

A systematic investigation on the influence of intumescent flame retardants on the properties of ethylene vinyl acetate (EVA)/liner low density polyethylene (LLDPE) blends

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Table S1. EVA/EBM/CLNA-8400/120phr MH flame retardant formulations as a function of Tafmer 805 content.

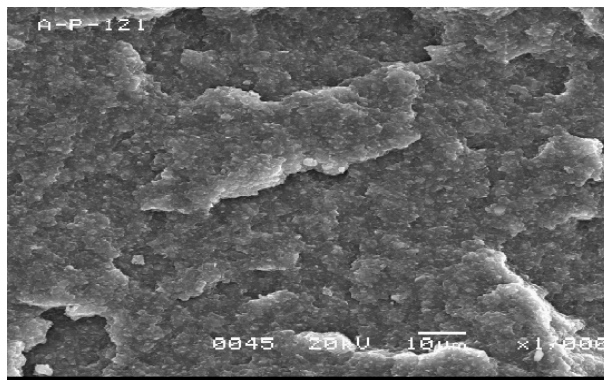
Content/Property	AP-647	AP-654	AP-655	AP-656	AP-657
EVA	85	80	75	70	65
LLDPE 118W	-	-	-	-	-
Tafmer 805	-	5	10	15	20
CLNA-8400	6	6	6	6	6
EBM	9	9	9	9	9
MH	120	120	120	120	120
Carbon black 550	6.0	6.0	6.0	6.0	6.0
Naugard Q	1.5	1.5	1.5	1.5	1.5
Tensile strength (MPa) at RT	13.0±0.2	13.3±0.2	13.3±0.3	13.9±0.4	14.1±0.4
Elongation at break (%) at RT	208±13	229±12	220±16	222±11	228±12
Tensile strength (MPa) after thermal aging at 100°C	12.5±0.2	13.1±0.3	13.3±0.1	13.2±0.1	13.3±0.2
Retention of tensile strength (%) after thermal aging at 100°C	96.1	98.5	100	95.0	94.3
Elongation at break (%) after thermal aging at 100 °C	201±12	213±8	219±17	229±9	221±4
Retention of elongation at break (%) after thermal aging at 100 °C	96.6	93	99.5	103.2	96.9
LOI (%)	30.0	30.5	30.0	30.0	30.0

Table S2. EVA/120 phr MH formulations as a function of EBM content.

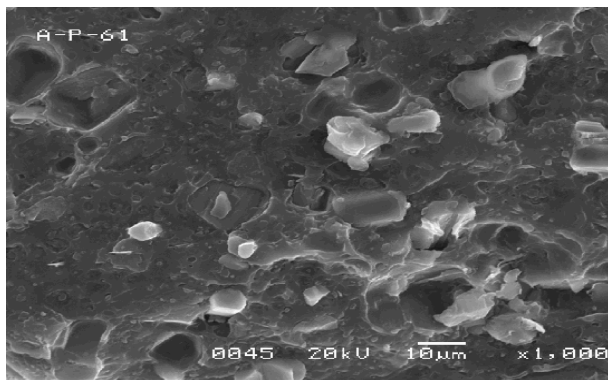
Content/Property	AP-586	AP-638	AP-639	AP-640	AP-641
EVA	85	91	88	85	80
LLDPE 118W	15	-	-	-	-
EXACT 8201	-	-	-	-	-
CLNA-8400	-	-	-	-	-
EBM	-	9	12	15	20
MH	120	120	120	120	120
Carbon black 550	6.0	6.0	6.0	6.0	6.0
Naugard Q	1.5	1.5	1.5	1.5	1.5
Tensile strength (MPa) at RT	11.3±0.3	14.2±0.4	14.3±0.1	14.6±0.2	14.5±0.1
Elongation at break (%) at RT	177±10	225±8	214±13	216±15	194±15
Tensile strength (MPa) after thermal aging at 100°C	12.6±0.2	12.7±0.3	13.5±0.2	13.6±0.3	13.3±0.3
Retention of tensile strength (%) after thermal aging at 100°C	111.5	89.4	94.4	93.2	91.7
Elongation at break (%) after thermal aging at 100 °C	179±8	219±5	219±6	212±6	192±8
Retention of elongation at break (%) after thermal aging at 100 °C	101.1	97.3	102.3	98.1	98.9
LOI (%)	38.0	31.5	31.0	30.0	31.0

Figure S1. The morphology of the prepared composites was studied by scanning electron microscopy (SEM).

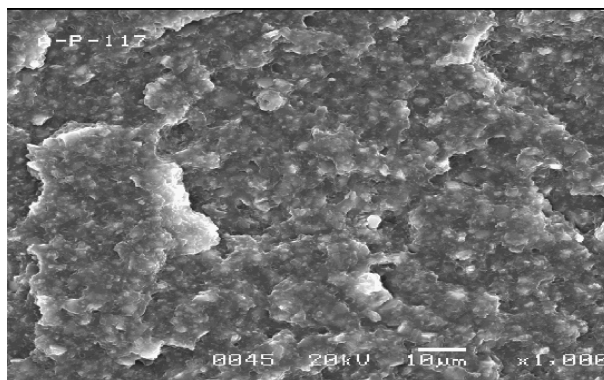
Figure S1 displays SEM micrographs of the EVA/LLDPE 118W and selected corresponding composites containing 120 phr flame retardants (MH+RP).



LDPE:EVA = 20:80
with 120 phr magnesium hydroxide
(MH) (AP-587)



LDPE:EVA = 20:80
with 120 phr magnesium
hydroxide + red phosphorus (AP-
663)



LDPE:EVA = 20:80
with 120 phr magnesium hydroxide +
red phosphorus (AP-665)

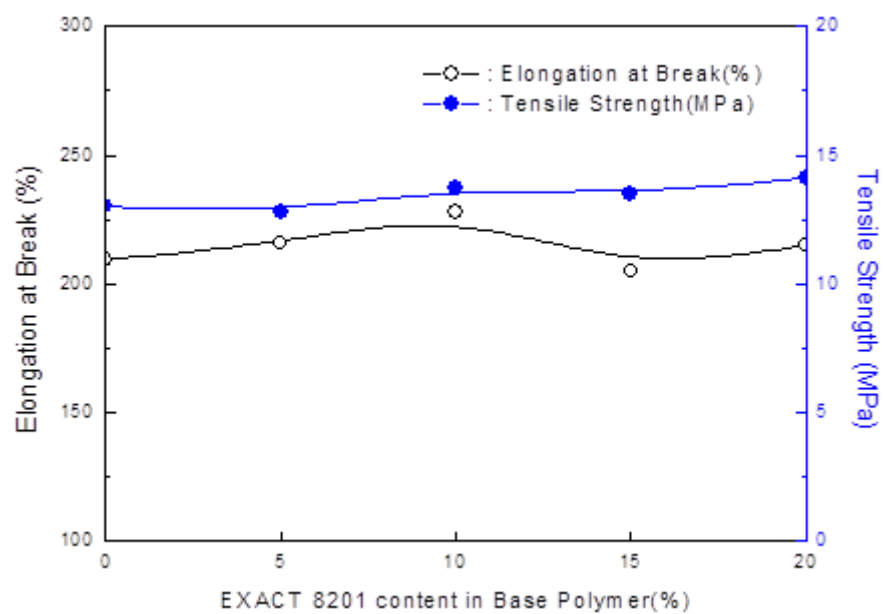


Figure S2. Mechanical properties of EVA/CLNA-8400/EBM/120phr flame retardants (MH) formulations as a function of EXACT 8201 content.