Raw Material Change Notice for AMR Sensor Embossed Carrier Tape

Murata Manufacturing Co., Ltd.

Product Engineering Department

Functional Devices Division

Doc No. DM-A26-068

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Background and Overview of the Change

■ Background

Due to worsening conditions in the Middle East, the raw material manufacturer has informed us that production of the current material will be discontinued. To ensure the continued **stable supply of AMR sensors**, the raw material used for the embossed carrier tape will be changed to an alternative material.

Embossed Carrier Tape



■ Change Overview

Change Scope	Raw material of the embossed carrier tape
Change Details	Changes to the raw material grade and the composition of the intermediate layer
Planned Changeover	Sequential changeover from around July 2027

■ Impact on the AMR sensor

✓ **There will be no changes to the design, structure, or electrical characteristics of the AMR sensor.**

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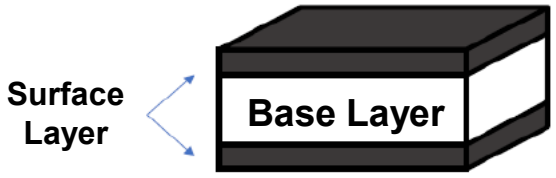
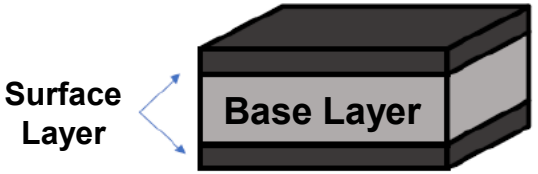
Change Details and Scope of Impact

Change Details

Current



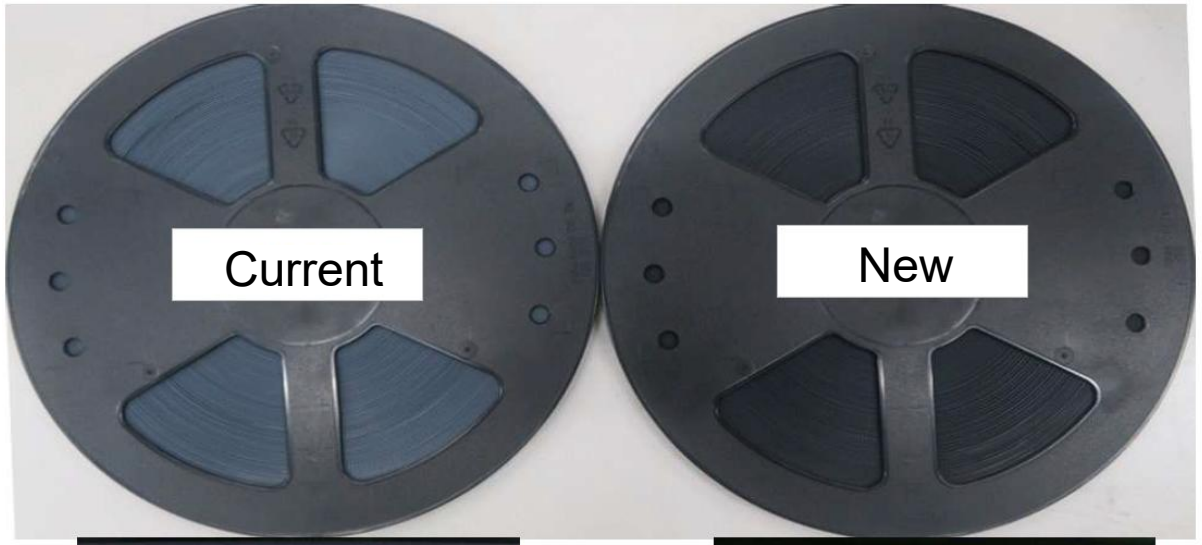
New



	Current	New
Surface Layer	PS+CB	PS+CB
Base Layer	ABS (White)	ABS (Gray)

* The raw material grade and the material composition of the intermediate layer will change, while the basic structure of the carrier tape will remain unchanged.

Appearance Comparison





Current cross-section (enlarged)



New cross-section (enlarged)

✓ **Although the material composition and color tone will change, no significant differences have been observed in the key quality and functional characteristics.**

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Comparison Results for Quality and Functional Characteristics

The following characteristics were evaluated to compare the current and new materials.

Evaluation Item	Comparison Result
Surface Resistance	Comparable
Material Thickness	Comparable
Dimensions	Comparable
Pocket Shape and Appearance	Comparable except for color tone
Bending Strength	Comparable
Seal Performance	Comparable

✓ **Although the color tone of the intermediate layer changes, no significant differences were observed in the key quality and performance characteristics.**

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Surface Resistance and Material Thickness Comparison

■ Surface Resistance

Five random points were measured on both the front and back sides of the material sheet.

Unit: Ω

	Front	Back
Current	1×10^5.0	1×10^5.1
	1×10^5.1	1×10^5.1
	1×10^5.0	1×10^5.1
	1×10^5.0	1×10^5.1
	1×10^5.0	1×10^5.2
Manufacturer Spec.	≤1×10 ^ 7	

	Front	Back
New	1×10^4.9	1×10^5.1
	1×10^4.9	1×10^5.1
	1×10^4.9	1×10^5.1
	1×10^4.9	1×10^5.1
	1×10^4.9	1×10^5.1
Manufacturer Spec.	≤1×10 ^ 7	

■ Material Thickness

Measured at five random locations on the material sheet before forming.

Unit: mm

Spec	0.20
+	0.02
-	0.02

n=5	Current	New
1	0.200	0.205
2	0.203	0.200
3	0.208	0.205
4	0.207	0.203
5	0.200	0.202

No significant difference was observed between the two materials.

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Dimensional Comparison

■ Dimensional Measurements

Measuring instrument: Mitutoyo Tool Microscope

Unit: mm

Current	A	A0	B	B0	k0	Cumulative
Spec	1.06	1.00	1.66	1.60	0.56	40.00
+	0.1	0.05	0.1	0.05	0.05	0.2
-	0.1	0.05	0.1	0.05	0.05	0.2
1	1.060	1.012	1.665	1.603	0.553	40.016
2	1.071	1.012	1.673	1.604	0.555	40.028
3	1.063	1.012	1.654	1.609	0.549	40.029
4	1.073	1.003	1.669	1.609	0.562	40.025
5	1.066	1.015	1.663	1.606	0.561	40.021
6	1.066	1.014	1.663	1.607	0.555	40.030
7	1.065	1.007	1.660	1.600	0.558	40.029
8	1.078	1.015	1.667	1.605	0.542	40.020
9	1.064	1.012	1.660	1.610	0.561	40.018
10	1.060	1.012	1.659	1.602	0.565	40.013
AVG	1.067	1.011	1.663	1.606	0.556	40.023
MAX	1.078	1.015	1.673	1.610	0.565	40.030
MIN	1.060	1.003	1.654	1.600	0.542	40.013
R	0.018	0.012	0.019	0.010	0.023	0.017

New	A	A0	B	B0	k0	Cumulative
Spec.	1.06	1.00	1.66	1.60	0.56	40.00
+	0.1	0.05	0.1	0.05	0.05	0.2
-	0.1	0.05	0.1	0.05	0.05	0.2
1	1.062	1.007	1.661	1.602	0.554	40.024
2	1.066	1.009	1.658	1.606	0.554	40.033
3	1.066	1.006	1.659	1.608	0.553	40.042
4	1.066	1.005	1.658	1.602	0.548	40.027
5	1.066	1.010	1.659	1.607	0.561	40.027
6	1.068	1.011	1.656	1.604	0.546	40.025
7	1.059	1.004	1.658	1.601	0.550	40.038
8	1.063	1.008	1.657	1.607	0.546	40.024
9	1.072	1.017	1.661	1.605	0.556	40.022
10	1.070	1.012	1.657	1.606	0.546	40.027
AVG	1.066	1.009	1.658	1.605	0.551	40.029
MAX	1.072	1.017	1.661	1.608	0.561	40.042
MIN	1.059	1.004	1.656	1.601	0.546	40.022
R	0.013	0.013	0.005	0.007	0.015	0.020

No significant difference was observed between the two materials.

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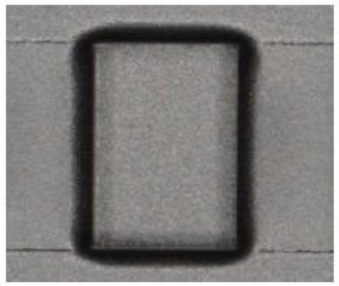
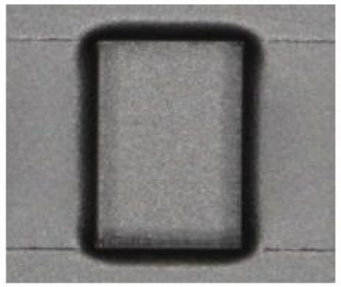
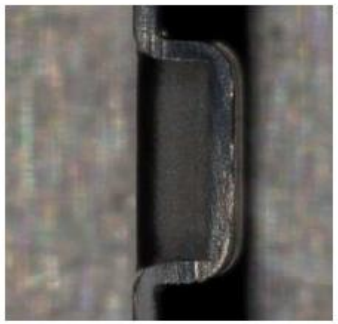
Cross-Sectional Shape Comparison

	Current	New
Opening		
Bottom		
Section A		
Section B		

No significant differences in shape were observed.

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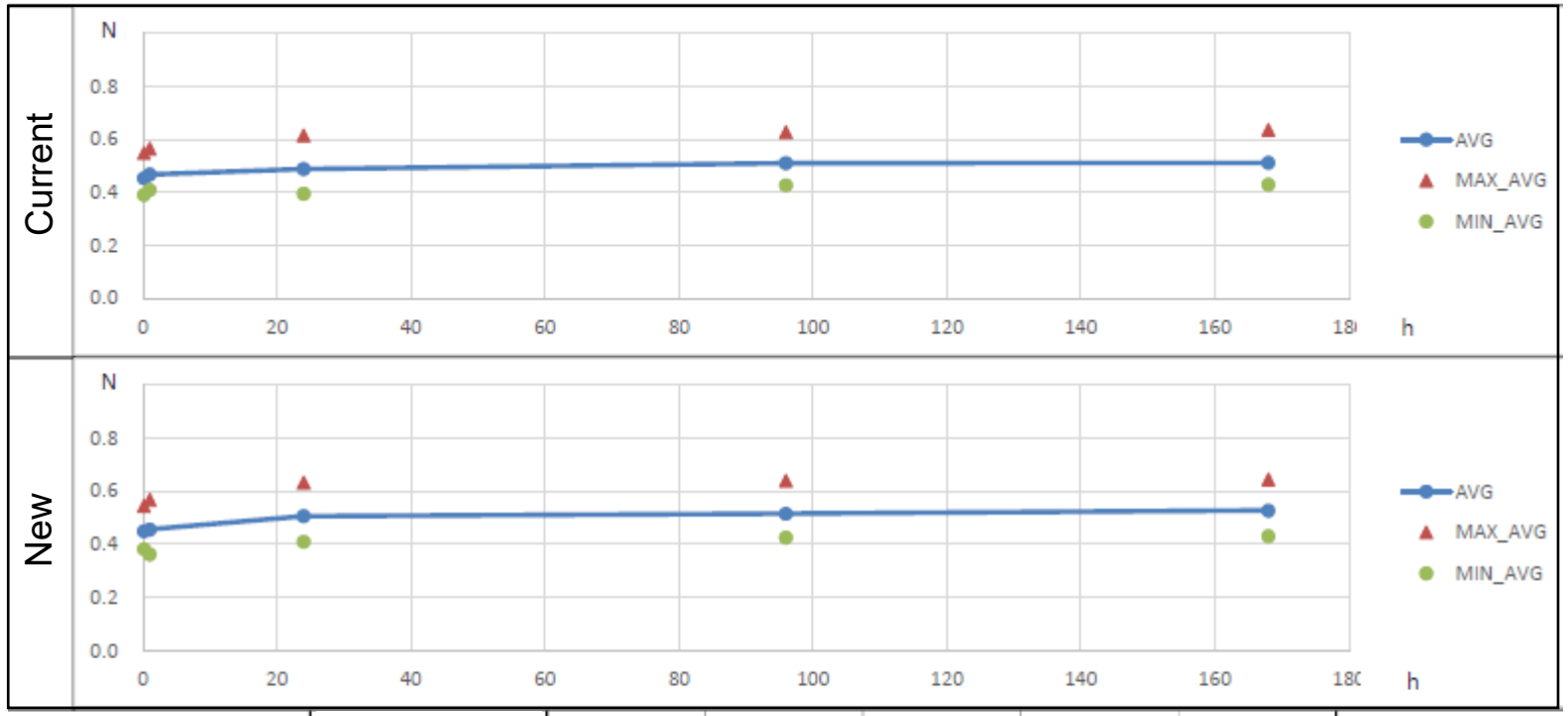
Cover Tape Peel Force Comparison



	Elapsed Time (h)	10(min)	1	24	96	168
Current	MAX_AVG	0.549	0.565	0.615	0.627	0.636
	MIN_AVG	0.391	0.410	0.395	0.427	0.429
	AVG	0.453	0.468	0.488	0.511	0.512
New	MAX_AVG	0.545	0.569	0.633	0.640	0.645
	MIN_AVG	0.383	0.363	0.410	0.425	0.431
	AVG	0.449	0.456	0.506	0.516	0.528

Unit: N

No significant difference was observed between the two materials.

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Composition / Information on Ingredients

Single Substance or Mixture: Mixture

Ingredient and Concentration or Concentration Range		Reference No. in Gazetted List in Japan	CAS No.
Butadien-Acrylonitril-Stylene Copolymer	70~90wt%	(6)-176	9003-56-9
Polystyrene	10wt% or less	(6)-120 (6)-134	9003 55 8 and 9003 53 6
Carbon Black	10wt% or less	N/A (Element)	1333-86-4

The major components and concentration ranges listed in the SDSs are consistent between the current and new materials.

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