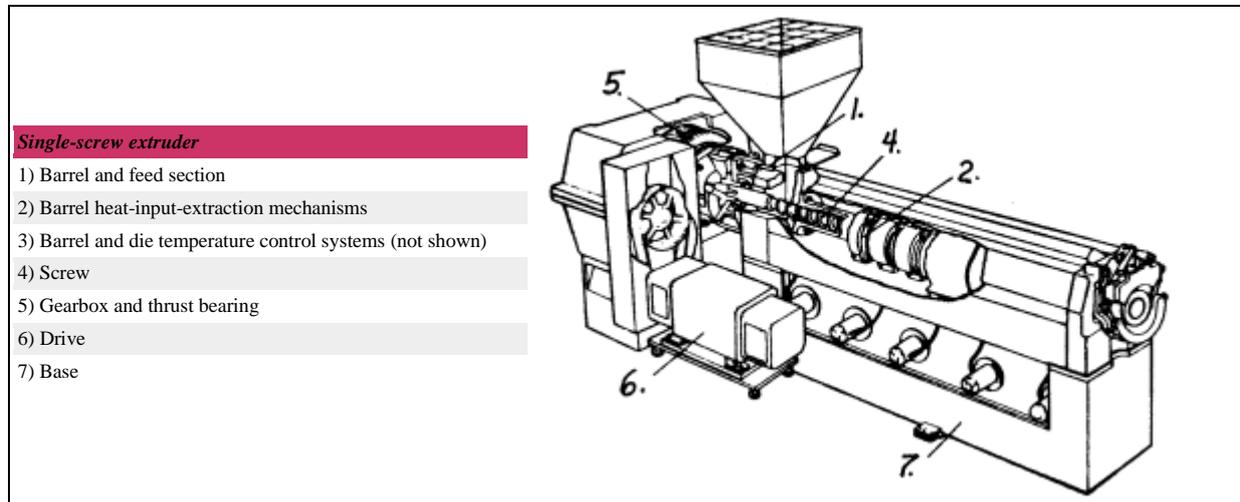


Cast Film Process

(Source: The Dow Chemical Company - from the internet)

A typical cast film line uses single-screw extruders to convert a variety of thermoplastics into continuous melt streams that are formed by the dies into the film structure. Every single-screw extruder includes these components:



Coextrusion

Coextrusion combines two or more molten polymer layers into a composite extruded web or tube which provides functional, protective, or decorative properties. The introduction of new high-performance polymers, the development of new processing equipment technology, and the emergence of many new packaging applications has resulted in high growth rates in coextrusion.

The majority of new equipment being installed for both blown and cast film extrusion will be capable of coextrusion. The shift to coextrusion is being made because the technology can meet a wide range of application needs, including the ability to achieve specific performance properties, to reduce costs, to use fewer processes and to reduce waste source.

The advances in coextrusion equipment technology, the new polymers introduced, and the market application development have made coextruded films attractive. However, to take advantage of coextrusion technology, companies must develop the techniques and knowledge to produce these sometimes complex film structures.

In recent years, there has been an increase in the number of polymers available for extrusion. There are several types of polymers to choose from, with attributes such as high barriers, selected permeation rates, adhesion, high strength sealants, easy opening (peelable) sealants, low temperature sealants, high hot tack sealants, high tensile strength, high impact strength, high tear strength, high modulus, high temperature resistance, low temperature impact, high clarity, abrasion resistant, chemical resistant, low taste and odor, high cling, low slip, stabilized, degradable, antistatic, antifog, pigmented, thermoformable, and the list goes on. The performance attributes of polymers will continue to grow as application needs are identified.

Specific performance properties

Sometimes, the requirement for specific performance properties can't be met by a single polymer, or even with blends of different polymer types extruded in a monolayer film. Blending may not be desirable if the polymer types are incompatible. Coextrusion with a high strength polymer can allow significant down-gauging while maintaining or improving key properties. Heat seal polymers can be incorporated into a film structure to improve packaging line efficiency or speed.

Reduced cost

Coextrusion can lower the cost to produce many films by reducing the amount of expensive polymer used, increasing the amount of less costly polymers, using recycled material, or reducing film thickness. Competitive advantages can be achieved for many coextruded film structures, ranging from the high volume trash bag market, to high technology barrier food packaging films.

Fewer processes

Coextrusion can reduce the number of process operations required when several polymers are needed to obtain the desired properties. Combining operations into a single process provides more space for other equipment, and generates less scrap than multiple process steps. Coextrusion can also eliminate the use of solvent based adhesives. This may provide some cost savings in raw materials. With increasing regulations regarding the use and disposal of solvents, the cost of incineration or recovery can be high—eliminating the use of solvents can also help to lower these costs.

Waste source reduction

Coextrusion allows scrap or trim material to be recycled into the core of the structure. The increased desire to reduce waste and use recycled materials makes coextrusion an even more attractive option.