

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

Increasing crystallinity

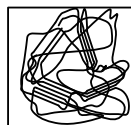
Semicrystalline

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).

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

KEY TO MAJOR POLYMER FAMILIES:

Styrenes

Polyolefins

Vinyls

Cellulosics

Polyesters

Polyamides

Acrylics

Polycarbonates

Acetals

Polysulphones

Imides

Fluoropolymers

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