Pluss Polymers is an offshoot of Manas, established to develop and market new technologies and products developed in-house. 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.
Polyethylene Terephthalate (PET) is not used for injection moulding for the following reasons:

a. Its crystallization rate from the melt is very low. Thus, when moulded, the material needs a long time in the mould to get a stabilised moulding; making it an uneconomic process.
b. The mould temperature desired is greater than 90°C, hence oil has to be use as the heat transfer medium for mould temperature control. This becomes a specialised requirement.
c. If not fully crystallized, the crystallization can continue and cause changes in dimension of moulded part in-service.
d. T_g of PET is approx. 70°C. If not adequately crystallized, it may mean deformation above 70°C.
e. The impact strength of the as-moulded or crystallized PET is low.

Thus to recycle PET for injection moulding it becomes imperative to increase impact strength and rate of crystallization.

Pluss Polymers have experimental products OPTIM NA 210 & OPTIM NA 211, which enhance the rate of crystallization of PET when mixed with it to the extent of 1-5%. To increase the impact strength, it is suggested that 15-40% by weight of glass fibers be incorporated together with a rubbery toughening agent such as OPTIM GE-340 or others.

OPTIM NA 210 has been tested by incorporation in commercial PET. The DSC curve of the compound shows a total absence of heat of crystallization before the melting temperature. This indicates that the compound was fully crystallized between the exit from the extruder and quenching in the cooling tank.

Both the Nucleating Agents are PET based but have different chemical structures.