

Henkel Technology-Centre

Test Report Lab-96U8GD-RLA

1. Customer

Fa. **FABRYKA FRONTÓW MEBLOWYCH WIECH**

2. Contact Person Henkel

Tomasz Stefanski
Technical Consulting
and Sales

Astrid Morgeneyer
Sales Support CEE

Jürgen Lotz
Manager
Technical Customer Service

3. Task to be performed

WSF Dorus

Test Date: 2013

Examiner: Lauter Rudolf

5. Test material

Type of adhesive <ul style="list-style-type: none">• FD 150LS Plus	Kind of adhesive <ul style="list-style-type: none">•
Carrier material <ul style="list-style-type: none">• MDF	
Substrate <ul style="list-style-type: none">• PVC , PET	Manufacturer <ul style="list-style-type: none">•
Manufactured in Henkel Technology Centre <ul style="list-style-type: none">• no	Original parts from customer <ul style="list-style-type: none">• yes

6. Test methods

- **DORUS[®]-method, heat resistance of 3D-parts** (DORUS[®]-test method 963)
- **FIRA-method, heat resistance of 3D-parts** (DORUS[®]-test method 959)
- **AMK-method, heat resistance of 3D-parts** (DORUS[®]-test method 961)
- **Long term stability** (DORUS[®]-test method)

7. DORUS[®] judging criteria (German school grading system)

1-2	Very high bond strength	(strong and complete tear form the carrier board, cohesion failure)
2	High bond strength	(complete tear form the carrier board, cohesion failure)
3	Satisfactory bond strength	(low tear from the carrier board, partial adhesion failure)
4	Low bond strength	(minimal tear from the carrier board, distinct adhesion failure)
5	Very low bond strength	(no tear from the carrier board, complete adhesion failure)

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8. Test results

Foil manufacturer:		Foil material:		Foil thickness:		
		FOLIA JEDNOBARWNA PCV		0,35 MM		
Adhesive:		Press system:	Edge temperature achieved:	Sample to be tested:		
FD 150LS Plus				Samples without inner radius		
Adhesion :		Immediately	After 7 days	Spraying:		
Edge			2-3			
Surface			100%			
Heat resistance						
Edges: 100°C			Inner radius: -----			
DORUS®-test method 963 Increasing heat resistance. Starting at 50°C/5°C per h until 100°C, afterwards 12 hrs at 100°C. Maximum foil shrinkage 0,3 mm						
DORUS®-test method 959: FIRA-method Increasing heat resistance. Each 3 days 40 °C / 50 °C / 60 °C / 65 °C / 70 °C. FIRA passed with maximum foil shrinkage 0,3 mm at 60°C						
DORUS®-test method 961: AMK-method Increasing heat resistance. 1 h at 50 °C / 1 h at 60 °C / 4 h at 75 °C. Maximum foil shrinkage 0,2mm at 75°C						
DORUS®-test method: Long term stability Conditions: 12 h 40 °C 40% air humidity / 12 h 40 °C 80% air humidity						
Keyword evaluation:						
FD 150 LS Plus + 7% R397 WSF Dorus Part 1-56						
Method						
DORUS®	Foil shrinking (mm)	FIRA	Foil shrinking (mm)	AMK	Foil shrinking (mm)	Long term Stability – 100 days Conditions: 12 h 40 °C 40% air humidity 12 h 40 °C 80% air humidity
		40 °C				
50 °C	0	50 °C		50 °C		
55 °C	0					
60 °C	0	60 °C		60 °C		
65 °C	0	65 °C				
70 °C	0,1	70 °C				
75 °C	0,1			75 °C (4 h)		
80 °C	0,1					
85 °C	0,2					
90 °C	0,2					
95 °C	0,3					
100 °C	0,3					
105°C	0,4					
105 °C (12 h)	3					
Remarks:						

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8. Test results

Foil manufacturer:		Foil material:		Foil thickness:		
		FOLIA JEDNOBARWNA PET		0,25 MM		
Adhesive:		Press system:	Edge temperature achieved:	Sample to be tested:		
FD 150LS Plus				Samples without inner radius		
Adhesion :		Immediately	After 7 days	Spraying:		
Edge			2			
Surface			100%			
Heat resistance						
Edges: 105°C			Inner radius: -----			
DORUS®-test method 963 Increasing heat resistance. Starting at 50°C/5°C per h until 100°C, afterwards 12 hrs at 100°C. Maximum foil shrinkage 0,3 mm						
DORUS®-test method 959: FIRA-method Increasing heat resistance. Each 3 days 40 °C / 50 °C / 60 °C / 65 °C / 70 °C. FIRA passed with maximum foil shrinkage 0,3 mm at 60°C						
DORUS®-test method 961: AMK-method Increasing heat resistance. 1 h at 50 °C / 1 h at 60 °C / 4 h at 75 °C. Maximum foil shrinkage 0,2mm at 75°C						
DORUS®-test method: Long term stability Conditions: 12 h 40 °C 40% air humidity / 12 h 40 °C 80% air humidity						
Keyword evaluation:						
FD 150 LS Plus + 7% R397 WSF Dorus Part 7-191						
Method						
DORUS®	Foil shrinking (mm)	FIRA	Foil shrinking (mm)	AMK	Foil shrinking (mm)	Long term Stability – 100 days Conditions: 12 h 40 °C 40% air humidity 12 h 40 °C 80% air humidity
		40 °C				
50 °C	0	50 °C		50 °C		
55 °C	0					
60 °C	0	60 °C		60 °C		
65 °C	0	65 °C				
70 °C	0	70 °C				
75 °C	0			75 °C (4 h)		
80 °C	0,1					
85 °C	0,2					
90 °C	0,2					
95 °C	0,2					
100 °C	0,3					
105°C	0,3					
110°C	0,5					
105 °C (12 h)	1					
Remarks:						

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8. Test results

Foil manufacturer:	Foil material:		Foil thickness:			
	FOLIA DREWNOPODOBNA PCV		0,4 MM			
Adhesive:	Press system:	Edge temperature achieved:	Sample to be tested:			
FD 150LS Plus			Samples without inner radius			
Adhesion :	Immediately	After 7 days	Spraying:			
Edge		2-3				
Surface		100%				
Heat resistance						
Edges:	105°C		Inner radius:	-----		
DORUS®-test method 963 Increasing heat resistance. Starting at 50°C/5°C per h until 100°C, afterwards 12 hrs at 100°C. Maximum foil shrinkage 0,3 mm						
DORUS®-test method 959: FIRA-method Increasing heat resistance. Each 3 days 40 °C / 50 °C / 60 °C / 65 °C / 70 °C. FIRA passed with maximum foil shrinkage 0,3 mm at 60°C						
DORUS®-test method 961: AMK-method Increasing heat resistance. 1 h at 50 °C / 1 h at 60 °C / 4 h at 75 °C. Maximum foil shrinkage 0,2mm at 75°C						
DORUS®-test method: Long term stability Conditions: 12 h 40 °C 40% air humidity / 12 h 40 °C 80% air humidity						
Keyword evaluation:						
FD 150 LS Plus + 7% R397 WSF Dorus Part 4-47						
Method						
DORUS®	Foil shrinking (mm)	FIRA	Foil shrinking (mm)	AMK	Foil shrinking (mm)	Long term Stability – 100 days Conditions: 12 h 40 °C 40% air humidity 12 h 40 °C 80% air humidity
		40 °C				
50 °C	0	50 °C		50 °C		
55 °C	0					
60 °C	0	60 °C		60 °C		
65 °C	0,1	65 °C				
70 °C	0,1	70 °C				
75 °C	0,1			75 °C (4 h)		
80 °C	0,2					
85 °C	0,2					
90 °C	0,3					
95 °C	0,3					
100 °C	0,3					
105°C	0,3					
110°C	0,5					
105 °C (12 h)	3					
Remarks:						

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8. Test results

Foil manufacturer:		Foil material:		Foil thickness:		
		FOLIA POLYSK PCV		0,5 MM		
Adhesive:		Press system:	Edge temperature achieved:	Sample to be tested:		
FD 150LS Plus				Samples without inner radius		
Adhesion :		Immediately	After 7 days	Spraying:		
Edge			2-3			
Surface			100%			
Heat resistance						
Edges: 100°C			Inner radius: -----			
DORUS®-test method 963 Increasing heat resistance. Starting at 50°C/5°C per h until 100°C, afterwards 12 hrs at 100°C. Maximum foil shrinkage 0,3 mm						
DORUS®-test method 959: FIRA-method Increasing heat resistance. Each 3 days 40 °C / 50 °C / 60 °C / 65 °C / 70 °C. FIRA passed with maximum foil shrinkage 0,3 mm at 60°C						
DORUS®-test method 961: AMK-method Increasing heat resistance. 1 h at 50 °C / 1 h at 60 °C / 4 h at 75 °C. Maximum foil shrinkage 0,2mm at 75°C						
DORUS®-test method: Long term stability Conditions: 12 h 40 °C 40% air humidity / 12 h 40 °C 80% air humidity						
Keyword evaluation:						
FD 150 LS Plus + 7% R397 WSF Dorus Part 11-161						
Method						
DORUS®	Foil shrinking (mm)	FIRA	Foil shrinking (mm)	AMK	Foil shrinking (mm)	Long term Stability – 100 days Conditions: 12 h 40 °C 40% air humidity 12 h 40 °C 80% air humidity
		40 °C				
50 °C	0	50 °C		50 °C		
55 °C	0					
60 °C	0	60 °C		60 °C		
65 °C	0	65 °C				
70 °C	0	70 °C				
75 °C	0,1			75 °C (4 h)		
80 °C	0,2					
85 °C	0,2					
90 °C	0,2					
95 °C	0,3					
100 °C	0,3					
105°C	0,4					
105 °C (12 h)	4					
Remarks:						

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8. Test results

Foil manufacturer:		Foil material:		Foil thickness:		
		FOLIA POLYSK PET		0,5 MM		
Adhesive:		Press system:	Edge temperature achieved:	Sample to be tested:		
FD 150LS Plus				Samples without inner radius		
Adhesion :		Immediately	After 7 days	Spraying:		
Edge			2			
Surface			100%			
Heat resistance						
Edges: 105°C			Inner radius: -----			
DORUS®-test method 963 Increasing heat resistance. Starting at 50°C/5°C per h until 100°C, afterwards 12 hrs at 100°C. Maximum foil shrinkage 0,3 mm						
DORUS®-test method 959: FIRA-method Increasing heat resistance. Each 3 days 40 °C / 50 °C / 60 °C / 65 °C / 70 °C. FIRA passed with maximum foil shrinkage 0,3 mm at 60°C						
DORUS®-test method 961: AMK-method Increasing heat resistance. 1 h at 50 °C / 1 h at 60 °C / 4 h at 75 °C. Maximum foil shrinkage 0,2mm at 75°C						
DORUS®-test method: Long term stability Conditions: 12 h 40 °C 40% air humidity / 12 h 40 °C 80% air humidity						
Keyword evaluation:						
FD 150 LS Plus + 7% R397 WSF Dorus Part 12-180						
Method						
DORUS®	Foil shrinking (mm)	FIRA	Foil shrinking (mm)	AMK	Foil shrinking (mm)	Long term Stability – 100 days Conditions: 12 h 40 °C 40% air humidity 12 h 40 °C 80% air humidity
		40 °C				
50 °C	0	50 °C		50 °C		
55 °C	0					
60 °C	0	60 °C		60 °C		
65 °C	0	65 °C				
70 °C	0	70 °C				
75 °C	0,1			75 °C (4 h)		
80 °C	0,1					
85 °C	0,1					
90 °C	0,2					
95 °C	0,3					
100 °C	0,3					
105°C	0,3					
110°C	0,6					
105 °C (12 h)	1,5					
Remarks:						

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9. Evaluation

Excellent heat resistance between 100 °C and 105°C . Means a proper glue amount on the edges and activation temperature achieved. Excellent bonding.