



EFFECT OF COMPATIBILIZER GRAFTABOND™ SB-MAH 03020 IM AND GRAFTABOND™ SB-GMA 00330 IM ON THERMOPLASTIC POLYURETHANE

In this report, we examined the effectiveness of GRAFTABOND™ SB-MAH 03020 IM and GRAFTABOND™ SB-GMA 00330 IM on the mechanical properties of thermoplastic polyurethanes (TPU).

MATERIALS USED

We added the additives to thermoplastic polyurethane TPU T3170 from Polstar.

Additives:

GRAFTABOND™ SB-GMA 00330	MFI (200°C, 5 kg) = 3 g/10 min
GRAFTABOND™ SB-MAH 03020	MFI (200°C, 5 kg) = 30 g/10 min

PREPARATION OF SAMPLES AND TESTING

All samples were kindly provided by Center of Repair Technologies Co. Ltd.

The following blends were prepared:

Material Used	Additive Amount [Weight %]
Virgin TPU T3170	-
GRAFTABOND™ SB-GMA 00330 IM	5
GRAFTABOND™ SB-MAH 03020 IM	5
GRAFTABOND™ SB-MAH 03020 IM	10
GRAFTABOND™ SB-MAH 03020 IM	20

Specimen were prepared in accordance with:

- ASTM D412 (Standard test method for Vulcanized Rubber and Thermoplastic Elastomers – Tension, Type C) from all blends,

All tests were performed on a standard universal testing machine.



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Material Report

RESULTS

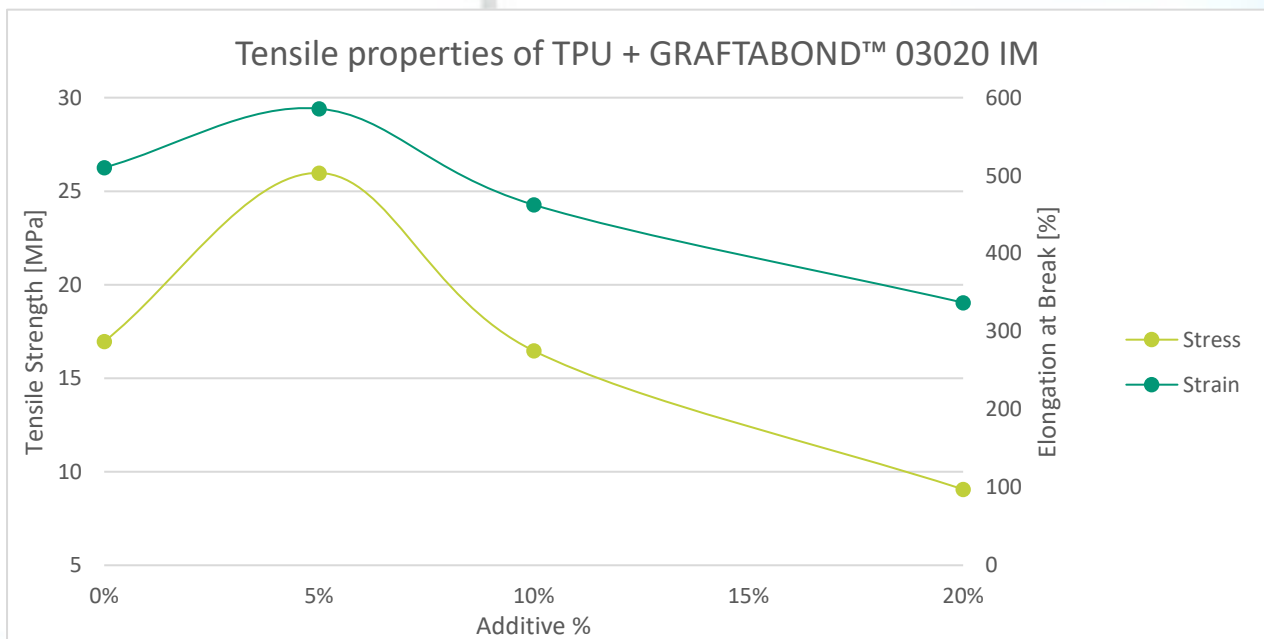
MATERIAL	Additive Amount [Weight %]	Tensile Stress [MPa]	Elongation at Break [%]	Hardness Shore A
Virgin TPU T3170	-	16,9	510	73
+ GRAFTABOND™ SB-GMA 00330 IM	5	24,9	557	79
+ GRAFTABOND™ SB-MAH 03020 IM	5	25,9*	586*	72
+ GRAFTABOND™ SB-MAH 03020 IM	10	16,5	463	80
+ GRAFTABOND™ SB-MAH 03020 IM	20	9,1	337	86

*Note: Due to high elongation, specimen didn't break.

GRAFTABOND™ SB-GMA 00330 IM offers very similar performance to the SB-MAH grade.

Below graph displays the effect of GRAFTABOND™ SB-MAH 00220 IM amount on mechanical properties of TPU. The data points at 5% are very similar to GRAFTABOND™ SB-GMA 00330 IM.

Hardness increases slightly with amount of additive.



CONCLUSIONS

- GRAFTABOND™ SB-MAH 00220 IM and GRAFTABOND™ SB-GMA 00330 IM both increase mechanical properties of TPU
- Most effective up to 5% added GRAFTABOND™
 - Increase tensile stress by up to 50%
 - Increase maximum elongation by at least 20%

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