



PRODUCT APPLICATION NOTE

Coupling Agent for Filled Polypropylene Composites

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Coupling Agent for Filled Polypropylene Composites

Introduction

Polypropylene (PP) is a thermoplastic polymer which is often compounded with various other materials to meet the requirements of packaging, automotive and textiles industries. Usually, PP is filled with mica, talc, calcium carbonate and glass fibers as reinforcement and lower the price. Recently, bio filler such as wood, cellulose and jute are also being used in PP compounds to move towards sustainable society. Interfacial interaction of these fillers during compounding with PP plays an important role in determining the mechanical properties of the composites. To enhance the interfacial interaction maleic anhydride-graft-PP (MA-g-PP) is added in the compound.

CHARACTERISTICS OF OPTIM[®] P-425

About OPTIM[®] P-425

OPTIM[®] P-425 is a maleic anhydride modified polypropylene. It acts as a coupling agent between polymer and filler to enhance the mechanical performance of the composite. Fig. 1 explains the mechanism of coupling action between amino silane coated glass fiber and **OPTIM[®] P-425**.

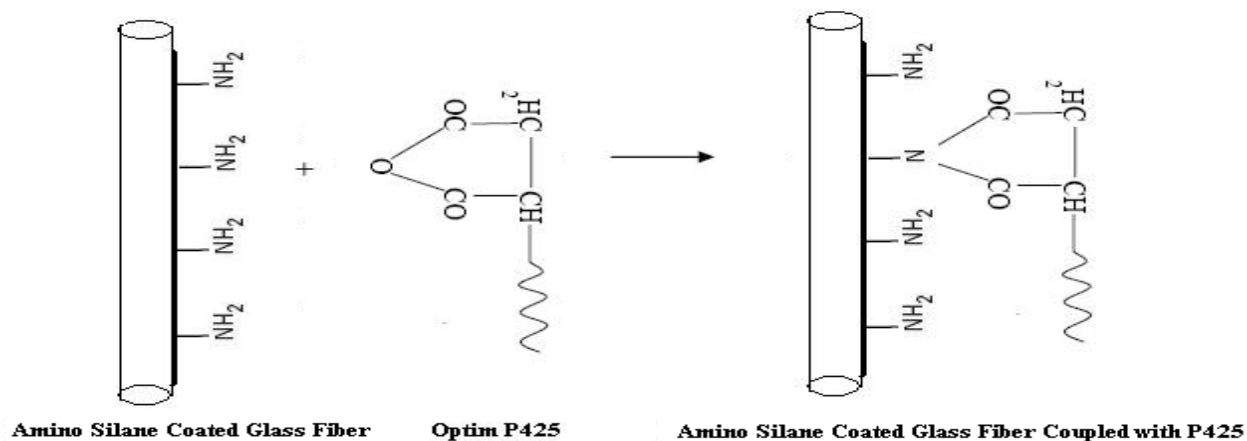


Fig.1: Mechanism of coupling action between amino silane coated glass fiber and **OPTIM[®] P-425**

Properties:

- Appearance : White color granules
- MAH : Very High (%)
- MFI* : 100-120 g/10min
- Density : 0.908 g/cm³

*190°C/2.16Kg

Suggested Formulation:

OPTIM® P-425 provides excellent coupling action between the filler and the PP at the addition levels of 1-5 %.

Table 1: Properties of glass filled polypropylene coupled with **OPTIM® P-425**

Properties	Unit	Composition	
		PP-78%+Glass-20% OPTIM® P-425-2%	PP-68%+Glass-30% OPTIM® P-425-2%
Tensile Strength	MPa	77	58
Elong. @ Break	%	7.5	3.0
Flex. Modulus	MPa	4050	4525
Impact Strength	J/m	102	98

Advantages

- ✓ It also improves composite processability.
- ✓ Enhances the mechanical properties.
- ✓ It is also used as compatibilizers in PP alloys.

Processing

OPTIM® P-425 is compounded with PP and fillers via thermoplastic processing equipment, preferably extrusion compounding machine.

Disclaimer:

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