

PLUSS[®]



Pluss Polymers is an offshoot of Manas, established to develop and market new technologies and products developed inhouse. Pluss Polymers was incorporated in 1993 to commercialise the technology for grafted modified polymers and alloys and blends. Backed by competent technical staff, laboratory facilities, a good library and technical database with a retrievable wealth of information marketed the OPTIM[®] brand of grafted polymers for the first time in India in 1996.

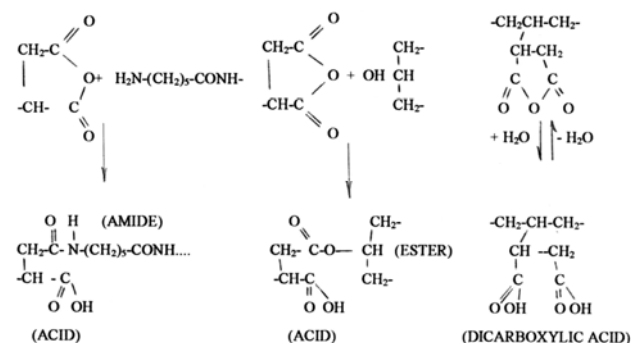
OPTIM[®] coupling agents and compatibilisers allow plastics manufacturers of world class quality products to *OPTIMise* their compound properties. The ADNYL[®] range of nylon alloys provide the user with extra tough nylon for increased strength.

Profiles and other rigid and flexible containers for thermal energy storage have also been introduced in India for the first time by Pluss Polymers.

OPTIM®
Chemically Modified Polyolefines

TECHNICAL DATA SHEET

Product	: OPTIM® E-126
Series	: 100
Description	: Grafted LDPE resins with anhydride and acid functionality.
Appearance	: White to off white free flowing pellets / granules.
Properties	: Density g/ml 0.925 T _m (DSC) °C 108.0 MFI-190°C, 2.16 Kg 0.4 MAH Content (% min) High High - 0.9 - 1.5%



Nylon Scrap Upgradation: Value can be added to nylon scrap, be it in fibre, film or moulding form, by using the compatibilising action of **OPTIM®**. The product is suitable for injection moulding applications.

Applications

OPTIM® E-126 is suitable for use in nylon blending. This resin may also be used as compatibiliser for a range of polar and non-polar polymer mixtures. Nylon scrap can be upgraded and made use of in injection moulding by using this OPTIM® grade.

OPTIM® E-126 has higher thermal stability than E-142, E-143, and hence is equally suitable for higher melting nylons such as nylon 6, 6 as well as nylon 6.

OPTIM® E-126 acts by improving interfacial adhesion between the filler and polymer matrix. The polar functional groups in OPTIM® bond with the surface of fillers like calcium carbonate, talc, mica, glass fibers, etc. This results in the better dispersion of the filler and enhancement of mechanical properties of the compound.

Nylon Alloys and Coextrusion:

Series 100 resins are based on LDPE, and have acid and anhydride groups grafted on the backbone. These groups act as adhesion promoters to various substrates. The resins are especially useful for blending with nylon to improve the latter's toughness in dry state. Although polyethylene on its own will not blend well with nylon, the anhydride groups in OPTIM® react with the amine end groups in nylon and thus compatibilise polyethylene moiety, through a coupling reaction between the grafted resin and nylon. In polyamides the amine end groups, and in EVOH the hydroxyls, react with the anhydride as shown in the figure.

Amine and Hydroxyl Reaction with Anhydride

Properties of Alloys are influenced by a number of factors. Some of the important ones are:

1. Shear rate in the machine used
2. Residence time
3. Temperatures
4. Grade of nylon used
5. Composition of the blend and
6. Additives package

Processing Conditions

The coupling reaction provided by series 100 resins are slow at 200°C and estimated to be over in less than 2 min. at 240°C. Thus, for any application, the normal resin residence time in an extruder system or a compounding equipment is adequate for the said reaction and the resultant coupling to occur. Maximum processing temperature should not exceed 280°C.

Drying: Series 100 resins are mildly hygroscopic. Our recommendation is that prior to processing the material should be dried in a hopper dryer or oven at 80±5°C for 2 to 4 hours.

Stoppages: For short interruptions, the extruder should be kept running at a low speed (as low as practical).

Pluss Polymers Pvt. Ltd.

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The information given here is meant as a guide to determining suitability of our products for the stated applications. 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. We guarantee that our products will meet our written specifications. Nothing herein shall constitute any other warranty expressed or implied. 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.