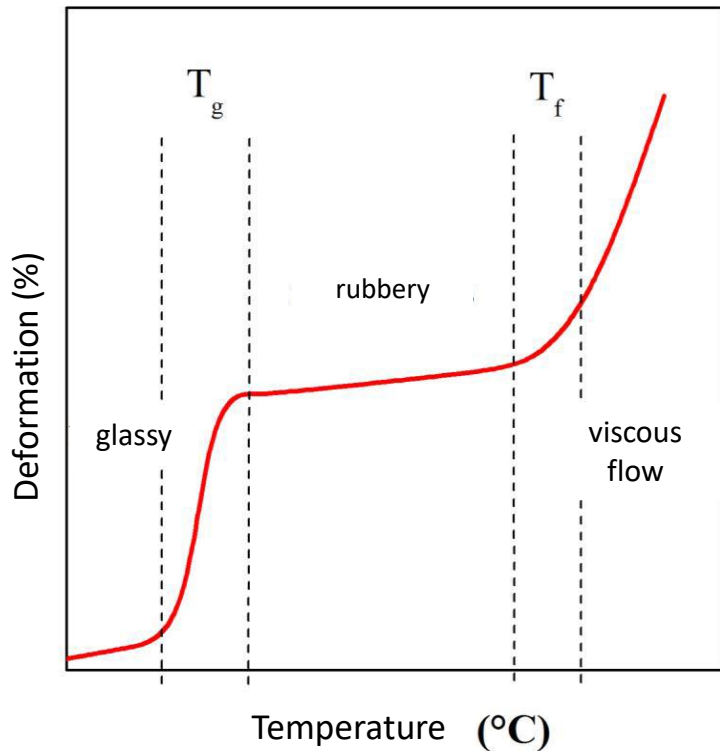


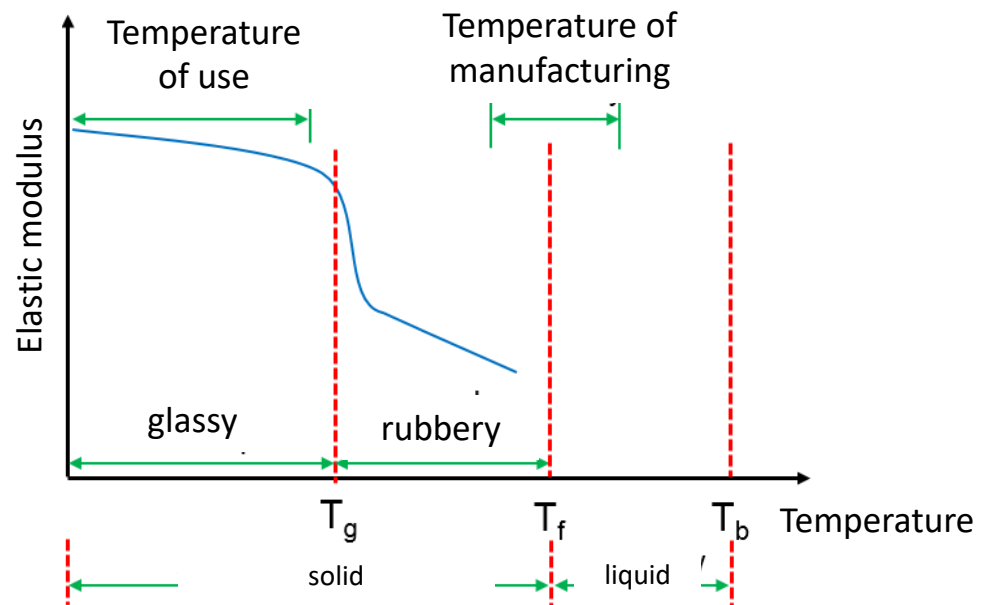
# Materials Science (BMEGEMTAMM1)

**Lecturer: Dr. Ákos Pomázi**  
[pomazi.akos@gpk.bme.hu](mailto:pomazi.akos@gpk.bme.hu)

## Termomechanical curves



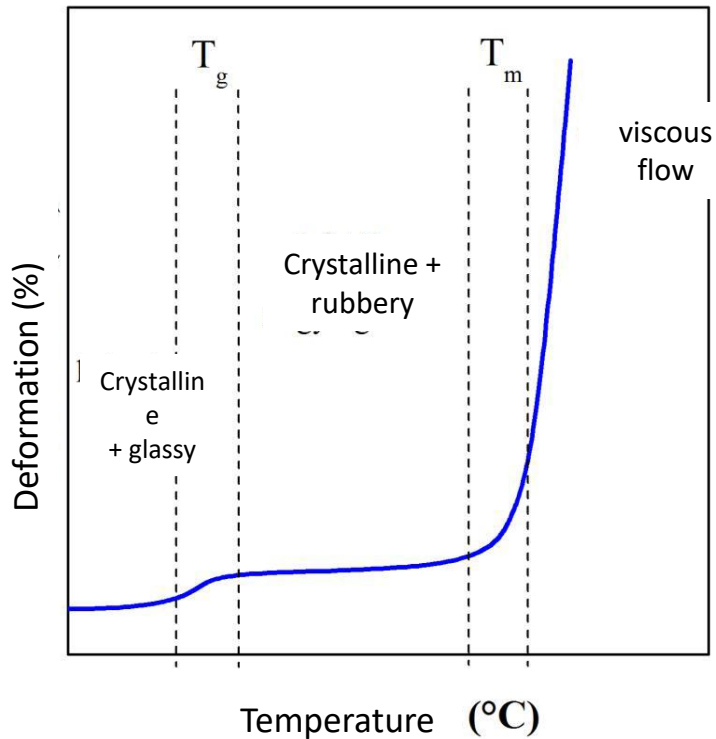
Linear, amorphous polymers



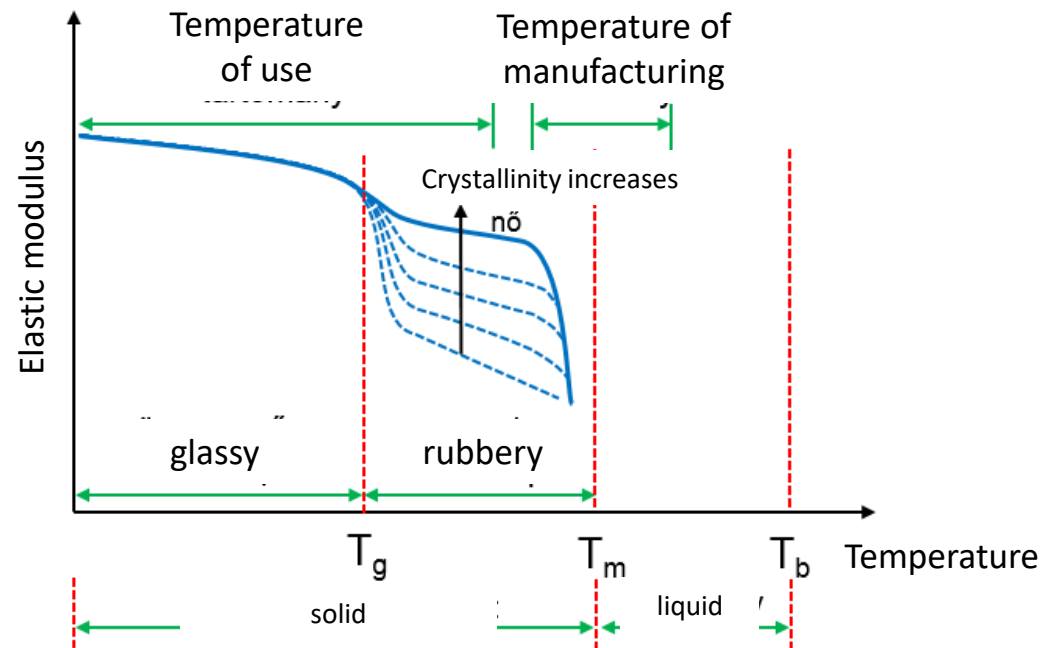
$T_g$ : glass transition temperature  
 $T_f$ : flow temperature  
 $T_b$ : temperature of degradation



## Termomechanical curves



Linear, semicrystalline polymers



$T_g$ : glass transition temperature

$T_m$ : melting temperature

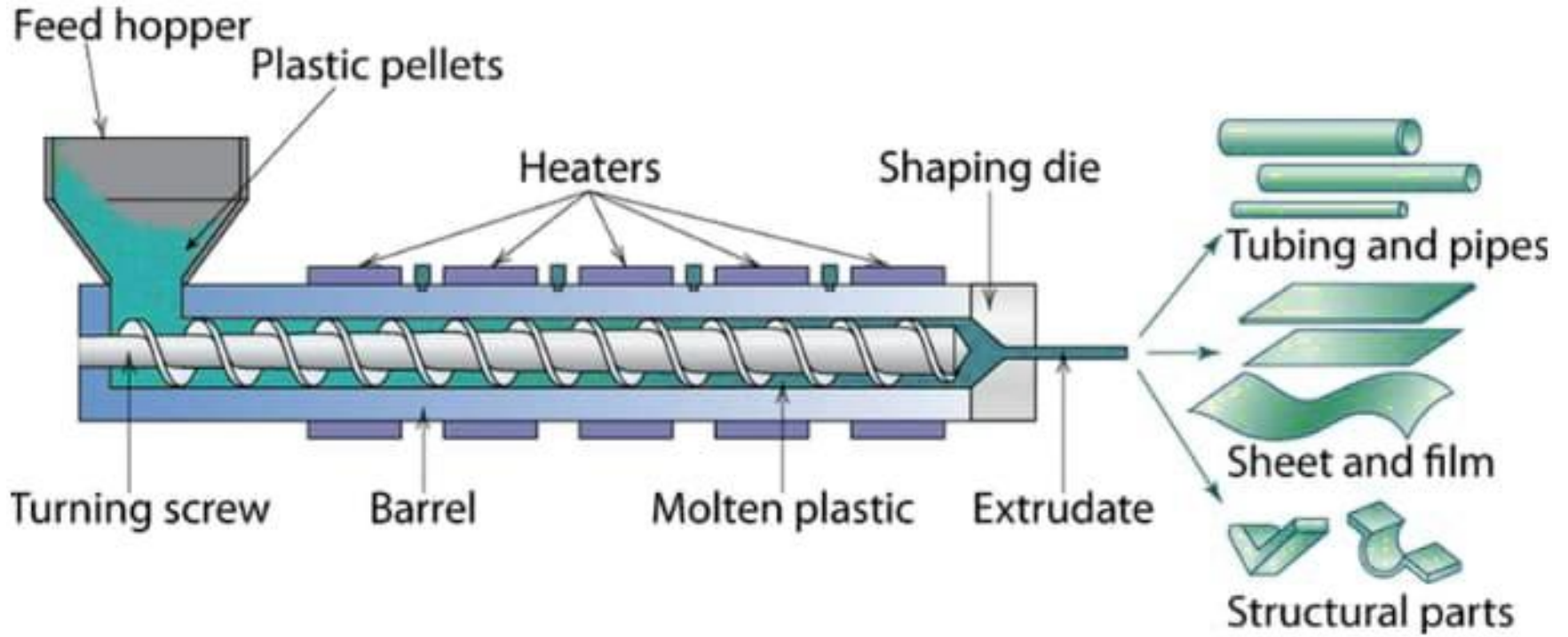
$T_b$ : temperature of degradation

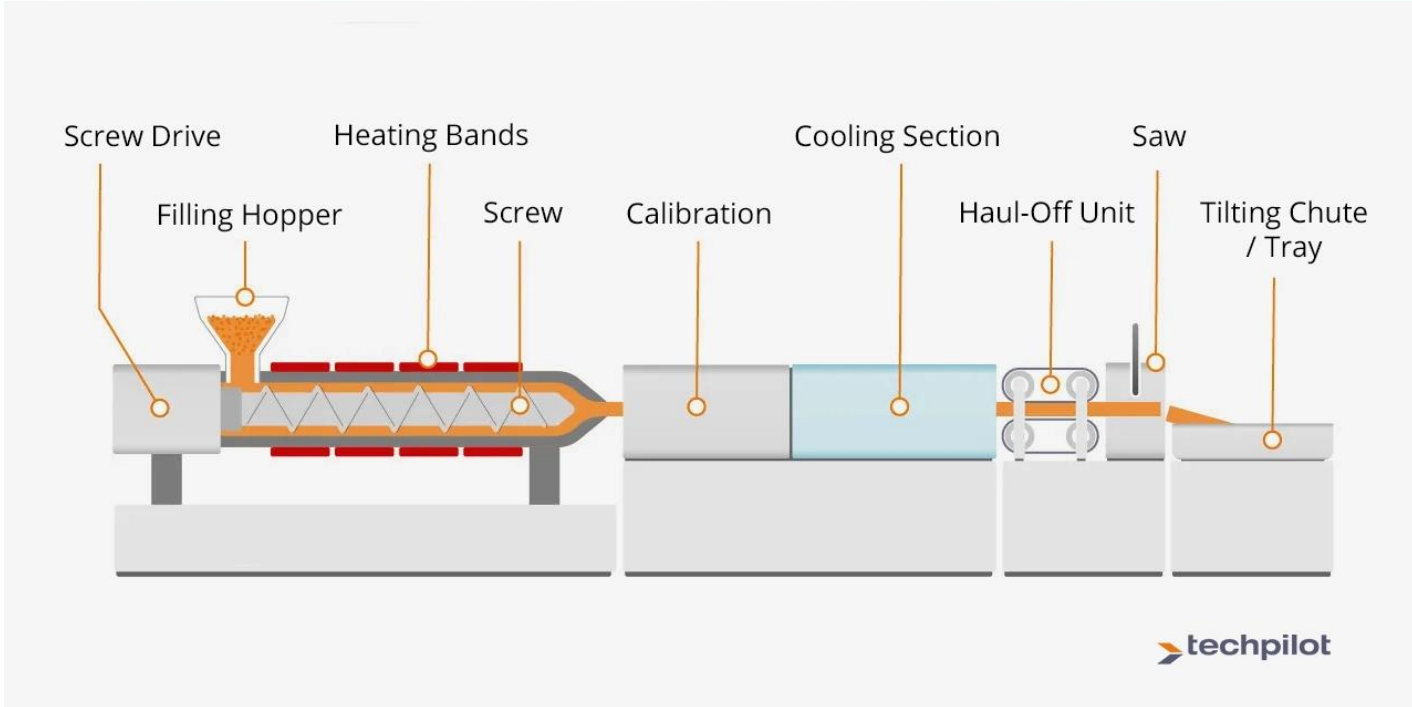


- **Melting the polymer**
- **Forming of homogeneous melt**
- **The product's properties are greatly influenced by the processing technology and the conditions under which it is processed**
- **Melt based:** extrusion, injection moulding, 3D printing; **rubbery state:** thermoforming, (blowing)

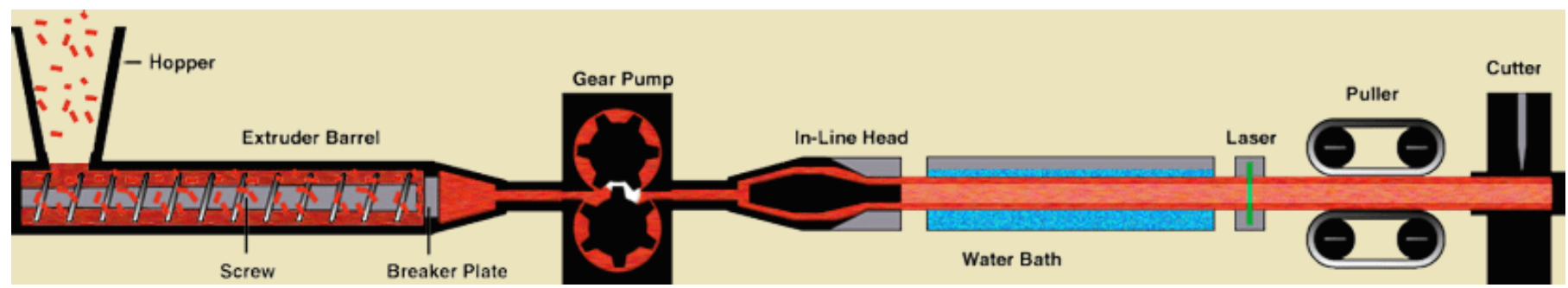


S. no.	Common plastics	Melting temperature range (°C)
1	Polystyrene (PS)	180–280
2	Low density polyethylene (LDPE)	160–260
3	High density polyethylene (HDPE)	200–300
4	Polypropylene (PP)	230–270
5	Polyvinyl chloride (PVC)	180–210
6	Polyamide (PA66)	260–320
7	Polyamide (PA6)	230–280
8	Polycarbonate (PC)	280–320
9	Poly(ethylene)phthalate (PET)	280–320



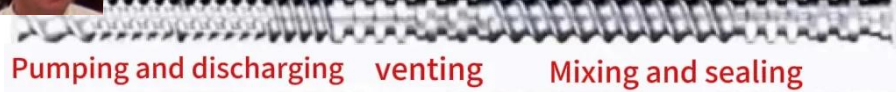
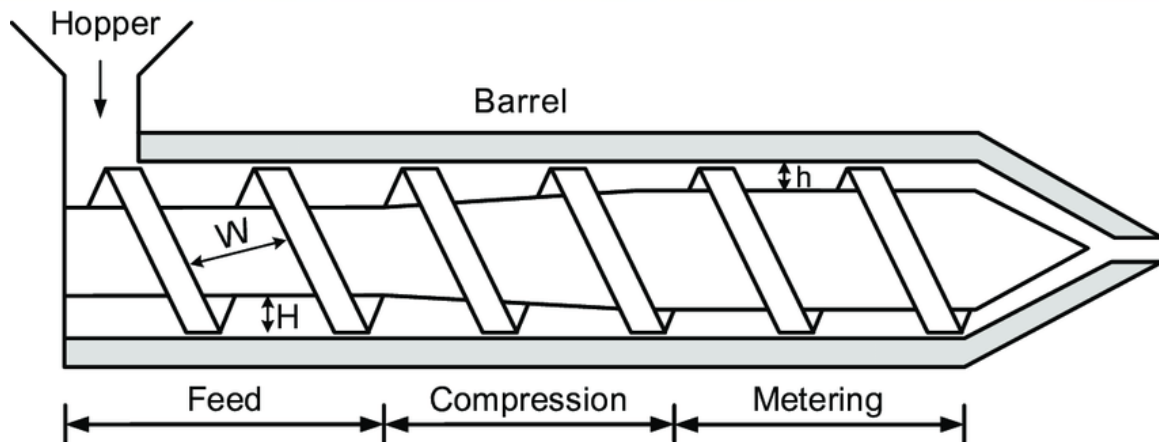


techpilot

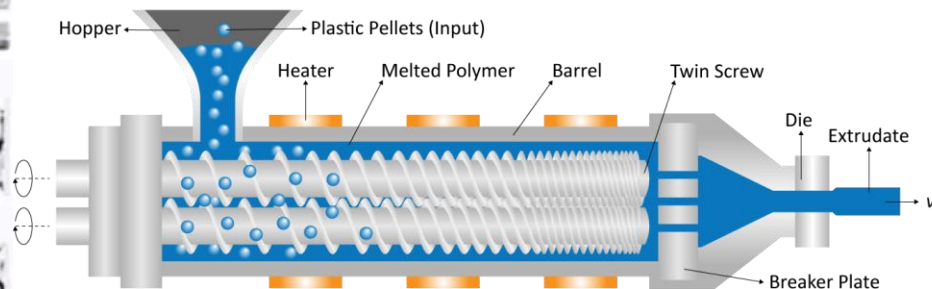




# Extruder screw



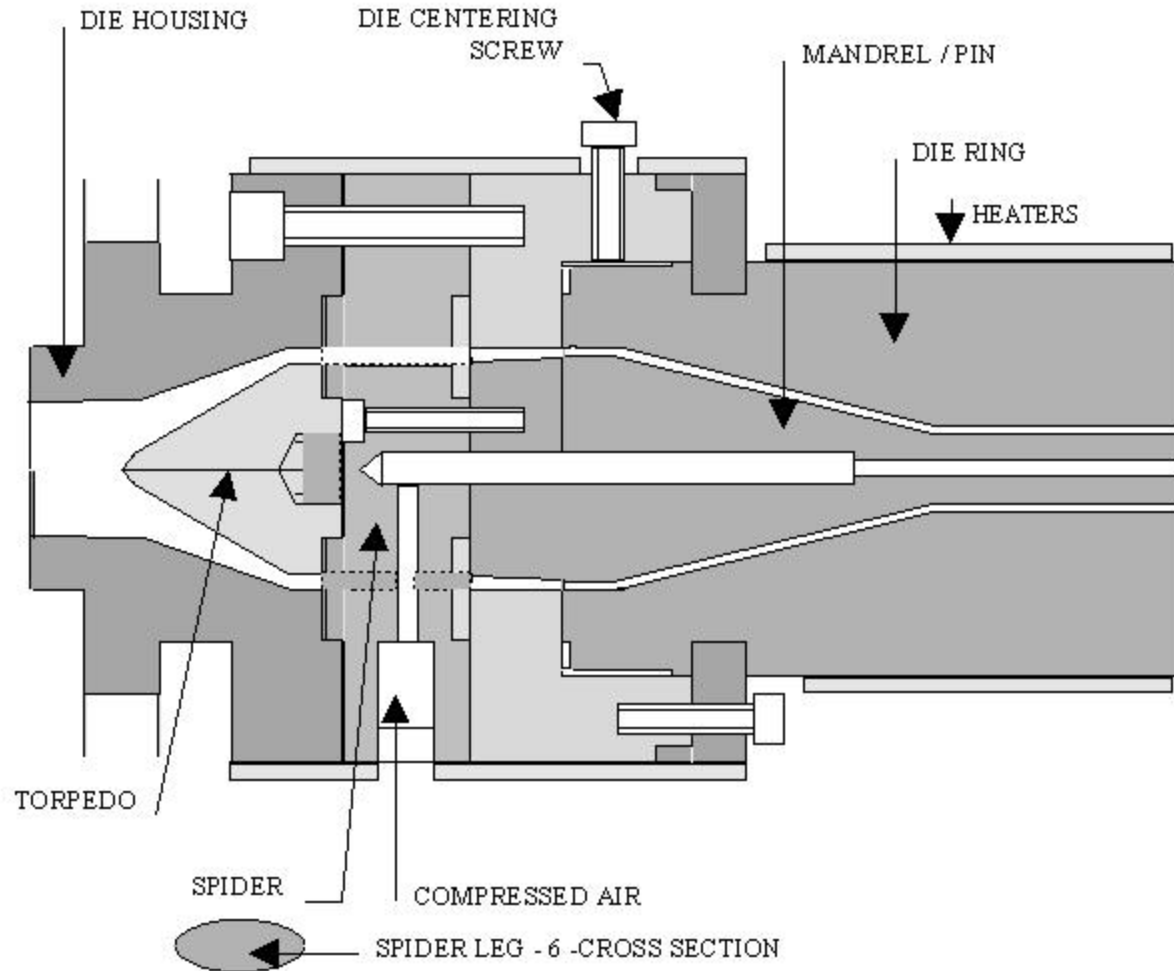
## Twin Screw Extruder





# Pipe extrusion

## TYPICAL PIPE DIE WITH SPIDER



# Granulation – Strand pelletizing





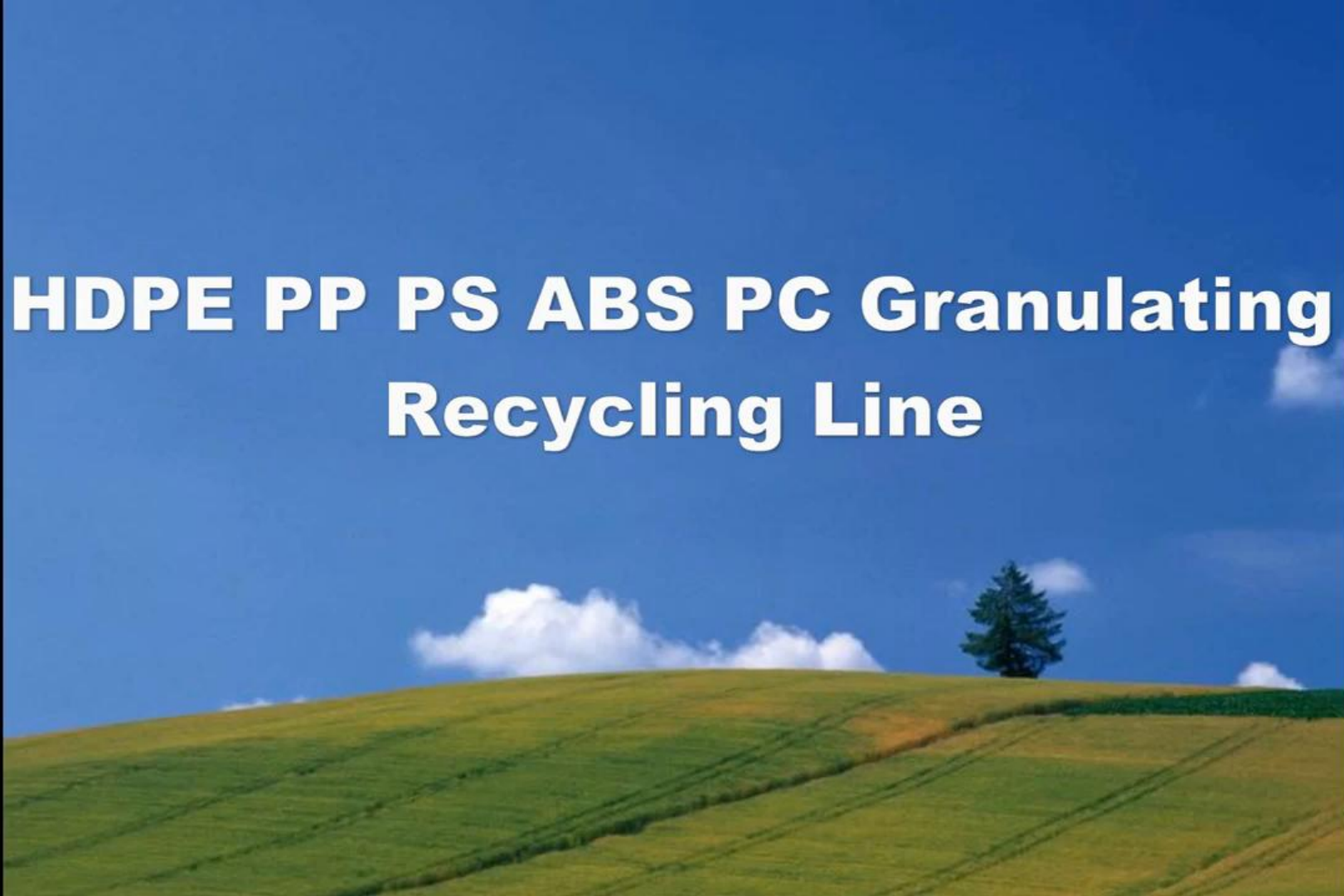
# Granulation – Underwater pelletizing



**ECON**

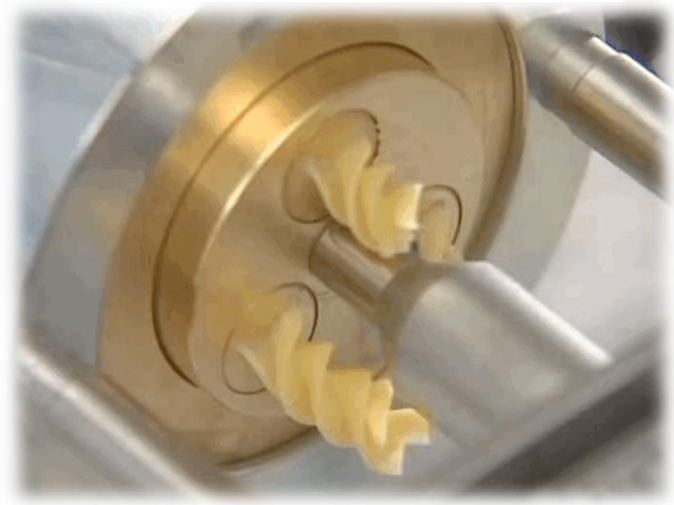
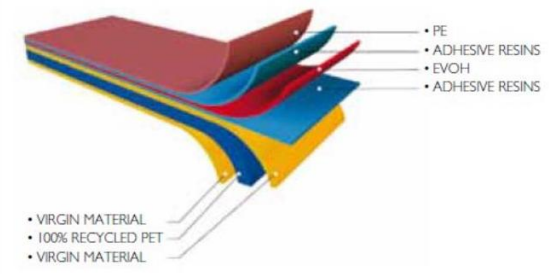
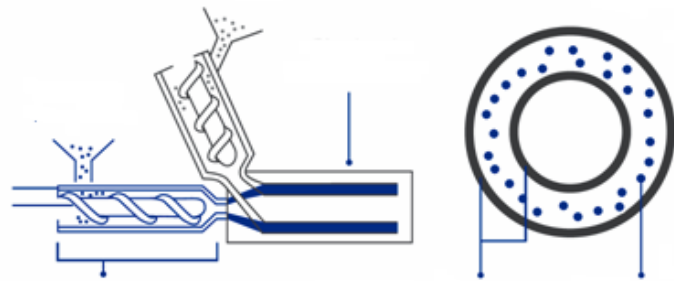
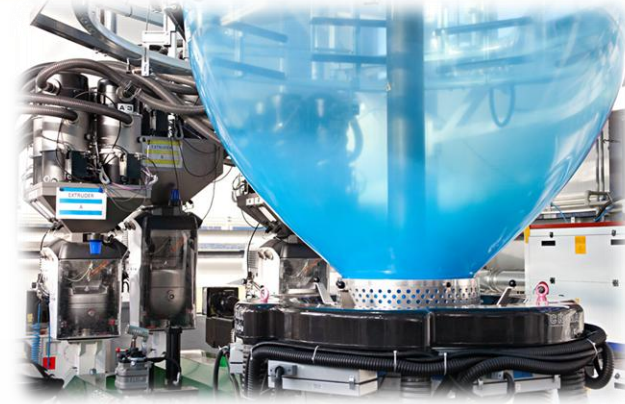
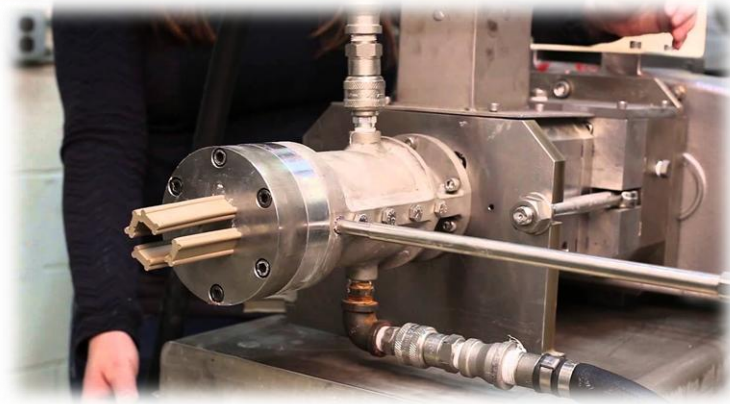


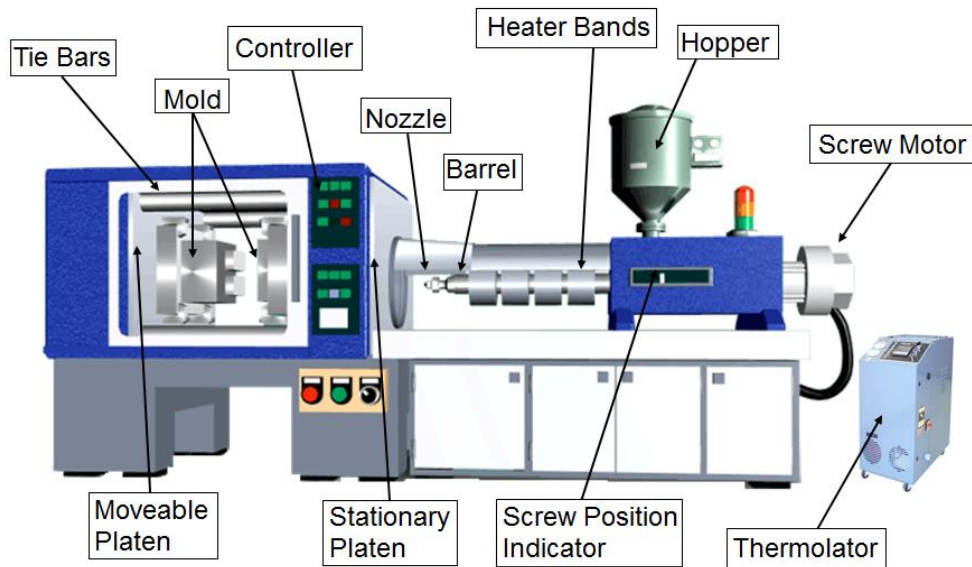
## HDPE PP PS ABS PC Granulating Recycling Line



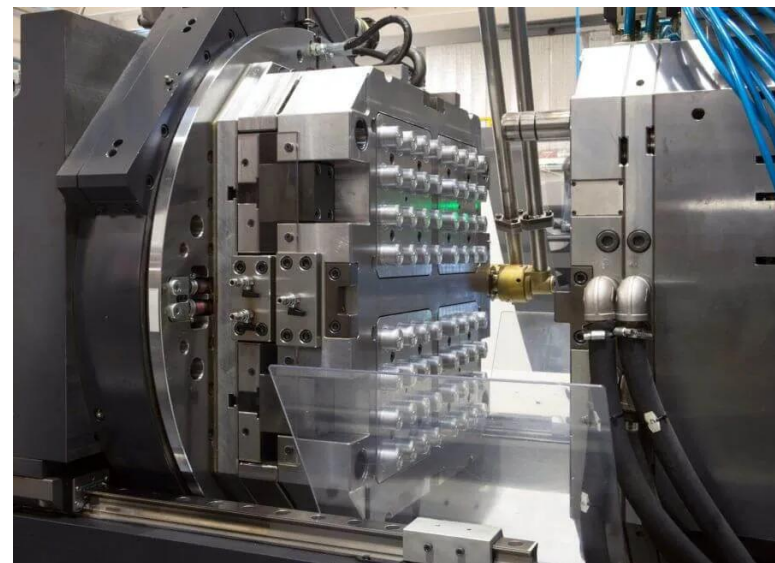
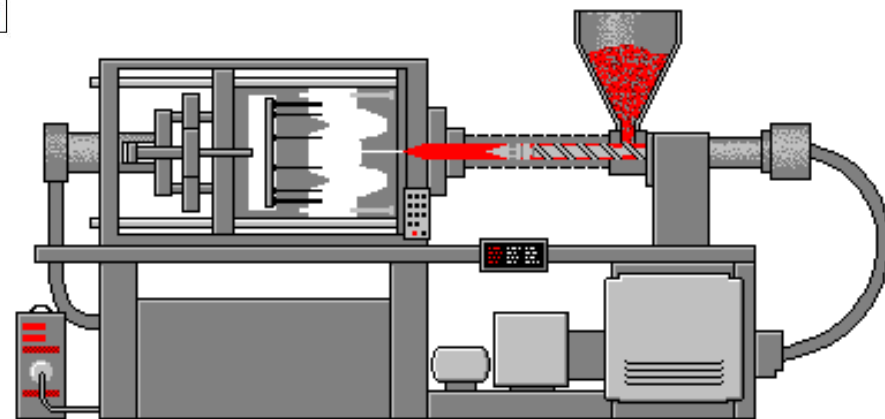


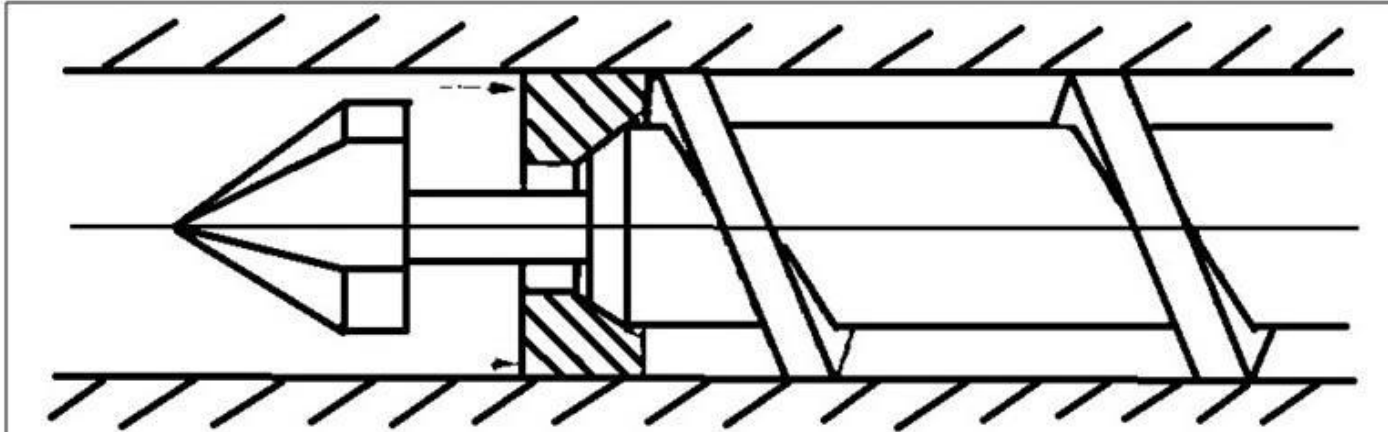
# Extrusion products





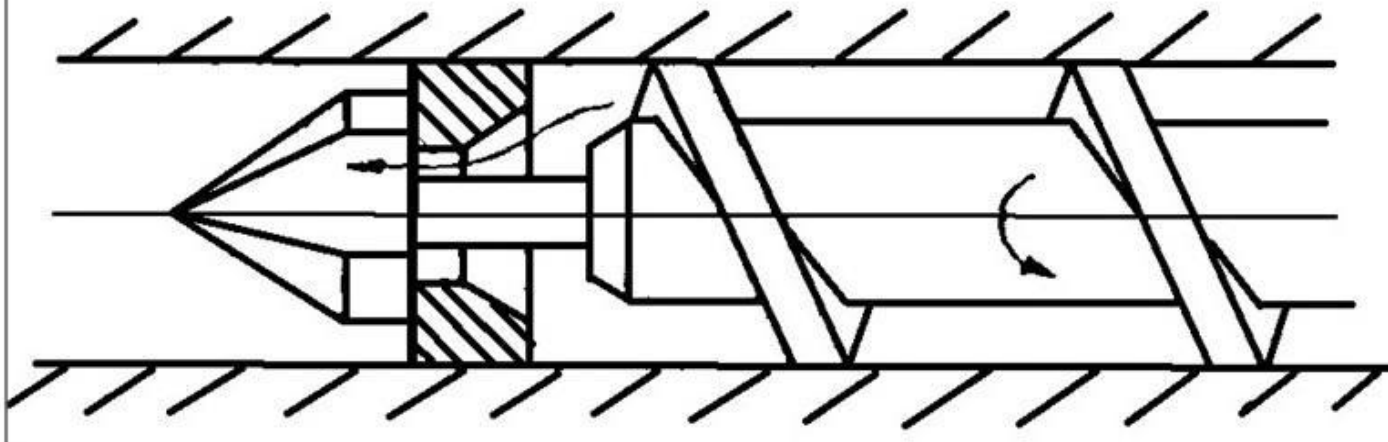
Clamping Injection Cooling Ejection





a) Ring closed – injection phase

b) Ring open - plastification





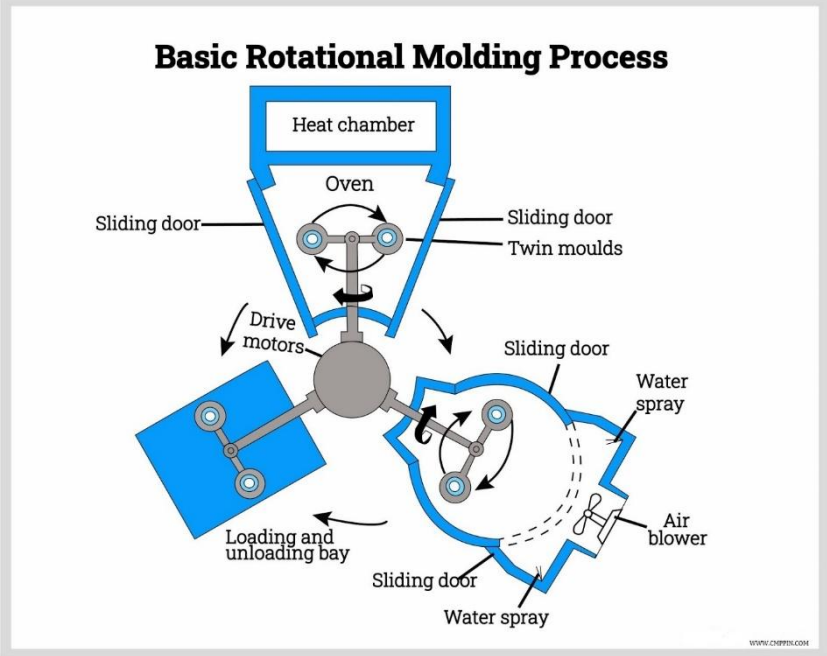
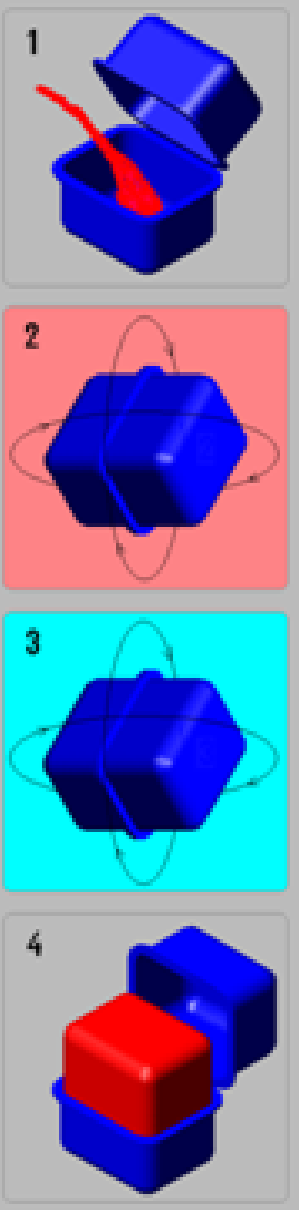
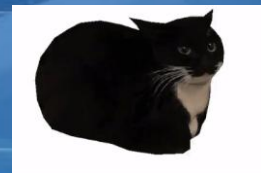
Légáteresztő aranyos disznó  
kutya szájkosar szilikon  
harapásgátló kutyapofa  
ugatáscsökkentő szájmaszk,  
állítható kistestű kutyákhoz  
Kék zöld

Lefordítva • [Adj visszajelzést](#)





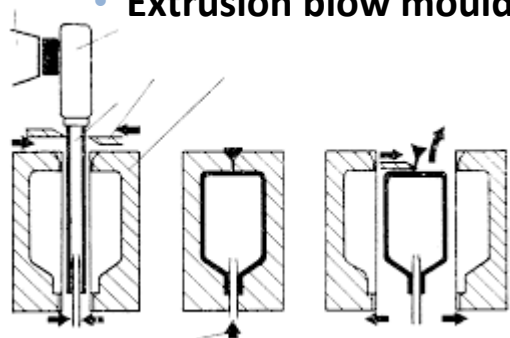
# Rotational moulding



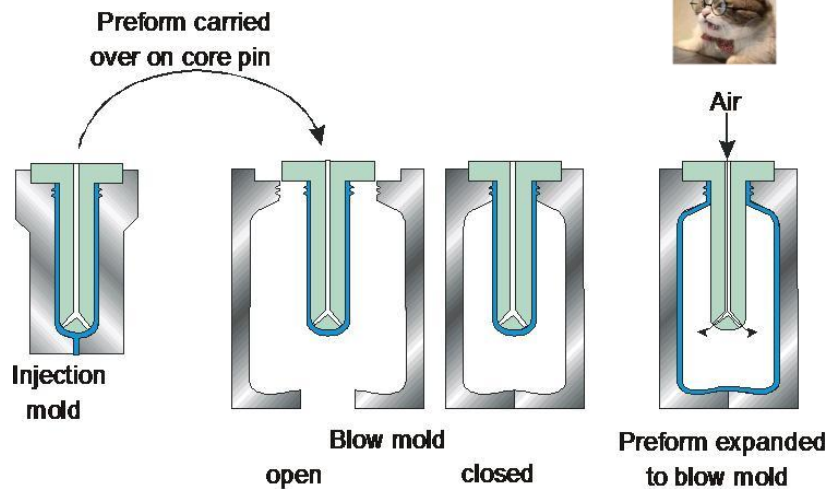


# Blow moulding techniques

- Extrusion blow moulding (HDPE)



- Injection blow moulding (PET)





# Thank you for your attention!

Dr. Ákos Pomázi

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