

THERMOPLASTIC

AMORPHOUS GROUP

Definition:

It is the long chained molecules that define the character of this group. When moulded, the molecular structure has no preferred alignment and is very random and intertwined. These entanglements generally create higher physical properties with lower melt flow and less shrinkage which is isotropic (relatively uniform in all directions).

Amorphous materials do not have a sharp melting point instead they gradually soften when exposed to increases in temperature and quickly lose strength above the Glass Transition temperature (T_g) where they elongate and become 'rubbery'.

Typical Features:

- Low chemical resistance.
- Poor fatigue resistant
- Can be bonded, welded and plated.
- More translucent/transparent

Additions of reinforcements & fillers:

Benefits, if available:-

Glass fibre **reinforcement** by weight (eg: 30%) alters Mechanical Properties:-

- Increases stiffness
- Becomes more brittle.
- Reduces moulding shrinkage.
- Improvements to Heat Distortion Temp (HDT).

Additional **fillers** can improve:-

- Flame-retardance.
- Electrical properties:-

Carbon increases conductivity

Stainless steel improves dissipative behaviour.

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DCR	41730	44747							



DSM 4.1.7

NORYL_ 30% G. Filled (Signal Black)

General:

NORYL: a blend of **PPO** resin and **PS** polymer combines to create a thermoplastic that draws on the inherent benefits of each component. By varying the blend ratio, including additives, a variety of grades are available

Polyphenylene oxide (PPO): Stiffness & surface hardness.

Polystyrene (PS): Prerequisite for processing.

Benefits:

This is a strong engineering polymer with excellent mechanical, thermal, and electrical properties. Low moisture absorption and low thermal expansion make (PPO) one of the most dimensionally stable thermoplastics available, and is widely used for electrical housings and structural components since it has excellent insulating properties, flame resistance, & dimensional stability over a wide range of service temperatures (145°C). PPO is often selected for fluid handling applications because of its low moisture absorption, superior impact strength and stiffness. Good for machining, bonding, painting & plating.

Limitations: (unmodified)

- Limited colour choice
- Poor resistance to petroleum products.
- Colour shift with UV exposure. Black grades offer best resistance.

ASM (DEK) Applications:

- Internal light Housing

These values are representative. For critical applications, refer to data-sheet.

MECHANICAL PROPERTIES					
	HARDNESS Shore A	TENSILE STRENGTH:	YOUNGS MODULUS:	POISSONS RATIO:	DENSITY:
PPO +PS	----	120 MPa	3.9 GPa	0.35	1310 Kg/m³

GRADE	SUPPLIER	UL No.	RECYCLE CODE
Noryl GFN 3 + Master Batch Colour: RAL 9004	SABIC PLASTICS	E45329	>PPO+PS GF30<

Alternatives:

Alternative polymers are allowed only with the express written permission of ASMPT. Please email details of your request to engineering_enquiries@asmpt.com

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