APPLICATION DEVELOPMENT

AMCO POLYMERS

APPLICATION AND BUSINESS DEVELOPMENT

At Amco Polymers, application and business development is essential to our company, and we love solving puzzles. We specialize in the following:

- Metal to Plastic Replacement
- Part Design
- Material Specifications
- Material Development
- Problem Solving
- Opportunity Discoveries
- Process Support
- Teardown Capability
- Moldflow Analysis
- Lunch & Learns (Training Seminars)

LUNCH AND LEARNS

Our Lunch and Learn's offer the opportunity for an Amco Polymers expert to engage in person with your team. Sessions run anywhere from 45 minutes to 3 hours and focus on a variety of topics, including:

- Plastics 101
- Plastics 201
- Designing for Plastics
- The Clear Advantage
- Medical 101
- Polyamide 101
- Processing 101

REQUIREMENTS

Please provide customer, application and volume info, a brief description of the part and function, a picture and/or CAD file of the part, the material needs, any agency requirements, and any cost targets.

Material needs include strength needs (glass filled, target tensile strength, flex mod, etc), impact resistance or modification, max/min temperatures, continuous use temperatures, anti-stat or conductive needs, optical requirements, chemicals the material will come into contact with, secondary operations, outdoor/UV requirements, appearance part/ colors needed, and tooling requirements.

The Periodic Table of the elements by Mendeleev was a historic achievement in chemistry and enabled chemists to see the relationship between structure and properties of the basic elements.

Polymers also have a strong relationship between structure and properties and this 'Periodic Table of Polymers' is a first attempt to provide a simple codification of the basic polymer types and structures.

The diversity of polymer types makes it impossible to include all of the variations in one simple table and this table only includes the most common polymers.

Tangram Technology
Periodic Table of Thermoplastics

TANGRAM TECHNOLOGY Consulting Engineers

Increasing performance

Commodity | **Engineering** | **Performance**

Amorphous ... **Semicrystalline**

Increasing crystallinity

Random molecular orientation in both molten and solid phases.

General Characteristics
- Soften gradually.
- Generally transparent.
- Lower Tensile Strength and Tensile Modulus.
- Lower Density.
- Low Creep Resistance.
- High Dimensional Stability.
- Low fatigue resistance.
- Easy to bond using adhesives and solvents (high surface energy).

Random molecular orientation in molten phase, densely packed crystallites in solid phase.

General Characteristics
- Sharp melting point.
- Generally translucent or opaque.
- Higher Tensile Strength and Tensile Modulus.
- Higher Density.
- High Creep Resistance.
- Low Dimensional Stability.
- High fatigue resistance.
- Difficult to bond using adhesives and solvents (low surface energy).

PS-HI High Impact Polystyrene	**PS-GP** General Purpose Polystyrene	**ABS** Acrylonitrile Butadiene Styrene (Copolymer)	**SAN** Styrene Acrylonitrile (Copolymer)		**PMMA** Polymethyl methacrylate (Acrylic)	**PPO** (Modified) Polyphenylene Oxide	**PC** Polycarbonate		**PAR** Polyarylate	**PSU** Polysulphone	**PES** Poly-ethersulphone	**PPSU** Poly-ethersulphone (Block copolymer)		
PVC-P Plasticised Poly-vinylchloride	**SBS** Styrene-Butadiene-Styrene (Copolymer)	**SMA** Styrene-Maleic Anhydride (Copolymer)	**ASA** Acrylonitrile Styrene Acrylate (Copolymer)	**SB** Styrene-Butadiene (Copolymer)						**PEI** Polyetherimide	**PAI** Poly-amideimide	**PI** Polyimide	**PBI** Polybenzimidazole	
PVC-U Unplasticised Poly-vinylchloride	**CA** Cellulose Acetate	**CAB** Cellulose Acetate Butyrate	**CAP** Cellulose Acetate Propionate	**CP** Cellulose Propionate	**PET-G** Glycolised Polyethylene terephthlate	**PVC-UX** Crosslinked Unplasticised PVC	**PVC-C** Chlorinated PVC							
PVC-U High-Impact Unplasticised PVC								**PA 6/3/T** Amorphous polyamide	**PPA** Poly-phthalamide (Amorphous)	**PARA** Polyaryl amide				
PE-LD Low Density Polyethylene	**PE-LLD** Linear Low Density Polyethylene	**PE-MD** Medium Density Polyethylene	**PMP** Polymethyl pentene	**EVA** Ethylene-vinyl Acetate (12% VA)	**PE-X** Crosslinked Polyethylene	**PB** Polybutene-1 (Polybutylene)	**PE-UHMW** Ultra-high Molecular Weight PE	**PA 11** Polyamide 11 (Nylon 11)	**PA 12** Polyamide 12 (Nylon 12)	**PPA** Poly-phthalamide	**PA 46** Polyamide 46 (Nylon 46)	**PEK** Poly-etherketone	**PEEK** Polyetherether ketone	
		PE-C Chlorinated Polyethylene	**PE-VLD** Very Low Density Polyethylene	**EMA** Ethylene-methyl Acrylate	**PBT** Polybutylene-terephthlate	**PA 6** Polyamide 6 (Nylon 6)	**PA 66** Polyamide 66 (Nylon 66)		**LCP** Liquid Crystal Polymer (Aromatic copolyester)	**PFA** Perfluoroalkoxy	**ECTFE** Ethylene-chlorotrifluoro-ethylene	**PCTFE** Polychloro-trifluoro-ethylene	**PTFE** Poly-tetrafluor-ethylene	
	PP Polypropylene (Homopolymer)	**PP** Polypropylene (Copolymer)			**PET** Crystalline Polyethylene-terephthlate	**PA 6/10** Polyamide 6/10 (Nylon 6/10)	**PA 6/12** Polyamide 6/12 (Nylon 6/12)	**POM** Poly-oxymethylene (Acetal Copolymer)	**EVOH** Ethylene-vinyl Alcohol	**PPS** Polyphenylene Sulphide	**FEP** Fluorinated ethylene-propylene	**ETFE** Ethylene-tetrafluoro-ethylene	**PVDF** Poly-vinylidene-fluoride	
PE-HD High Density Polyethylene								**POM** Poly-oxymethylene (Acetal Homopolymer)						

KEY TO MAJOR POLYMER FAMILIES: Styrenes | Polyolefins | Vinyls | Cellulosics | Polyesters | Polyamides | Acrylics | Polycarbonates | Acetals | Polysulphones | Imides | Fluoropolymers

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