

# TAKEMOTO

## Anti-Fog Technology (Masterbatch & Coating)

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2025.07 GSI-GHN

TAKEMOTO OIL & FAT CO., LTD.

# Our Target Market by our Unique Anti-Fog Technology

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## 1) Anti-Fog masterbatch for Easy-Peel Lidding

Target: multi-layer blown PE / castPP(CPP) film producers.

(→ Convertor(=Lamination, Printing)→Super-Market)

## 2) Anti-Fog Coating for Rigid Food Tray (Sushi-Box)

Target customer: A-PET, PP, PLA sheet extruders.

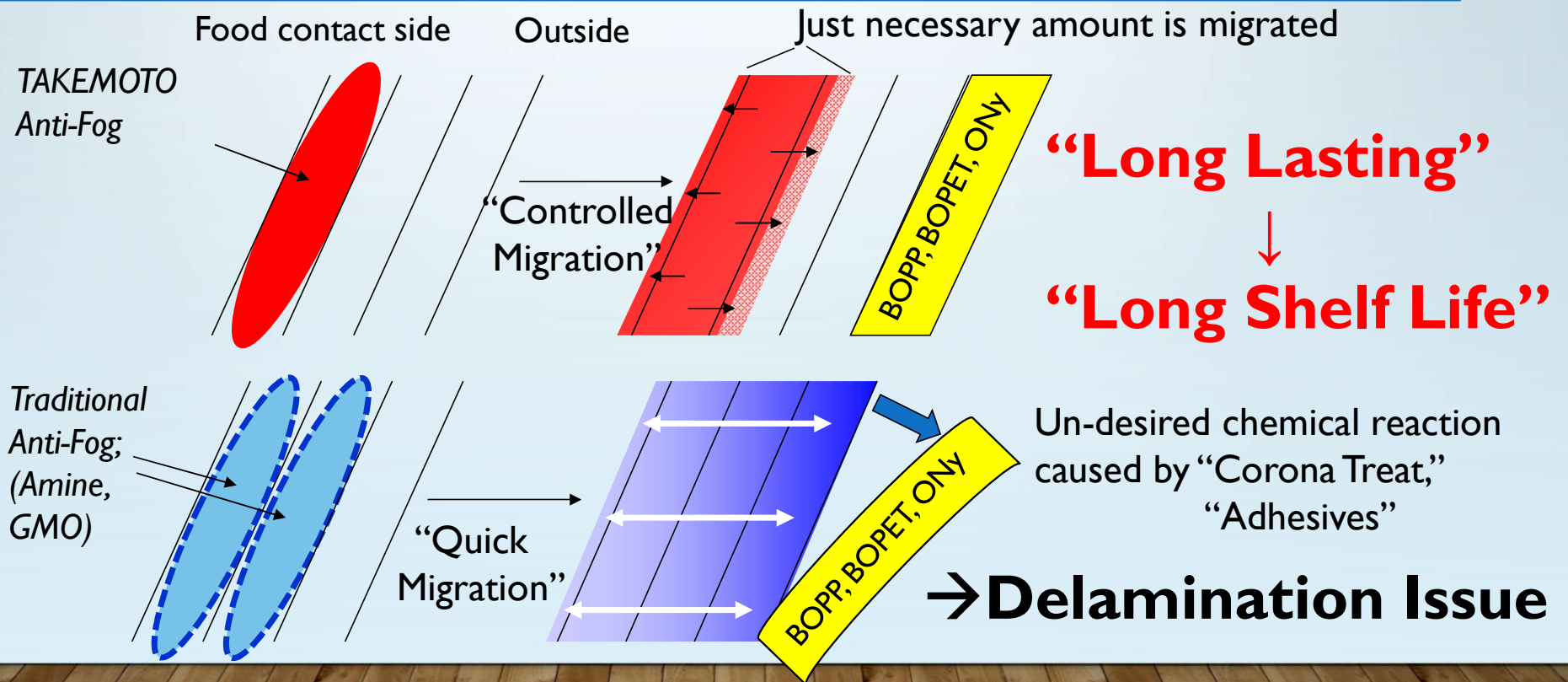
(→ Thermo-forming convertor → Super-Market)



# Our Product Line-Ups:

Product Name/End Use (MB: Masterbatch, CO: Coating)	Anti-Fog (Long Lasting)	PFAS Free PPA (Non-PFAS)	Anti-Static (Long Lasting)
ELECUT M-1302 (MB)	○PE	-	○PE
ELECUT M-2302 (MB)	○CPP, BOPP	-	○CPP
ELECUT CL-502 (MB)	-	○PE(high temp.)	-
ELECUT CL-503 (MB)	-	○PE(standard)	-
ELECUT CL-301 (MB)	-	○CPP, BOPP	-
ELECUT C-3304 (CO)	○A-PET	-	-
ELECUT C-3306 (CO)	○BOPET	-	-

# TAKEMOTO Strong Point “Controlled Migration Technology”



# “Controlled Migration Technology”

**Corona side:**  
**Anti-fog: none**  
**AF Rank: 1**

**Seal Layer:**  
**Anti-fog: 20wt%**  
**AF Rank: 5**



Corona Treatment side

Food Contact side  
ELECUT M-1302 20%

## Test Method:

- 60ml of 20°C Water
- Put into 200ml beaker
- Place film over beaker
- In 5°C refrigerator
- One hour later, you can evaluate.

Anti-fog into only skin-layer of 3-layers co-ex. film (After 18 months from extruded.)



# (PFAS-Free-PPA) Polymer Process Aid, Non-PFAS

- ELECUT™ CL-500 series are for PFAS-free PPAs(Polymer Process Aids) masterbatch
- ELECUT™ CL-500 series don't include Siloxane(=Silicon Polymer), TNPP, PEG nor Animal base material.
- Good Melt Fracture Elimination, Reduction of Die Lip Build-Up and Thermal Stability.

Product Name	Recommended Loading	Animal-Derived Material (ADM)	Melt Fracture Elimination (Down time)	Die Lip Build-Up Reduction	Thermal Stability	Food Contact Compliance
ELECUT CL-503 (PE)	1.0%	ADM free	Good	Very Good	Good	FDA, EU, Japan, China, Mercosur
ELECUT CL-502 (PE)	1.0%	ADM free	Very Good	Good	Very Good	
ELECUT CL-301 (PP)	1.0%	ADM free	Good	Very Good	Good	

Thermal Stability	Standard (230°C, under N <sub>2</sub> )			High Temp. (300°C, under Air)		
	0min.	10min.	30min.	0min.	10min.	30min.
mLLDPE	0.2	0.2	0.3	2.4	7.4	13.3
ELECUT CL-503	0.4	0.8	1.7	4.2	8.5	11.5
ELECUT CL-502	0.2	0.2	0.2	1.7	4.4	6.6

TGA Condition:  
 Standard Temp. Condition  
 30°C→(40°C/min.)→  
 230°C (30min. Hold), N<sub>2</sub>  
 High Temp. Condition  
 30°C→(40°C/min.)→  
 300°C (30min. Hold), Air

# PFAS-Free-PPAs(=Non-PFAS): Reduction of Melt Fracture & Die Build-Up(DBU)

mLLDPE blank








mLLDPE + CL-502 (0.5%)



30min.

Grade	Heat Stability	COF
ELECUT CL-502	Up to 300°C (572°F)	Good (Same as base film)
ELECUT CL-503	Up to 240°C (464°F)	Good (Same as base film)

Die-Build-Up (DBU) Test	0min	15min	30min
CaCO <sub>3</sub> 20% + mLLDPE			
CaCO <sub>3</sub> 20% + mLLDPE + CL-503 1.0%			

Die Lip Build-Up Test:  
Cylinder temp. 180°C,  
Die Temperature 170°C