



# Impact Modification in Polycarbonates & its alloys

## PRODUCT APPLICATION NOTE

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### Introduction

Polycarbonates are largely amorphous engineering thermoplastic resins with excellent inherent hardness, transparency, tensile strength and toughness. Their high glass transition temperature ( $T_g$ ) allows applications permitting maximum service temperature around 120 – 140 °C. Crystallization rate in PC moulding compounds can be increased by using nucleating/reinforcing agents. This improves thermal, tensile, flexural and dimensional properties further, but with concomitant reduction in their notched impact strength.

When polycarbonates are recycled, drop in impact strength becomes a bigger issue than other mechanicals, which still remain high enough for designated applications.

To make up the impact strength of filled or unfilled Polycarbonate for injection moulding or extrusion of components, it is necessary to blend it with suitable impact modifier. This is done through compounding in a twin screw extruder.

### OPTIM® GE-344 for Impact Modification

Plus product, OPTIM® GE-344 is widely used for improving impact properties of polycarbonates. It is a reactive high polymer ULDPE resin, chemically grafted with glycidyl methacrylate monomers. At PC processing temperatures, the functional groups on OPTIM® GE-344 chemically react with the polycarbonate matrix to provide necessary nucleation sites for rapid crystallization. At the same time, elastomeric nature of its backbone provides the necessary enhancement in impact strength. Polar functional groups on OPTIM® GE-344 also help in better dispersion and compatibilization of mineral fillers and reinforcements added.

Depending on the impact properties desired in the final product, dosage of OPTIM® GE-344 in the PC compound varies from 2-5%.

OPTIM® GE-344 modified first use or recycled PC compounds help in extending life cycle of an expensive material. They find application in automotive components, appliances and accessories.

OPTIM® GE-344 can also be used to similarly modify PBT.

For detailed technical specifications refer to OPTIM® GE-344 technical data sheet.

### Procedure of using **OPTIM GE-344**

1. Remove the hopper drier from extruder and put it on a separate stand.
2. Fill the hopper drier with the **Polycarbonate Regrinds** up to 2/3<sup>rd</sup> of its capacity.
3. Dry the scrap in the hopper drier **@120°C for 2-3 hr.**
4. Discharge the dried scrap completely into a tub.
5. Add additives i.e. - **Optical Brightener (O.B.); T.T; OPTIM GE-344** to the dried PC regrind.
6. Mix all the ingredients in the tub homogeneously and transfer the material into extruder hopper.
7. Fill the next lot of PC regrind in the dryer and repeat steps 1 to 6.

The information given here is meant as a guide to determining suitability of our products for the stated applications. It is based on trials carried out by our laboratories and data selected from literature and shall in no event be held to constitute or imply any warranty. The products are intended for use in industrial applications. The users should test the materials before use and satisfy themselves with regard to contents and suitability in the desired application. Our formal specifications define the limits of our commitment. Recommendation herein may not be construed as freedom to infringe/operate under any third party patents. In the event of a proven claim, our liability is limited only to replacement of our material and in no case shall we be liable for special, incidental or consequential damages arising out of usage of our material. This datasheet is subject to change without notice.