|  |  |
| --- | --- |
| **Abbreviation** | **Meaning** |
| PE | Polyethylene |
| tie | Adhesive layer of modified ethylene copolymers (bonds incompatible layers) |
| EVOH | Ethylene Vinyl Alcohol |
| Admer | Trade name of an adhesive polymer developed by Mitsubishi |
| ABS | Acrylonitrile Butadiene Styrene |
| PC | Polycarbonate |
| PVOH | Polyvinyl Alcohol |
| Ecovio | Biodegradable material based on polylactic acid (PLA) and polyester |
| PHB | Polyhydroxybutyrate (a biopolymer produced by microorganisms) |
| PP | Polypropylene |
| PS | Polystyrene |
| LDPE | Low-Density Polyethylene |
| PVC | Polyvinyl Chloride |
| PET | Polyethylene Terephthalate |

**List of Plastic Samples:**

**1. PE/tie/EVOH/tie/PE (Admer AT1707E) (0.57mm) - B**

* Widely used in flexible packaging and food barriers due to its excellent oxygen resistance (EVOH) and ease of processing (PE).
* Suitable for vacuum packaging or perishable products.

**2. ABS+PC (2.05mm) - C**

* Used in the automotive and electronics industries due to its high impact resistance and good thermal stability.
* The combination of ABS and PC provides mechanical strength with good aesthetics for structural and decorative applications.

**3. PP/tie/EVOH/tie/PP (tupper) (0.27-0.31mm) - F**

* Commonly used in food packaging due to its chemical resistance, oxygen barrier properties, and recyclability.
* Suitable for food containers, bottles, and reusable packaging.

**4. PVC (1.85mm) - L**

* Widely used in industrial applications, from pipes to construction materials, due to its chemical and fire resistance.
* Used in both rigid products (pipes) and flexible applications (cable coatings).

**5. Ecovio/PVOH/Ecovio (0.1mm per layer) - E**

* Biodegradable and eco-friendly, but its industrial use is limited due to high costs and lower resistance compared to conventional plastics.
* Focused on compostable packaging applications.

**6. ABS (3.0mm) - D**

* A standard material in the industry due to its rigidity, impact resistance, and ease of molding.
* Used in appliance housings, toys (such as LEGO), and vehicle components.

**7. PS (0.36mm) - I**

* Used in the industry for packaging, disposable tableware, and thermal insulation (such as EPS).
* Provides transparency or rigidity depending on the application, being essential in packaging and construction.

**8. LDPE (0.07mm) - J**

* Commonly found in plastic films, bags, and coatings due to its flexibility and chemical resistance.
* Used in the food, medical, and agricultural sectors.

**9. PE/tie/EVOH/tie/PE/Adhesive/PE/tie/EVOH/tie/PE (0.2mm) - A**

* Has similar applications to PE/tie/EVOH/tie/PE (Admer AT1707E), but its complex multi-layer structure with adhesive makes it less cost-effective and less widely used in the industry.
* Specifically designed for technical applications in food or pharmaceutical industries.

**10. PHB/PVOH/Ecovio (0.1mm per layer) - G**

* Similar to Ecovio, biodegradable and eco-friendly, but with limitations in mechanical resistance and durability compared to traditional plastics.
* Useful for specific applications but not widely adopted in general industries.

**11. PP/tie/EVOH/tie/PP (0.07mm) - H**

* Has industrial applications, but its reduced thickness makes it more specific for limited uses such as lightweight coatings or packaging.
* Less robust and functional for demanding applications compared to thicker PP (0.27-0.31mm).

**12. PET (0.12mm) - O**

* Commonly used in food and beverage packaging due to its excellent barrier properties against gases and moisture.
* Also employed in textiles (polyester fibers) and engineering applications.

**PC (2.25mm) - K**

* A robust and transparent material with high impact resistance, used in optical discs, security windows, and medical components.
* Combines mechanical and aesthetic properties, making it suitable for electronics and construction applications.

**PP with filler (0.04mm) - M**

* The addition of filler reduces PP’s flexibility and mechanical resistance, limiting its industrial applications. Additionally, its extremely thin thickness makes it less versatile.

**PP (0.04mm) - N**

* Thin PP is not very versatile for industrial applications. Its use is limited to extremely thin or lightweight packaging.

**Important Plastics Not Included in the Samples:**

* Polyamide (PA, Nylon)
* High-Density Polyethylene (HDPE)
* Polyurethane (PU)
* Polymethyl Methacrylate (PMMA, Acrylic)
* Expanded Polypropylene (EPP)
* Fluoropolymers (e.g., PTFE, Teflon)
* Thermoplastic Polyester (PBT)
* Polyamide 12 (PA12)

<https://github.com/danimp94/PIC-PAPER-01/tree/main/data/experiment_5_plastics>