

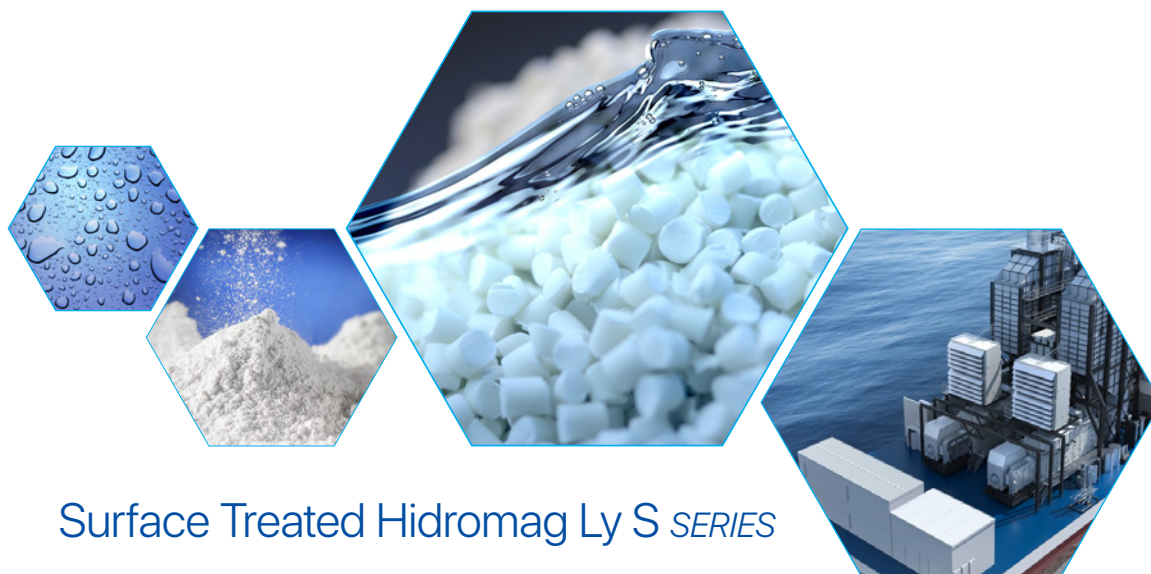


Hidromag *Ly & Lys*
SERIES

The advantages of the surface modification of Hidromag MDH



QUÍMICA DEL REY



Surface Treated Hidromag Ly S *SERIES*

- ✓ Improves interaction between filler and polymer, as well as the acceptability of filler into the polymer matrix.
- ✓ Decreases significantly the Melt Pressure and therefore the compounding process is more stable.
- ✓ Increases the Melt Flow Index (MFI) value of the compounds and therefore rises the productivity.
- ✓ Improves water resistance degradation and retains electrical properties of finished compounds after water aging test.



Magnesium Hydroxide is a functional mineral filler, use as fire retardant additive in the manufacture of HFFR compounds, where strict fire retardance and smoke suppression are required.

Generally, HFFR compounds containing high level of mineral fillers non-surface treated could have difficulties during compounding and processing and in some cases moisture and water pick up are present in the finished compounds.

All these inconveniences could be avoided by using surface treated Hidromag Ly S series.

Reference	Hidromag Ly1	Hidromag Ly1 S	Hidromag Ly2	Hidromag Ly2 S
Particle size d50 (µm)	1.5	1.6	2.0	2.1
Surface Area (m ² /g)	8.7	6.3	7.5	6.5
Type of Surface Treatment	-	Fatty Acids	-	Fatty Acids

Formulating with Hidromag Ly and Ly S



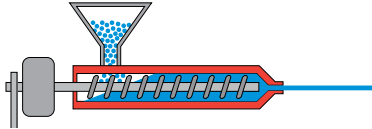
COMPOSITION 1: General Purpose Compound. (40% EVA/LLDPE + 60% MDH+ MAh coupling)

- Compound 1A: Using Hidromag Ly1 as MDH.
- Compound 1B: Using Hidromag Ly1 S as MDH with surface treatment.

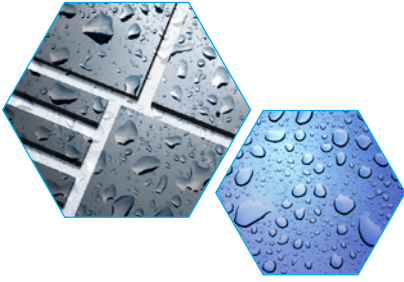
COMPOSITION 2: High performance Compound. (66% HDPE/EVA + 34% MDH +MAh coupling)

- Compound 2A: Using Hidromag Ly2 as MDH.
- Compound 2B: Using Hidromag Ly2 S as MDH with surface treatment.

Improving or maintaining Processing Parameters, Flowability and Mechanical Properties performance

	COMPOSITION 1		COMPOSITION 2	
	Compound 1A	Compound 1B	Compound 2A	Compound 2B
Processing Parameters. Compounds manufactured in a Twin-screw Compounding Line.				
Process Temperature (°C)	200	200	230	230
Mass temperature (°C)	198	195	208	203
Melt Pressure (Psi)	502	338 🍌	508	405 🍌
Flowability and Mechanical properties				
Melt Flow Index (g/10 min) @ 190°C / 21 Kg	6.8	9.8 🍌	5.2	7.6 🍌
Tensile Strength (MPa)	11.0	10.5	12.4	12.5
Elongation at break (%)	175	190	450	495
Fire Retardant Performance (Test in Cone calorimeter according to ISO 5660)				
Total Heat release THR (MJ/m ²)	80	85	115	122
Total Smoke Release TSR (m ² /m ²)	776	785	855	890

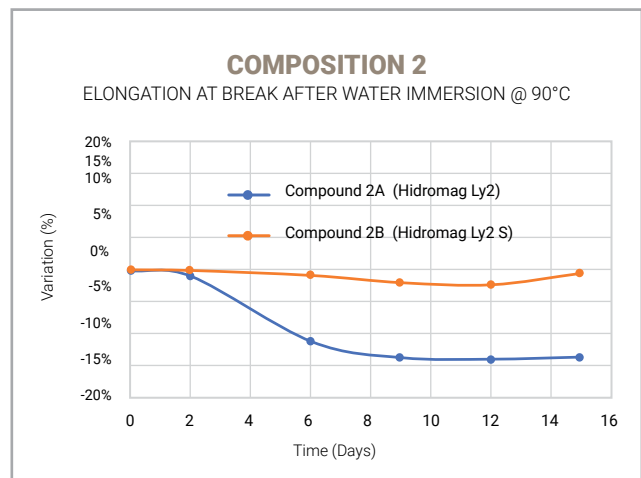
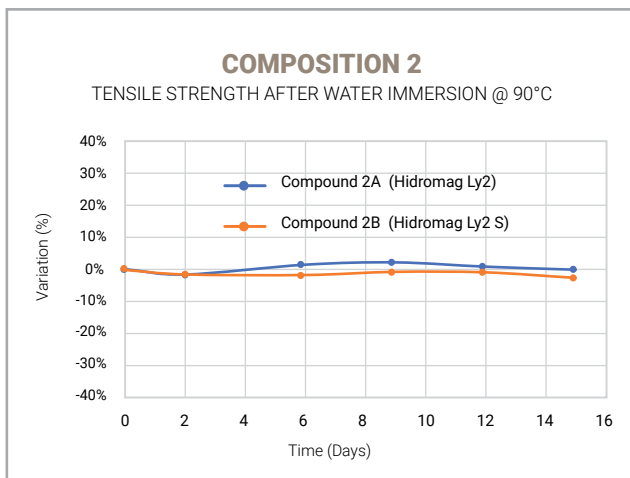
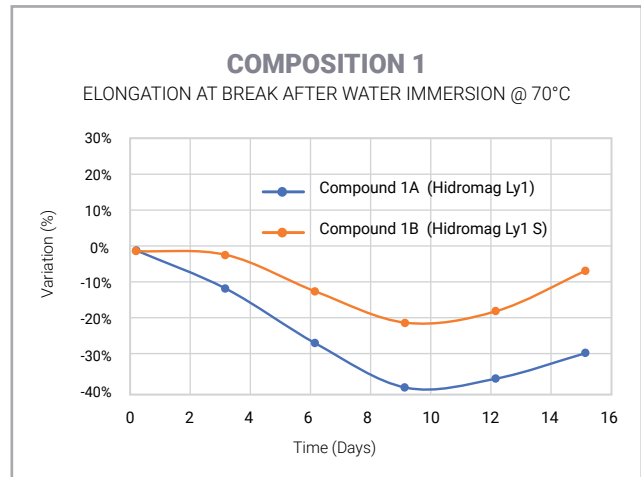
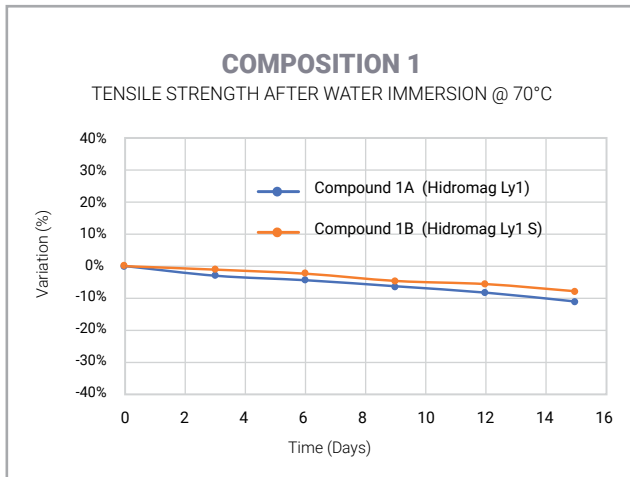
- ✓ **Surfaces treated Hidromag Ly1 S and Ly2 S offer significant reduction of Melt Pressure and stability process.**
- ✓ **Note the significant improvement of Melt Flow Index values that benefit the process.**
- ✓ **The mechanical properties are maintained or improved.**
- ✓ **The results show that surface treatment with fatty acids do not adversely affect the fire-retardant properties.**



Improving water resistance of compounds

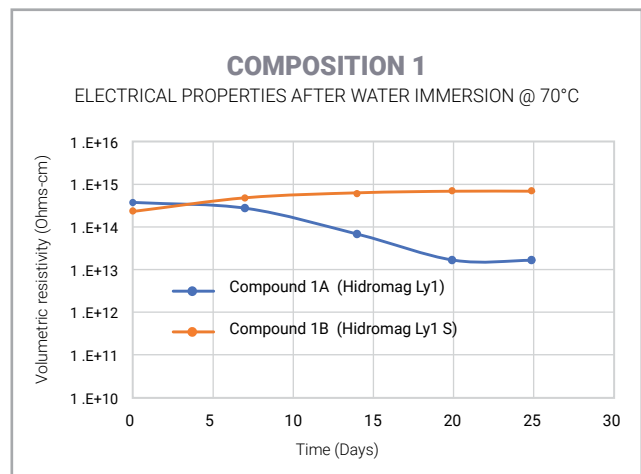
Sometimes HFFR compounds are used in applications with environments that have high humidity; therefore water-resistance materials are required. On these cases, surface treated magnesium hydroxide contributes to improve resistance and degradation caused by water.

The evolution of degradation level of a compound caused by hydrolysis is measured by a water resistance test. The samples were aged in hot water immersion for a long period of time, monitoring the evolution at different intervals of time.



The lower variation percentage of elongation at break after hot water aging tests, indicates that compounds with surface treated Hidromag Ly1 S and Ly2 S have a greater resistance to degradation.

The same positive effect is observed in the retention of electrical properties.





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