KURARITY™ sustainable formulations

KURARITY business promotion dept.
Elastomer Division

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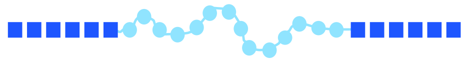
Sustainable solutions using KURARITY™

<Base Polymer>

KURARITY™

PMMA-*b*-PnBA-*b*-PMMA



KURARITY™ as “MAM” structure
-> Made by controlled living anionic polymerization

<Features>

High polarity
High flow-ability
Overmolding to polar resins

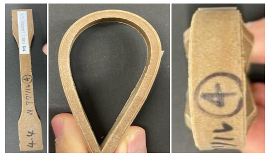
<What is the value added ?>

Promote effective use of thinned wood,
Reduce CO_2 emission

Reduce CO_2 emission by using polymer made from bio resources

<Solutions / values>

KURARITY™ / wood powder formulations



- Good dispersion and flexibility

KURARITY™ / PLA formulations

- High transparency
- Low stickiness

SEPTON™ BIO-series / KURARITY™ formulations

- Good haptics (rubber like)
- Overmolding to polar resins

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KURARITY™ / Wood Powder (WP) formulations

Fig. Injection molding sample (LA2250 / WP = 50 / 50)

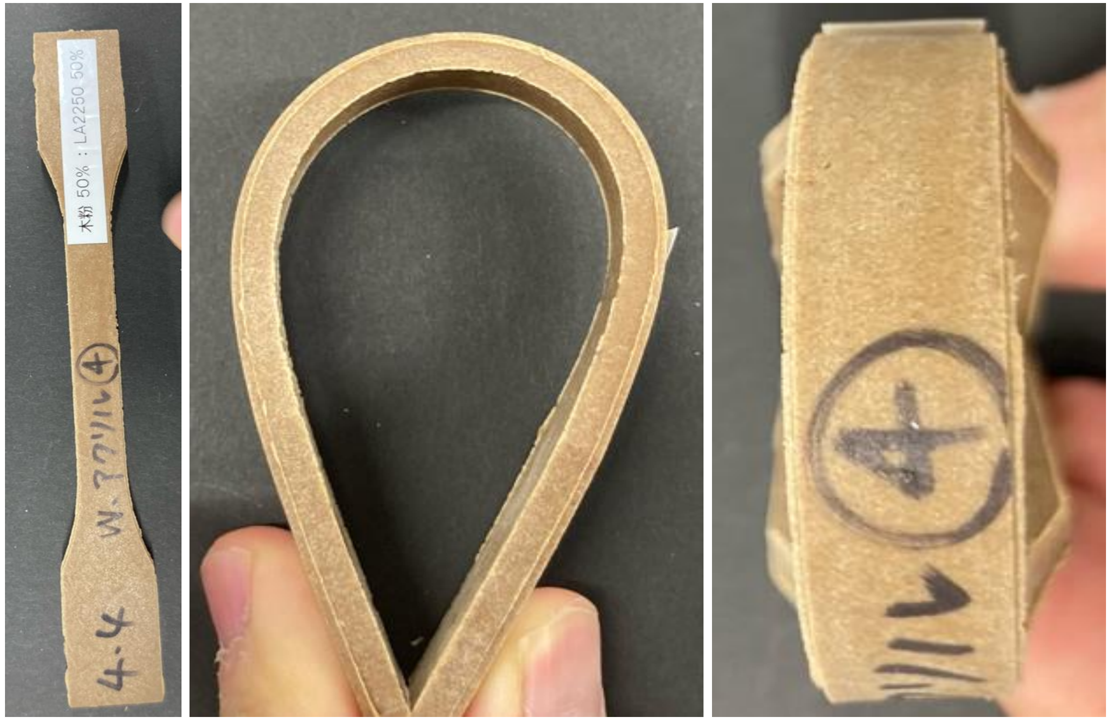
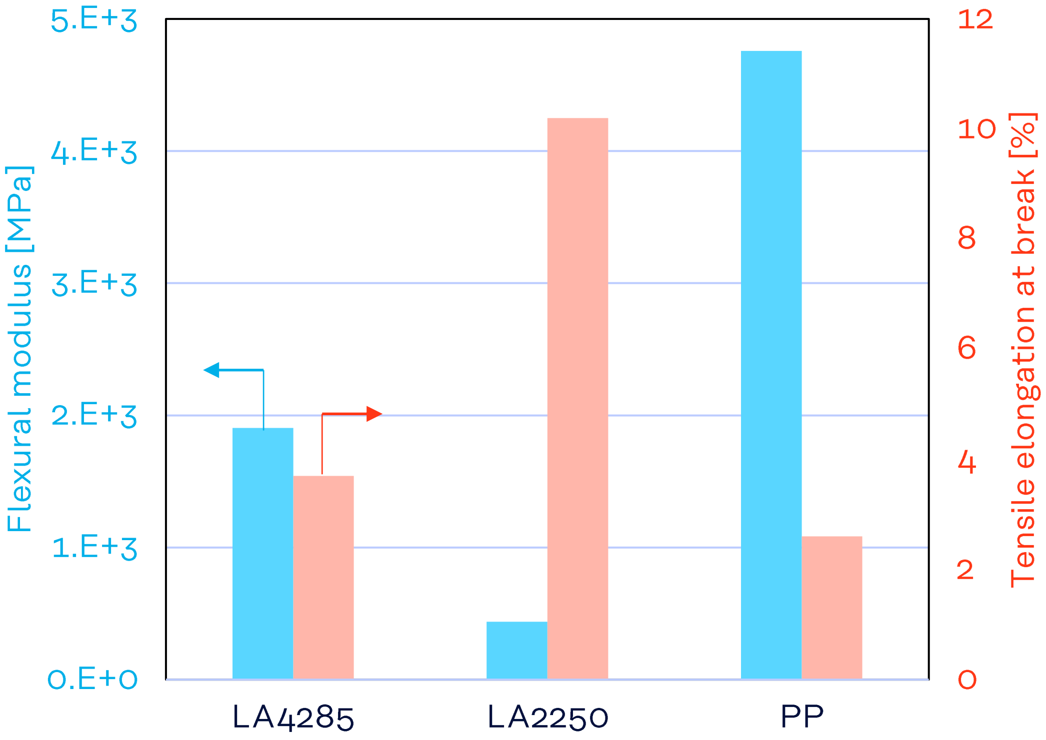


Fig. Basic properties



- ✓ KURARITY™ could be compounded with WP by twin screw extruder.
- ✓ KURARITY™ / WP = 50 / 50 shows flexible feature and better tensile elongation than PP / WP.

KURARITY™ / PLA formulations

				Ex.1	Ex.2	Ex.3	Ex.4	Ex.5	Ex.6	Ex.7	Ex.8	Ex.9
KURARITY™	LA2250			70	50					35	25	
	LA4285					70	50			35	25	35
	KL-LH8156							70	50			35
PLA	PLA (MFI* = 6)			30	50	30	50	30	50	30	50	30
	Bio-based content [wt%]			30	50	30	50	30	50	30	50	30
Items	**Methods**	**Conditions**	**Units**									
Hardness	ISO 7619-2	after 15 sec	-	61	73	92	93	55	74	74	83	74
Transmittance	ISO 13468-1	1 mmt		75	74	92	89	76	73	89	84	89
Haze	ISO 14782			41	49	2.9	5.5	34	48	4.7	12	4.5
MFR	ISO 1133	230 deg.C, 2.16 kgf	g / 10 min	55	33	4.6	4.6	34	21	8.1	7.2	9.6
Tensile modulus	ISO 37	500 mm / min	MPa	14	29	1400	1500	11	39	280	530	220
Tensile strength at break			MPa	11	17	25	28	14	18	19	22	19
Tensile elongation at break			%	210	81	80	9.2	280	200	210	63	190
Adhesion to polar resins (Molded at 250 deg.C)	In-house method	to PC	N / 25 mm	17	23	65	100	9	17	46	42	42
		to ABS		21	21	90	101	10	13	45	49	43
		to PMMA		59	40	142	108	12	22	56	50	57

* 210 deg.C, 2.16 kgf

- ✓ KURARITY™ / PLA formulation can be adjusted wide hardness range.
- ✓ Especially using LA4285 formulations (e.g.: Ex. 3, 4, 7, 9) show good adhesion to polar resins and transparency.

SEPTON™ BIO-series / KURARITY™ formulations

		Ex.1	Ex.2	Ex.3	Ex.4	Ex.5	Ex.6	Ex.7	Ex.8
SEPTON™ BIO-series	SF902	25	25						
	SF904			40	40	40	30	40	40
Olefins	Bio-LDPE (MFI* = 30)	15	15	10	10	10	20	10	10
	Random PP (MFI** = 45)	10	10						
KURARITY™	LA2250	50	12	50	12		12	11	
	LA4285		38		38	50	38	34	34
	KL-LH8156								11
Compatibilizer	PELESTAT™ 300 (Modified polyolefin-PEG block copolymer)							5	5
	Bio-based content [wt%]	34.3	34.3	29.5	29.5	29.5	34.0	29.5	29.5

Items	Methods	Conditions	Units	Ex.1	Ex.2	Ex.3	Ex.4	Ex.5	Ex.6	Ex.7	Ex.8
Hardness	ISO 7619-2	after 15 sec	-	66	82	59	63	71	70	69	68
MFR	ISO 1133	230 deg.C, 2.16 kgf	g / 10 min	92	35	30	30	30	30	17	17
Tensile strength at break	ISO 37	500 mm / min	MPa	9.1	13	7.1	9.1	10	10	8.7	8.8
Tensile elongation at break			%	340	240	430	240	190	200	310	320
Adhesion to polar resins (Molded at 250 deg.C)	In-house method	to PC	N / 25 mm	10	7.7	56	19	12	11	25	71
		to ABS		14	20	64	39	14	13	48	68
		to PMMA		13	17	64	22	12	12	30	45

* 190 deg.C, 2.16 kgf, ** 230 deg.C, 2.16 kgf

*PELESTAT is a registered trademark of Sanyo Chemical Industries, Ltd.

- ✓ SF902 based formulations (Ex.1, 2) tend to be hard and difficult to adhere on polar resins.
- ✓ Some SF904 based formulations (Ex.3, 8) show good adhesion to polar resins and haptics.

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