



WATER-BASED DISPERSIONS

PRIMACOR™ & LOTADER® MAH

OCTOBER 2024

PRIMACOR™ EAA grades for water-based dispersions

PRIMACOR™ 4810- MI 55 g/10min, AA 14.5%

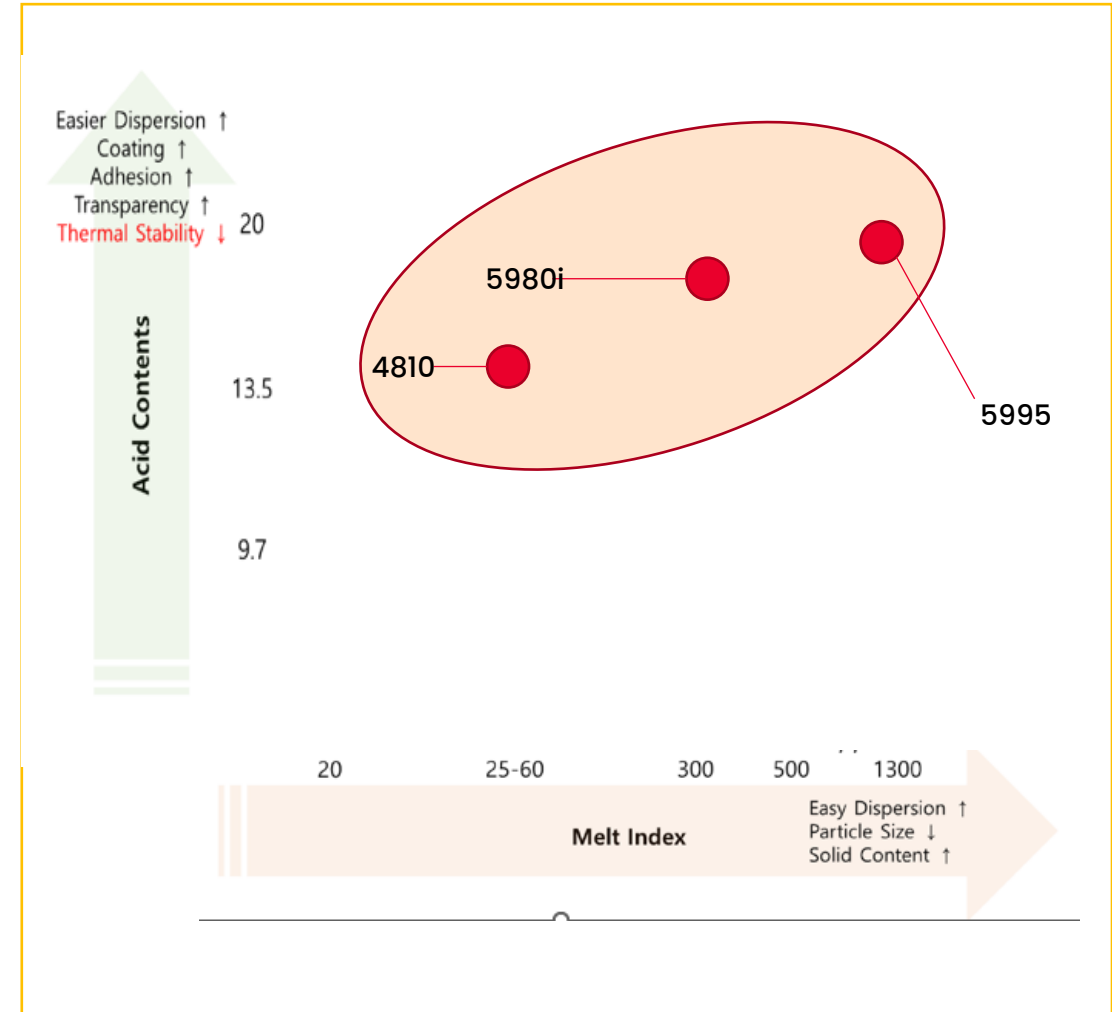
- Lower solids + larger average particle size due to lower acid content
 - Good optical property, though not as good as for higher acid content
- ⇒ Binder for nonwoven fibers, paper coatings

PRIMACOR™ 5980i – MI 300 g/10min, AA 20.5%

- High gloss, excellent clarity
 - Dispersions use existing waterborne application equipment
 - Low odor
- ⇒ Metal/paper coating, heat seal coatings

PRIMACOR™ 5995- MI 1460 g/10min, AA 20.7%

- Low Odor
 - Good optical qualities
 - Low heat seal temperature, high hot tack
- ⇒ Binder for nonwoven fibers, metal/paper coating, heat sealing, foil priming



PRIMACOR EAA 5980I FOR RECYCLABLE PAPER COATING

- ✓ Primacor 5980i designed for good dispersability in water

- ✓ EAA copolymer

- ✓ Acid content (w%): 20.5

- ✓ Melt index: 300

- ✓ Melting point : 77°C

- ✓ Primacor 5980i Coating :

- ✓ Easy to disperse in aqueous alkali or amine solutions

- ✓ 15 to 20°C above melting temperature

- ✓ Clean dispersion

- ✓ Do not require salts, surfactants or solvents

- ✓ Use existing waterborne dispersion equipment

- ✓ Good dispersion stability

- ✓ Good wetting and adhesion to fibers

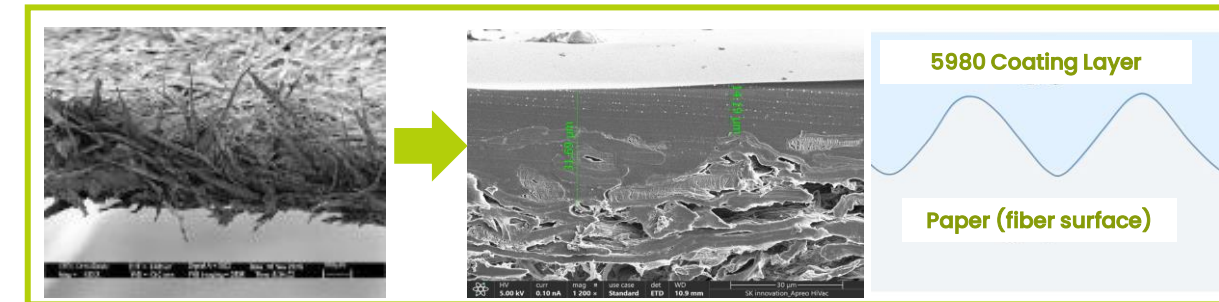
- ✓ due to solution coating and hydrogen bonding

- ✓ Applicable to any kind of paper surface roughness

- ✓ Excellent paper coating quality, thickness <5 microns

- ✓ Water barrier properties similar to LDPE

- ✓ Good recyclability



PRIMACOR EAA 5980I: WATER BARRIER PROPERTIES

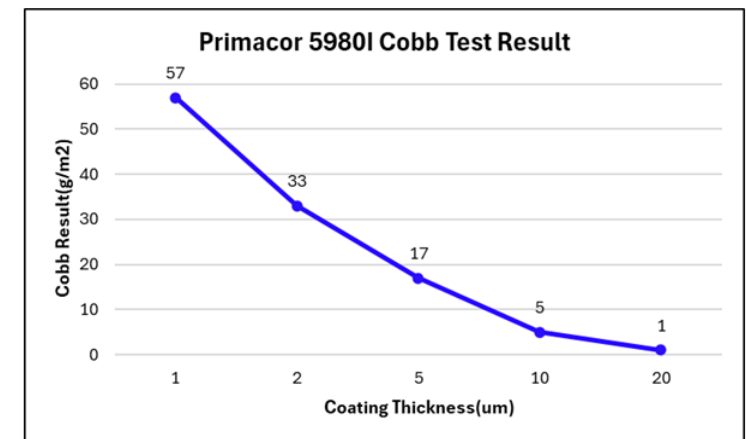
Water barrier measured through Cobb test

- Amount of boiling water absorbed in 10 min into the paper within a certain time period (in gsm: gram per square meter)
- Generally, Cobb value <10 recognized as having good water barrier property

Primacor coated paper -> good water barrier properties close to those of traditional LDPE extrusion coating

	Coating thickness (μm)	Cobb Value (g/m^2)
Raw Paper for Cup (with fiber sizing but no coating)	0	77
Commercial LDPE-coated paper Cup	25	2
PRIMACOR 5980I Coating	20	1
	10	4-5

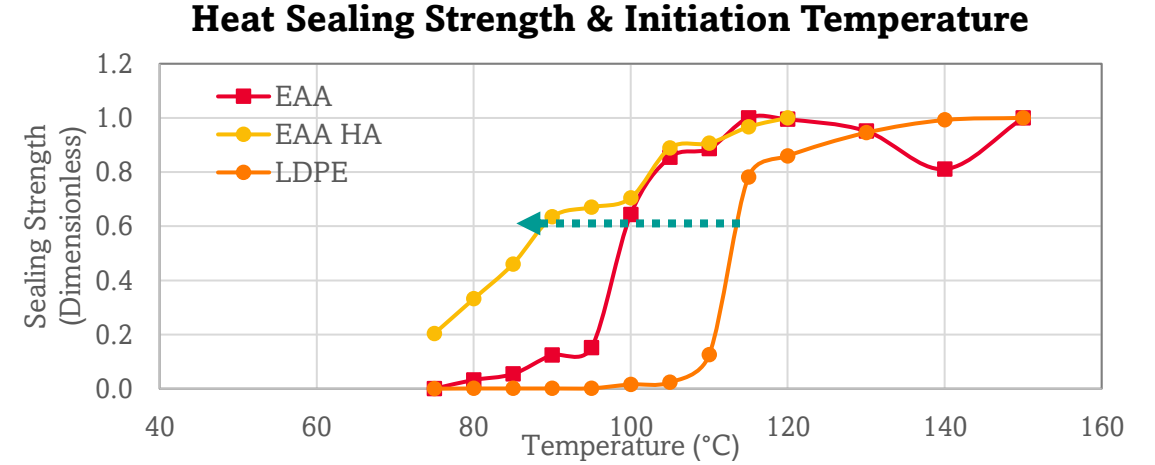
	PRIMACOR 5980i	PRIMACOR 4810	LOTADER 8200*
Cobb test ($10\mu\text{m}$)	5	<10	<5



PRIMACOR 5980i FOR PAPER COATING: RESULTS

✓ Sealing properties

- ✓ Lower initiation temperature versus LDPE for heat sealing
- ✓ Strong heat sealing strength, similar to LDPE.



✓ Recycling :

- ✓ Outstanding repulping ratio – reducing rejects during repulping
- ✓ **Fibers recovery up to >95%**



	LDPE Coated Sheet	EAA Dispersion Coated Sheet (Primacor 5980i)			
Film Thickness (micron)	25	30	20	10	5
Fiber Recovery (%)	80-85%*	88	92	94	96

LOTADER 8200 AQUEOUS DISPERSIONS PREPARATION

• Lotader 8200 properties :

- ✓ Due to its maleic anhydride (MAH) functionality -> Lotader can be dispersed in aqueous solution
- ✓ High chemical stability
- ✓ Melting point 100° C for good T resistance
- ✓ Both MAH and acrylate create adhesion to metallic and some plastic substrates (PP, PET, PS).

	Lotader® 8200
Melt index (190°C, 2.16kg)	200
MAH (w%) (mol%)	2.8 To be calculated
Acrylate (w%) (mol%)	6.5 To be calculated
Acrylate nature	Ethyl acrylate
Melting temperature	100°C

• Lotader dispersion preparation :

✓ **Equipment:** autoclave reactor + agitator + T control (oil circulation or electrical heating)

- ✓ Reactor T: 20° C above melting T (for Lotader® 8200, $T_{\text{reactor}} > 120^{\circ} \text{C}$)
- ✓ Agitation speed: 200 to 300 rpm
- ✓ Heating duration: >1hr
- ✓ P in autoclave: < 2 atm. (typical)

✓ **Recipe:**

- ✓ Recipe details only shared under NDA

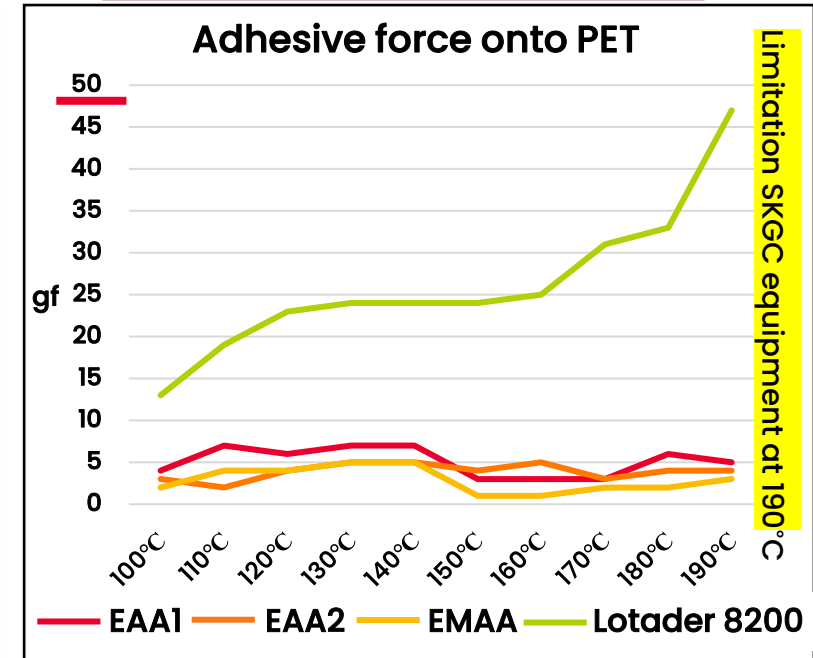
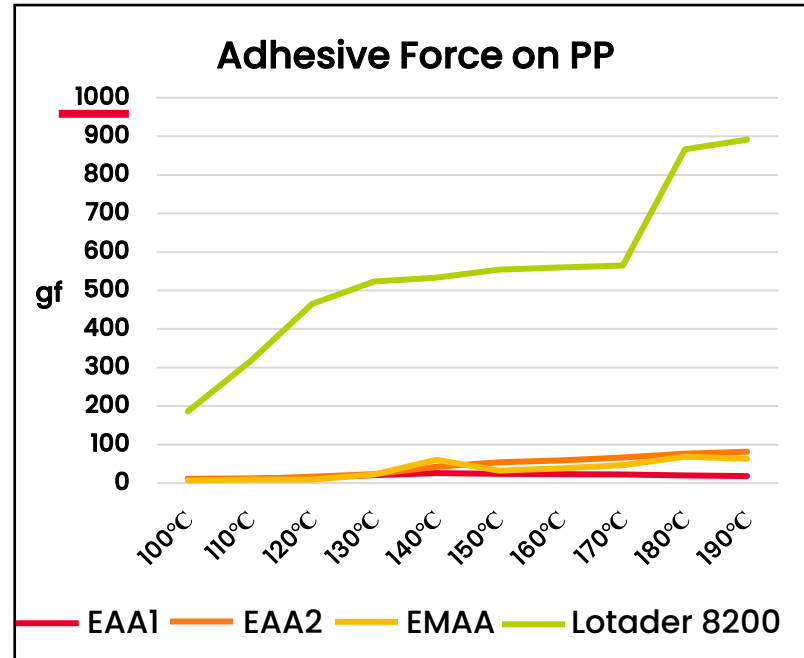
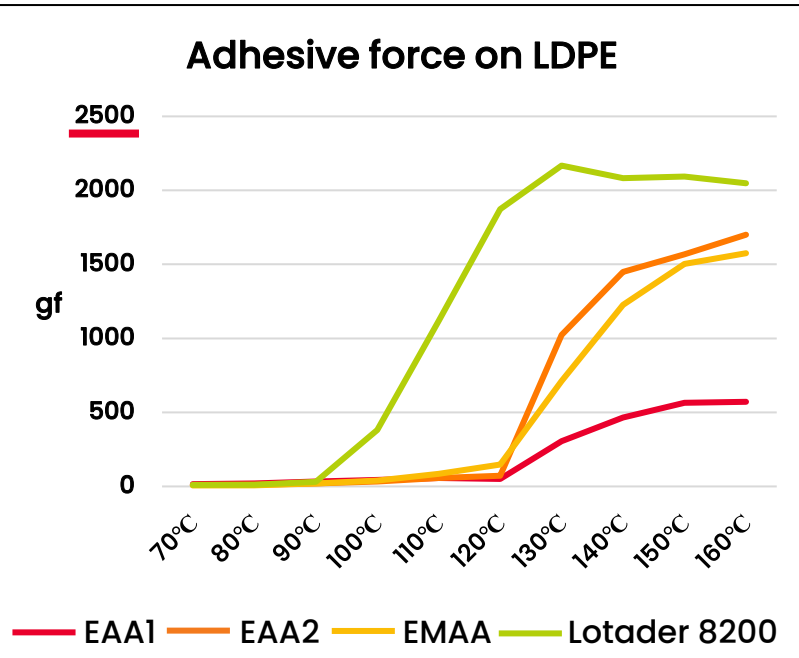
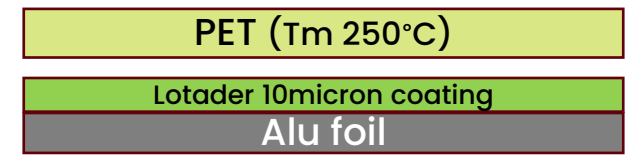
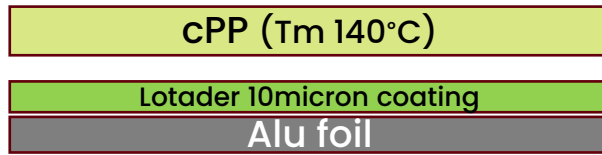
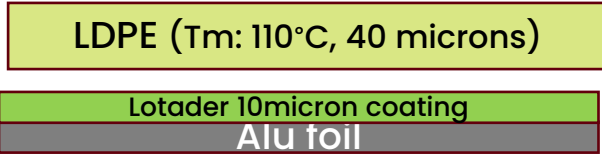


LOTADER 8200 BONDING RESULTS

- Lotader 8200 coated on to Alu foil then sealed onto PET/PP/PE films at various temperatures

Testing conditions

- Lotader dispersion coated & dried on Alu foil (drying in oven at 150°C for 5min). Coating thickness: 10microns
- Heat sealing to the substrate with heat sealing machine. Sealing pressure: 0.2MPa, dwell time: 2s. Sealing performed at T 70°C to 190°C. Sealing area width: 2.5cm
- Adhesion force measured using UTM at 200mm/min



- Excellent adhesion to LDPE, PP – Good onto PET (required additional testings)
 - Lotader > EMAA (MAA: methacrylic acid)
 - Lotader > EAA containing 15 to 20% of acrylic acid (AA)

PRIMACOR™ & LOTADER® DISPERSIONS: CONCLUSIONS

- SKGC is a supplier of Advanced Polyolefins for dispersions applications
 - Primacor 5980i and Lotader 8200 can be dispersed using recipes developed by SKGC
 - Complementary adhesion to various substrates
- PRIMACOR EAA dispersions for recyclable paper coating
 - Easy to disperse
 - Excellent water protection for recyclable coated paper & paperboard
 - Good bonding to PE
- LOTADER® MAH for adhesion onto PP and PET substrates
 - Dispersion conditions developed by SKGC, shared under NDA
 - Good adhesion onto difficult substrates such as PP and PET



Thank you

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