



GRAFTALEN™ SA EFFECTIVENESS AS POLYETHYLENE FLOW ENHANCER

This report is a guideline for effectiveness, dosation and processing of polyethylene (PE) and GRAFTALEN™ SA compounds, with the goal of decreasing viscosity (increasing melt flow index).

MATERIALS USED

Base PE: Resinex RWP 1304 Natural LLDPE

Base MFI: 2,3 g/10 min

Flow Enhancer: GRAFTALEN™ SA

TESTS PERFORMED

To determine the effectiveness of our flow enhancer, we measured the melt flow index (MFI) of base PE with different amounts of flow enhancer added.

We added 3% and 5% of GRAFTALEN™ SA.

Mixtures were extruded on a laboratory scale extruder.

MFI of mixtures was measured at **190°C, 2,16 kg**, in accordance with ISO 1133.



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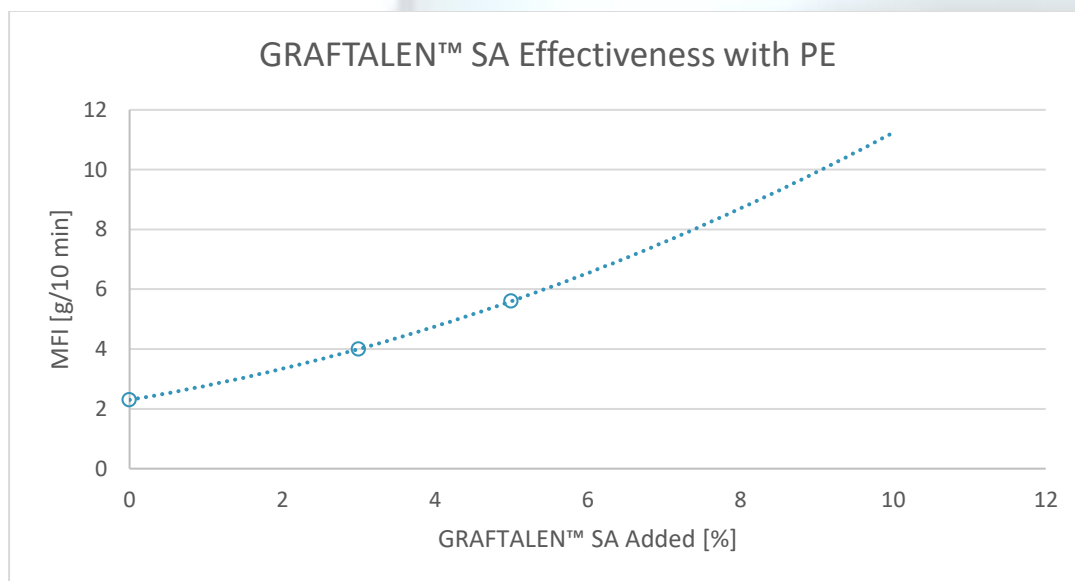
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RESULTS

GRAFTALEN™ SA Added [wt.%]	MFI [g/10 min]
0	2,3
3	4,0
5	5,6



The MFI increases with added GRAFTALEN™ SA, even at low amounts.

MFI increases in a polynomial fashion, according to:

$$MFI = A * x^2 + B * x + MFI_{start}$$

MFI = Melt flow index of mixture

A, B = Constants, depending on the extrusion parameters

x = Percentage of GRAFTALEN™ SA added

MFI_{start} = MFI of base PE

The effectiveness of GRAFTALEN™ SA is increased by using the proper temperature profile:

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	Die
Temp. [°C]	60	130	200	220	220	220	350	350	350	220	220	200	180	180

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The temperatures are much higher than usual, to ensure proper mixing and activation of GRAFTALEN™ SA.

CONCLUSIONS

- GRAFTALEN™ SA successfully increased the MFI of high viscosity PE by more than double with just 5% additive,
- MFI increases more with more GRAFTALEN™ SA added, and as such its effect is increased at higher dosation levels.



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