



POLYPROPYLENE + 30% GLASS FIBERS PROCESSING REPORT

This report is a guideline for the processing of PP-GF composites.

MATERIALS USED

Base PP: Resinex RXP 2004

Glass Fibers: JM Thermoflow 636

Coupling Agent: GRAFTABOND™ PPH-MAH 70025 CA

Blend Composition: 69% PP + 30% GF + 1% Coupling Agent

PROCESSING

The processing was done in the following steps:

1. Dry the glass fibers at 100°C for at least 3 hours
2. Dry the PP at 80°C for at least 3 hours
3. Mix the PP and GF in a mixing unit
4. Extrude the material in a twin screw extruder

Temp. profile: 130-240-240-230-220-200-180 [Die]

5. Granulate the material
6. Dry the prepared blend 80°C for at least 3 hours
7. Injection mold A1 type specimen for tensile and Charpy tests

Injection molding parameters:

Melt T – 240°C

Injection Pressure – 80 MPa

Holding Pressure – 50 MPa

Mold T – 40°C

Cooling time – 10 s



GRAFT POLYMER D.O.O.

Emonska Cesta 2, Ljubljana Slovenia
Company Num. 8056200000, VAT. SI 30561345
Phone Num. +38640867937
office@graftpolymer.com

GRAFT POLYMER UK LTD

Central Working Victoria Eccleston Yards 25,
Eccleston PI, London, UK, SW1W 9NF.
Company Num. 10776788, VAT. 281712016
www.graftpolymer.com

Material Report

The importance of heat treatment of glass fibers

Studies have shown that heat treatment of silanated surfaces at 100°C consolidates the condensation reaction and increases their bonding strength through the elimination of water, alcohol, and other subproducts of the condensation reaction. It is expected that heat treatment of the silane coupling agent improves the mechanical properties of fiber reinforced composites.

The heat treatment accelerates the silane condensation chemical interaction between the silane monomer and the fiber surfaces. Evaporation of solvents, such as water, alcohol, and acetic acid, causes the elimination of hydrogen bonds on the fiber surfaces, thus increasing sites available for reaction with silane. The silane application is seen as a sensitive technique. Among the factors that affect their effectiveness, evaporation of the solvents plays an important role since incomplete evaporation of these solvents may compromise adhesive action



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www.graftpolymer.com

Material Report

CONTACTS

MANAGEMENT

CEO/CTO | Victor Bolduev +386 40 534 739

Executive Director / CMO | Pavel Kobzev +386 40 867 937

Pavel@graftpolymer.com

GRAFT POLYMER D.O.O (OFFICE)

Emonska Cesta 8, Ljubljana Slovenia.

Company Num. 8056200000,

VAT. SI 30561345

Tel +386 1 777 6561

office@graftpolymer.com

www.graftpolymer.com

GRAFT POLYMER D.O.O (PRODUCTION/WAREHOUSE)

Mejaceva ulica 2, 1353 Borovnica Slovenia

Company Num. 8056200000,

VAT. SI 30561345

office@graftpolymer.com

www.graftpolymer.com

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