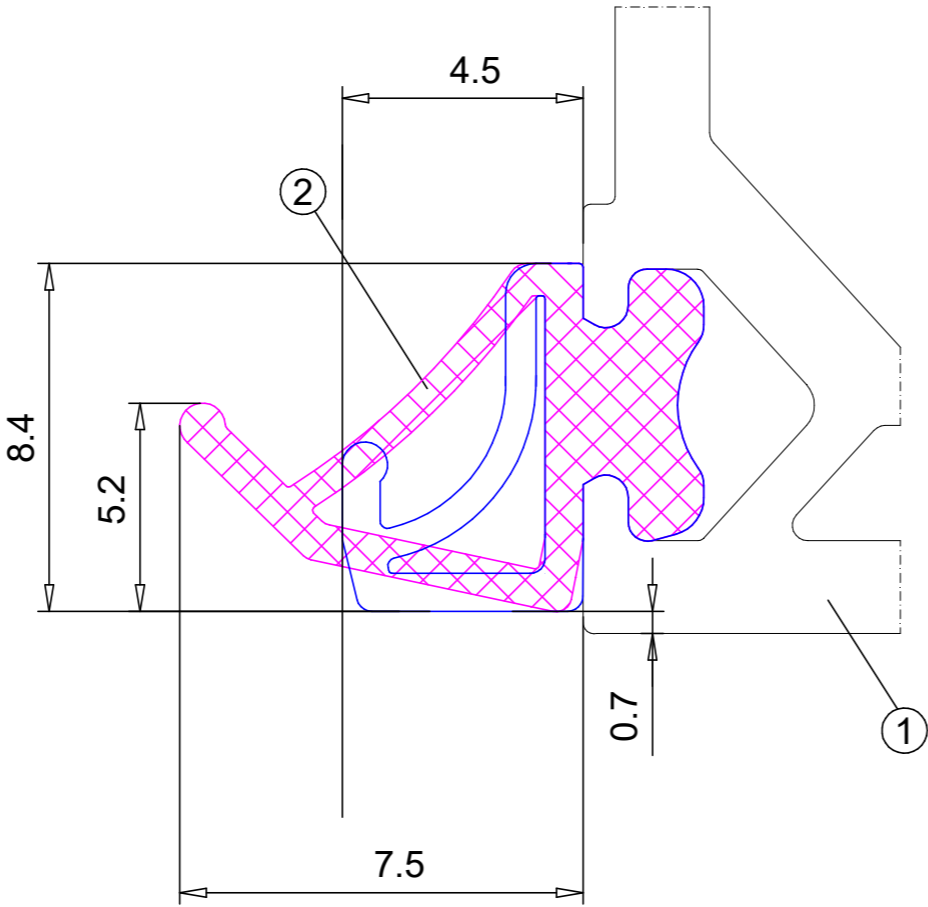
Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		


Notes:

- 1. VEKA P/N 112.324 - factory extruded
- 2. 4.5 mm after contact with sash

BILL OF MATERIALS

Number	Name	Material
1	Sash	PVC
2	Gasket	EPDM



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 5:1	Sash overlap seal				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 8 of 12	

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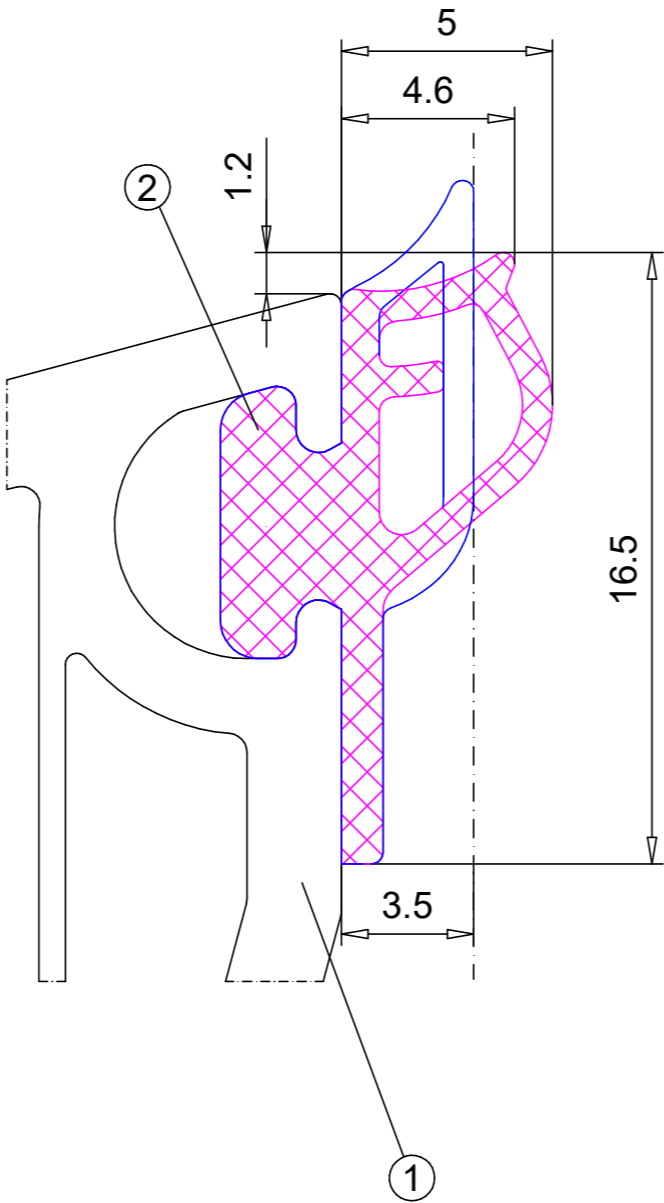
Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		


Notes:

- 1. VEKA P/N 112.390 - factory extruded
- 2. 3.5 mm after contact with glazing unit

BILL OF MATERIALS

Number	Name	Material
1	Sash	PVC
2	Gasket	EPDM



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 5:1	Sash glazing seal				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 9 of 12	

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B
C
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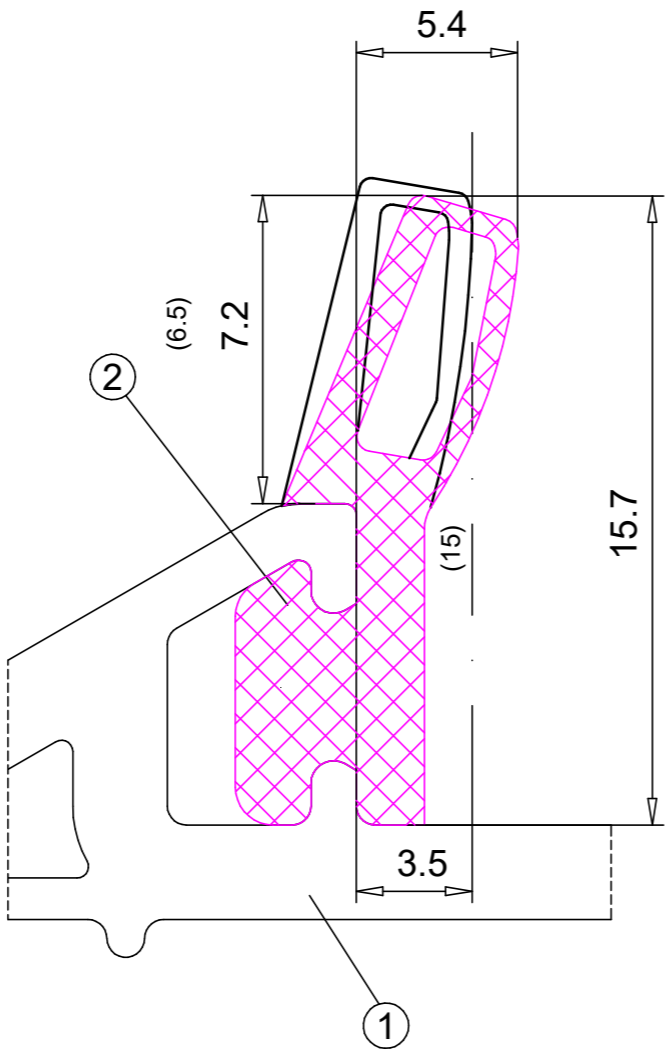
7

8


- Notes:
- 1. VEKA P/N 112.392 - factory extruded
 - 2. 3.5 mm after contact with sash

Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		

BILL OF MATERIALS		
Number	Name	Material
1	Floating (false) mullion	PVC
3	Gasket	EPDM



A
B
C
D
E
F

Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 5:1	Center seal for floating (false) mullion				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 10 of 12	

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Notes:

1. Veka P/N 112.393 - factory extruded
2. 3.5 mm after contact with glazing unit

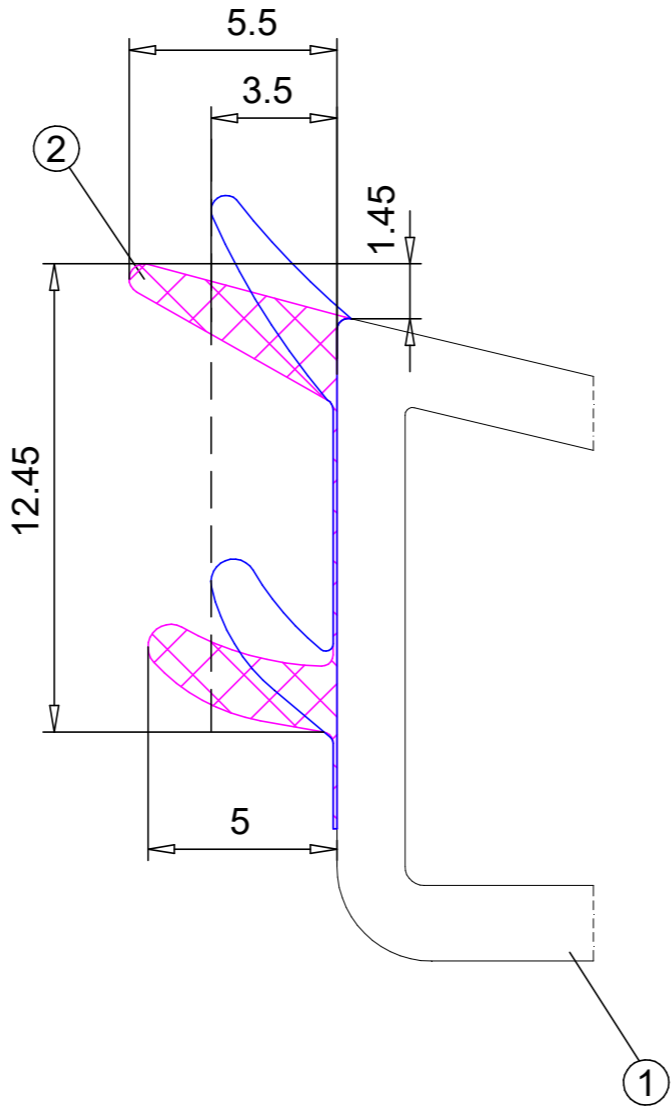
Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		


BILL OF MATERIALS

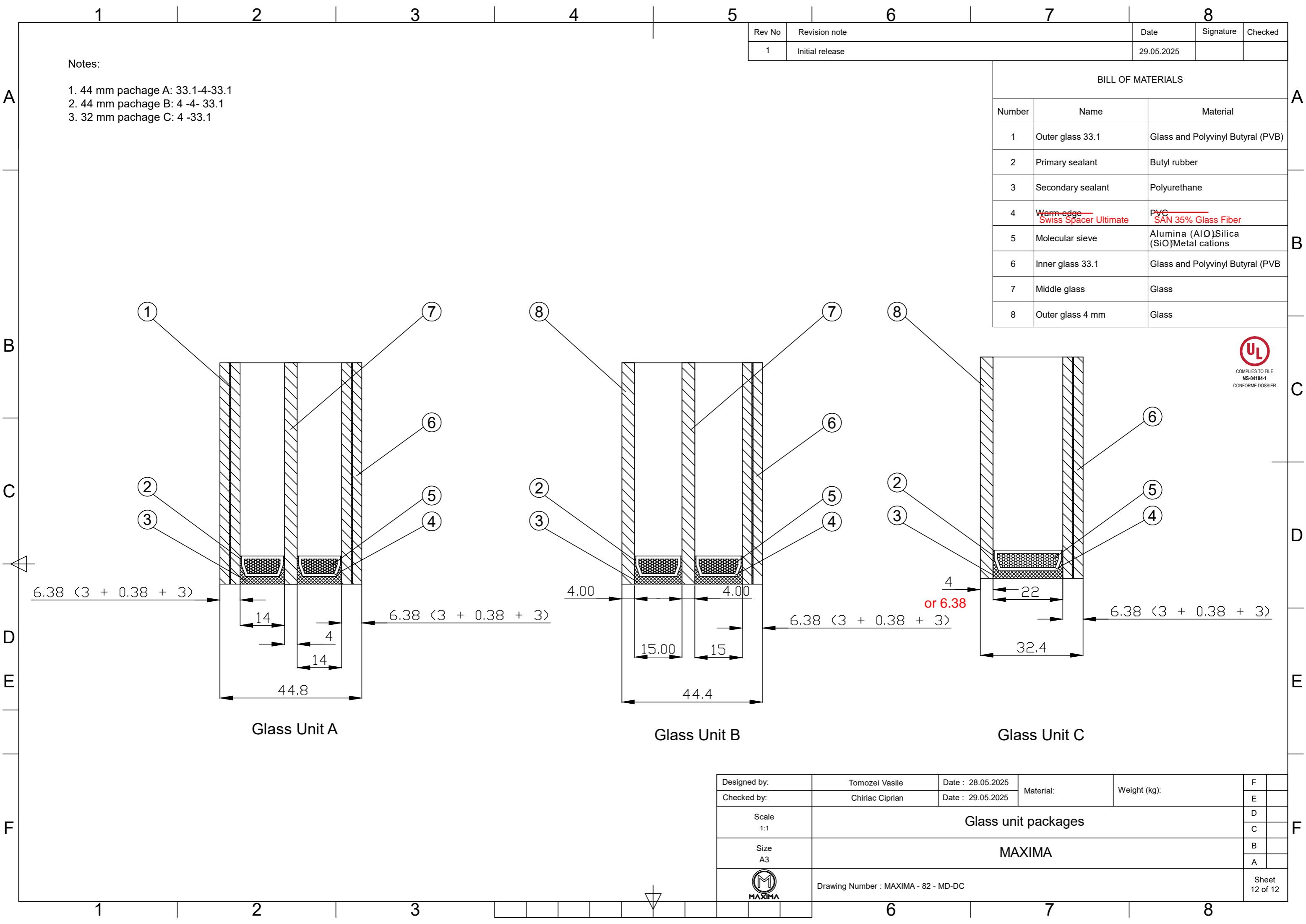
Number	Name	Material
1	Glazing bead	PVC
2	Gasket	EPDM



COMPLIES TO FILE
NS-04184-1
CONFORME DOSSIER



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 5:1	Glazing bead seal				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 11 of 12	




Notes:

- 1. 44 mm package A: 33.1-4-33.1
- 2. 44 mm package B: 4 -4- 33.1
- 3. 32 mm package C: 4 -33.1

Rev No	Revision note	Date	Signature	Checked
1	Initial release	29.05.2025		

BILL OF MATERIALS		
Number	Name	Material
1	Outer glass 33.1	Glass and Polyvinyl Butyral (PVB)
2	Primary sealant	Butyl rubber
3	Secondary sealant	Polyurethane
4	Warm edge Swiss Spacer Ultimate	PVC SAN 35% Glass Fiber
5	Molecular sieve	Alumina (AlO)Silica (SiO)Metal cations
6	Inner glass 33.1	Glass and Polyvinyl Butyral (PVB)
7	Middle glass	Glass
8	Outer glass 4 mm	Glass



Designed by:	Tomozei Vasile	Date : 28.05.2025	Material:	Weight (kg):	F	
Checked by:	Chiriac Ciprian	Date : 29.05.2025			E	
Scale 1:1	Glass unit packages				D	
					C	
Size A3	MAXIMA				B	
					A	
	Drawing Number : MAXIMA - 82 - MD-DC				Sheet 12 of 12	

Datasheet Swisspacer Ultimate

swisspacer | ultimate
SAINT-GOBAIN

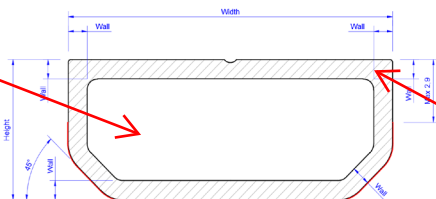


Dimensions and Tolerances

(Please ask your sales representative for available dimensions and colours)

SWS	6	7	8	9	10	11	12	1/2"	13	14	15	16	17	18	19	20	22	24	27	32	36
Height (mm) [+0.25/-0.05]	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Width (mm) [+0.25/-0.10]	5.5	6.5	7.65	8.50	9.65	10.65	11.65	12.85	12.65	13.65	14.65	15.65	16.65	17.65	18.30	19.65	21.65	23.65	26.65	31.65	35.65
Wall (mm) [+/-0.1]	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

DESICCANT -
MOLECULAR
SIEVE



SAN 35% GLASS
FIBER

Thermal Performance

2-Box Modelling (Measured according IFT Guideline WA 17/1)	Thermal conductivity according to WA17/1	Box Height
	0,14 W/mK	6,5 mm