

Plastic Injection Moulding Terminology

Below are some of the key terms in Plastic Injection Moulding that will be useful for you to know.

A

Abrasion Resistance: The capacity of a material to resist mechanical activities that gradually remove material from its surface, such as rubbing, scraping, or erosion.

Acceptable runner/cavity ratio: A suitable ratio of runner to cavity should have runner systems built for high pressure drops, which reduce material consumption and boost runner frictional heating.

Additive: A material used with resin to improve or enhance specific properties.

Adhesive assembly: The process of using an adhesive to unite two or more plastic components.

Ageing: The process by which a substance changes over time in a certain environment, either improving or losing qualities.

Alloy: A composite material created, under certain circumstances, by combining copolymers or other polymers with elastomers or other polymers.

Anneal: (1) To relieve tension, heat a moulded plastic item to a specific temperature and then gradually cool it. (2) To release tension and lessen the harness, heat steel to a predefined temperature over the critical range and then gradually cool it.

Antistatic agent: Agents that reduce conductivity of the moulding material or the moulded object's surface when added (thus inhibiting the attachment of dust).

Aspect Ratio: The ratio of average wall thickness to total flow length.

Assembly: The process of assembling components using a variety of techniques.

Automatic mould: An injection, compression, or transfer mould that continuously runs through the whole moulding cycle—including ejection—without the need for human intervention.

B

Backflow: The process by which molten resin escapes the mould and re-enters the runners.

Backing plate: A plate that supports the bearings, pins, and mould of the injection tool.

Back pressure: The molten plastic material's reluctance to flow forward. Back pressure during moulding raises the melt's temperature, which improves colour mixing and material uniformity. On the other hand, cycle time rises with back pressure.

Balanced runner: A runner device intended to position every cavity at the same distance from the sprue.

Barrel: The area where resin is melted in the moulding press.

Blister: A kind of part defect is usually produced by gas or air bubbles and manifests as a small bubble or blister on the surface of a component.

Blow moulding: A process that involves sandwiching a heated, hollow plastic tube between two mould cavities and applying internal pressure to push the tube to take on the shape of the mould cavity. This procedure creates hollow objects like tanks, bottles, and so on.

Boss: The round projections on plastic components, frequently intended for fastening.

Bridge Tool: A temporary tool mould for limited output. It is constructed with the intention of producing pieces up until a large volume manufacturing mould is prepared.

Bubbles: Air pockets that have developed in the component's substance. Bubble sizes can change.

Burned: Manifesting blistering, discolouration, deformation, or surface degradation as a result of overheating a plastic during production or usage.

C

Case harden: This process hardens a steel piece's surface to a comparatively shallow depth.

Cast: This process involves pouring a fluid monomer-polymer solution into an open mould so that it may finish polymerizing and make a "plastic" item.

Cavity: A depression in a mould that typically forms the moulded part's exterior; the number of these depressions determines whether a mould is considered single or multi-cavity.

Centre gated mould: An injection or transfer mould in which the moulding material is injected into the cavity straight into the middle of the component, via a sprue or gate.

Chalking: A dry coating or look on a plastic surface resembling chalk.

Charge: The quantity of material utilised in a single cycle or at a time to load a mould.

Clamping plate: A plate that fits into a mould and is used to secure the mould to the moulding machine.

Clamping force: The pressure used in injection and transfer moulding to maintain the mould closed against the fluid pressure of the compressed moulding material inside the mould cavity(s) and runner system.

Cold slug: The first substance to enter an injection mould, as the material cools down below the moulding temperature as it passes through the sprue hole.

Cold slug well: An injection mould's space opposite the sprue hole is designed to catch the cold slug.

Composite: A non-homogenous structural substance made of a mix of components. The materials are usually a thermoset or thermoplastic resin on the one hand, and a strengthening agent on the other.

Compound: A combination of additives and resin(s), often created in a different machine that is located downstream of the main reactor.

Compression mould: A mould that is open when material is inserted and that forms the material by the application of heat and closing pressure.

Compression moulding: This thermoset moulding method involves filling the heated open mould cavity with the moulding compound, which is typically preheated. The mould is then closed and compressed, usually using a hydraulic press, to force the material to flow into the cavity and fill it completely. The pressure is maintained until the material cures.

Compression ratio: The volume available in an extruder screw's initial flight at the hopper divided by the last flight at the end of the screw.

Compressive strength: Calculated by dividing the crushing load at the specimen's failure by its initial sectional area.

Cooling channels: These are passageways or channels inside the mould body that allow a cooling substance to be circulated to regulate the surface temperature of the mould.

Cooling fixture: A block of wood or metal that is used to hold a moulded item in place after it has been withdrawn from the mould. It is used to keep the moulding in place until it cools down sufficiently to prevent noticeable deformation.

Core: (1) A male component of a die that partially forms a hole or recess. (2) A section of an intricate mould used to create undercut pieces. Typically, cores are pulled to one side prior to the mould's major parts opening. (3) A mould's channel for heat-transfer media circulation.

Core pin: Used for moulding a hole

Coring: The process of removing extra material from a moulded part's cross section in order to achieve a more consistent wall thickness.

Crazing: Tiny fissures that can penetrate a layer of plastic material or spread in a network on the surface or beneath it.

Creep: The dimensional shift a material experiences over time while under stress after its initial instantaneous elastic deformation.

Cycle: The whole, repeated series of actions that make up a process or a portion of a process. The amount of time that has passed between a specific point in one cycle and the same position in the next is known as the cycle time in moulding.

D

Damping: The process of a mass experiencing a decrease in amplitude.

Deflection temperature: Temperature at which a specimen deflects to a predetermined point under a certain stress.

Degassing: The process of briefly opening and shutting a mould in the beginning of the cycle to allow gas or air to escape from the heated compound.

Degradation: When a plastic is exposed to heat, light, oxygen, weathering, or any other external force, it undergoes a harmful change in its chemical structure, physical characteristics, or appearance.

Delamination: The splitting of a completed part's surface. Where the layers may split, strata or a fish-scale-like look may be apparent.

Density: A substance's mass per unit volume.

Diaphragm Gate: This filling technique lowers weld-line forms and increases filling rates in symmetrical cavity filling.

Dielectric strength: The voltage at which an insulator may operate without experiencing dielectric breakdown.

Differential cooling: When the temperature of the mould surfaces varies or when a portion of the component cools more slowly than another.

Dimensional stability: The capacity of a component to maintain its exact form.

Direct gate: A sprue flows straight into the mould cavity.

Discolouration: Any deviation from the materials or components specified colour.

Dispersion aids: Components that change the flow at the additive's entrance point to help in mixing or dispersing during the compounding process.

Dominant Flow Path: When two opposing flows meet, the dominant flow will turn the other flow around.

Draft: A little taper in a mould wall that makes it easier to take the moulded object out of the mould.

Drag Marks: A type of deep scrape or scratches on the component's surface that are often brought on by the part being ejected.

Drooling: When filling or firing a mould, molten resin may extrude or seep from the nozzle or nozzle sprue bushing region.

Drying: The process of removing moisture from resin pellets by subjecting them to a specific amount of heat and time.

Durometer: A tool for determining a material's degree of hardness.

Dwell: A brief period of time during the injection cycle when a mould is not fully closed due to a halt in the pressure applied to it.

E

Edge gate: the point where the runner on the dividing line enters the portion.

Ejection pin marks: A residual mark left by the ejection pin's profile on the component.

Ejection pin: A rod, pin, or sleeve used to force a moulded piece out of a mould cavity or off of a core.

Ejector return pins: Projections that, when the mould shuts, force the ejector assembly back.

Ejector rod: A rod that, upon mould opening, activates the ejector assembly.

Elastic memory: A property of some polymers that is shown by their propensity to return to a form or size that they once had.

Elasticity: A material's capacity to return to its initial dimensions as soon as a load that has produced deformation is removed.

Elastomer: A substance that resembles rubber that, when stretched repeatedly to at least twice its initial length at room temperature, will forcefully return to its original length when the tension is immediately released.

Elongation, Break: The difference between the two gauge markings' increased distance at the breakpoint and their initial distance apart divided by the latter.

Elongation, Yield: Calculated by dividing the difference between the initial and increased distances between two gauge marks at a yield point.

Engineering plastics: A general word for plastics that have better mechanical, chemical, and thermal qualities than commodity grades of resins, whether or not they contain fillers or reinforcements.

Extender: A filler that lowers the quantity of resin needed per unit value by being added to a plastic composite.

Extrudate: The material or product that comes out of an extruder, such as pipe profiles or films.

Extrusion: The technique of pushing melted plastic through a die to create continuous forms.

F

Fabricating: Using the right processes to create plastic goods. Plastics moulded into rods, tubes, sheets, extrusion, and other shapes by means of punching, cutting, drilling, tapping, fastening, or other mechanical devices.

Fan gate: A gate that disperses the opening across a larger region to assist lessen stress concentrations in the gate area. The usage of this kind of gate often results in less part warping.

Fatigue strength: The highest amount of cyclic stress that a material can bear for a predetermined number of cycles before failing.

Fill pattern: the material's advancing contours as the hollow fills in.

Fill pressure: The pressure needed to fill the cavity.

Fill time: The amount of time needed to fill the mould or cavity.

Fill: The process of filling a mould's cavity or cavities as necessary to produce a finished item or parts free of flash and porosity.

Filler: A comparatively innocuous material added to a plastic composite to lower costs and/or enhance certain physical characteristics, such impact strength, stiffness, and hardness.

Fines: The part of a powdered or granular substance made up of particles smaller than a given size is referred to as fines in the particle size categorization system used for moulding compounds and other similar materials.

Finish: An article's finalised look and surface texture.

Flash gate: Broad gate that extends from a runner that follows the mould separating line parallel to an edge of a moulded item.

Flash: Any extra material that forms at a seam or mould parting line and is joined to the component.

Flexural modulus: The ratio of the applied stress on a test specimen in flexure to the equivalent strain in the outermost components of the specimen.

Flexural strength, Yield: the degree to which a substance resists breaking when bent.

Flexural strength: The outer fibre's maximal stress at the point of breakage or cracking. This number is often greater than the tensile strength when it comes to polymers.

Flow balancing: Changing flow channels, especially runner sections, to ensure that each flow path inside a mould fills equally quickly and under equal pressure.

Flow leader: A localised thickening that promotes flow in a certain direction.

Flow marks: Improper melt flow into the mould results in wavy surface appearances on the moulded object.

Flow pattern: The sequential shape that the melt adopts when it fills the chamber.

Flow rate: The amount of material passing a fixed place in a unit of time.

Foaming agent: Any material that may create a cellular structure in a plastic mass, either by itself or in conjunction with other substances.

Fracture: A body's separation, often described as brittle or ductile.

Freeze off: The material's temperature drops to the point where it prevents the region it would normally fill with heat.

Frictional heating: Heat produced by the friction of molecules sliding past one another or over a surface.

G

Gate blush: A stain or irregularity in the gate region of an injection-moulded product.

Gate Trim: Plastic residue left behind after the component is cut off the runner or sprue; this plastic is typically cut flush with the component's edge.

Gate: The opening that allows molten resin to enter the cavity from the runner.

Glass transition: the transformation of an amorphous polymer from a fluid to a hard, brittle state.

Gloss: A material's sheen or lustre on its surface

Guide pins: Mechanisms that keep the core and cavity in the correct alignment when the mould shuts.

H

Hardener: A substance added to a material in order to participate in the curing reaction and increase or regulate it.

Hardness: A material's ability to withstand abrasion, indentation, and compression.

Haze: A material's foggy appearance brought on by light bouncing off surfaces or from within the specimen.

Heat stabilisers: These are additives that make a material more resilient to the damaging effects of heat exposure.

Hesitation effect: In areas with different thicknesses. An neighbouring thin area freezes off as the flow travels preferentially towards a thicker area, which fills up. The separation of the flow into thick and thin flow channels is the ideal location for gates.

Hopper dryers: Auxiliary equipment used to extract moisture from resin pellets.

Hopper loader: Auxiliary equipment used to automatically load resin pellets into a machine's hopper.

Hot/heated manifold mould: A thermoplastic injection mould that has its own heating components in the part that houses the runner system to keep the moulding material plastic and ready for injection into the cavities that insulate the manifold.

Hot-runner mould: A mould where the runners are heated and protected from the chilly voids. Hot-runner moulds provide scrap-free pieces.

Hot stamping: The process of engraving a roll of leaves into the face of a plastic material using heated metal dies.

Hygroscopic: able to absorb moisture quickly.

I

Impact modifiers: Additives that increase a material's resistance to impact force.

Impact resistance: The ability of plastic items to withstand fractures when subjected to high-speed, applied forces.

Impact Strength: A material's capacity to tolerate shock loads.

Injection Time: The amount of time needed to fill a mould or cavity.

Infusion Injection moulding: Used in the blow moulding process to produce the plastic particle that will be blown.

Injection moulding pressure: Pressure delivered to the moulding cylinder's cross-section.

Injection moulding: The process of creating items out of granular or powdered plastics—most frequently thermoplastics—by injection moulding involves feeding the material from a hopper into a heated chamber where it softens before being forced into a mould by a ram or screw.

Infusion pressure: Usually measured in PSI, pressure is the force applied to the injection screw or ram's face during material injection into the mould.

Insert moulding: The technique of moulding plastic around prefabricated metal inserts is known as insert moulding.

Insert: a detachable portion of the mould that gives that portion of the mould improved heat transferability, wear resistance, or a moveable component form.

Insulated runner: A mould in which the runners are heated and kept separate from the cooled cavities. Hot-runner moulds provide scrap-free pieces.

Isobar: A pressure-equalising line. The cavity pressure at each location along an isobar is the same as it is at all other points.

Isochrone: A line with constant time. Every point on an isochrone fills simultaneously with all other points on the same isochrone.

Isotherm: A temperature line. The temperature at every position along an isotherm is the same as it is at every other place.

Izod impact strength: The difference in energy of a swinging pendulum before and after it smashes a notched specimen held vertically as a cantilever beam.

J

Jetting: A turbulence in the melt that results from a gate that is too small or from a thin portion that thickens quickly.

Jig: A device used in manufacturing to keep assembly components in place.

K

K-Factor: A word that can refer to either the coefficient of thermal conductivity or the value of thermal insulation.

Knit lines: A line or lines formed when melted material flows together and has the potential to weaken or shatter a component.

Knockout pin: A tool used to remove a moulded object from the mould.

L

Laminar flow: The solidification of the layer in contact with the mould surface, which serves as an insulating tube through which material flows to fill the remaining cavity in the mould, occurs simultaneously with the laminar flow of thermoplastic resins in a mould.

Land (Gate Area): The gate's dimension runs parallel to the melt flow's direction.

Land area: The region on a mould where the surfaces come into touch with one another when the mould is closed.

Linear mould shrinkage: The difference in size between the component and the mould cavity

Linear thermal expansion: The fractional change in a material's length for a unit change in temperature.

Liquid Injection Moulding (LIM): This technique entails using an integrated system to precisely measure, blend, and inject two-component liquid resin compositions into a mould that is clamped under pressure.

Low temperature flexibility: A plastic's capacity to bend at lower temperatures without breaking.

Lubricant: Internal lubricants encourage resin flow while having no effect on a compound's ability to fuse. External lubricants facilitate the smooth flow of melt across die surfaces by promoting release from metals.

M

Machine shot capacity: The greatest volume of thermoplastic resin that the injection ram can move or inject in a single stroke.

Mar resistance: The ability of shiny plastic surfaces to withstand abrasive wear and tear.

Melt flow rate: The weight of the polymer extruded through an aperture at a certain pressure and temperature determines the molten viscosity of the polymer.

Melt strength: The plastic's strength when it is molten.

Memory: The propensity of a plastic product to shrink back to a size that it was originally manufactured in.

Mould changer: An automated tool that swaps out a machine's original mould for a new one.

Mould frame: A set of steel plates that hold the cores, cavities, runner system, cooling system, ejector system, and other parts of the mould.

Mould temperature: The constant temperature that the mould is kept at.

Mouldability: The ability to form without breaking or acquiring defects as a result of the polymer moving during the gelation process.

Moulding cycle: The amount of time needed to complete all of the steps in a moulding press's sequence in order to produce a single set of moulded goods.

Moulding pressure: The force used on the ram of an injection press or machine to push the fully melted plastic into the mould cavities.

Moulding sensitivity: The variation in the temperature of the melted material at the component and the pressure required to fill the cavity caused by variations in the injection time and barrel melt temperature.

Moulding window: The range of moulding conditions that allow for the successful moulding of a component.

Moving platen: An injection moulding machine's platen that is moved by a mechanical toggle or hydraulic ram.

Multi-cavity mould: A mould with two or more impressions that may generate completed goods in a single machine cycle.

Multidirectional flow: When filling, the flow direction shifts, orienting the material in various directions and potentially causing flow markings, strains, and warping.

Multi-shot moulding: In a single moulding cycle, two or three materials are sequentially injected into a single mould.

N

Naturally balanced runner system: Every runner in a succession in one flow in the mould is the same runner in the same succession in all other flows.

Nest plate: A mould-inserted retainer plate including a recessed section for cavity blocks.

Non-Fill: The mould or mould cavities are not filled all the way to the top.

Non-Return valve: A screw tip that opens to permit material flow in one direction but shuts to stop material from flowing backward and to fill the mould with material (check valve).

Notch sensitivity: The degree to which the presence of a surface notch or abrupt change in section increases a material's susceptibility to fracture.

Nozzle: a hollow metal hose used to provide a pressure-sealed seal between the injection machine's heating cylinder and mould that is inserted into the extrusion end of the cylinder.

O

Orifice: opening

Over-moulding: A technique where a second shot is injected to enclose the first shot after the mould cavity has been partially filled with one plastic.

Overpack: As the material reaches the other locations, the melt will continue to pack the area that has the easiest flow channel filled first.

P

Packing: The process of filling a mould cavity or cavities to capacity without placing an excessive amount of stress on the moulds or producing flash on the completed pieces.

Part picker: An additional device, often fixed platen mounted, that reaches into the open mould to retrieve pieces and extract them before the subsequent moulding cycle.

Partially-balanced runner system: A system of runners that is partially balanced consists of both naturally occurring and artificially balanced runners.

Parting line: Mark the area on the component where the mould's two halves come together.

Peeling: A blister that has peeled open.

Pellets: Uniformly sized tablets or granules made of resins or resin mixes with compounding additives that have been chopped into short segments and extruded in order to prepare them for moulding operations.

Pigment: A plastic compound with a high proportion of pigment that must be mixed with base resin in the right ratios to produce the desired final colour.

Pinpoint gate: Typically used on hot-runner moulds, is confined to a diameter of 0.030 inches or smaller.

Pit: A flaw, a tiny indentation on the plastic's surface.

Plastic deformation: A shift in an object's dimensions caused by a load that does not return when the load is released.

Plasticity: A material's capacity to bear constant, irreversible deformation under stresses greater than its yield value without breaking.

Plasticise: To add a plasticiser to a substance to make it softer, more flexible, and/or more mouldable.

Plasticiser: A material or substance added to a material (typically an elastomer or plastic) to improve the material's extensibility, workability, or flexibility.

Platens: The press mounting plates that the mould halves are fastened to.

Plate-Out: As a result of an ingredient's extraction and deposition during the plastics manufacturing process, an unfavourable coating progressively developed on the metal surfaces of the moulds.

Poisson's ratio: The constant that connects the changes in dimensions that happen when a material is stretched.

Polymer structure: The relative locations, spatial arrangement, and molecular freedom of atoms inside a polymer molecule.

Polymerisation: The joining of the molecules of a monomer, or simple material, to create larger molecules with a molecular weight greater than the monomer's.

Preform: In the initial stage of a two-stage injection moulding and blow moulding process used to create bottles or containers, a pre-shaped plastic item created by injection moulding machines.

Pressure pads: Hardened steel reinforcements placed around dead spots in mould faces to assist the ground withstand the last pressure before collapse.

Processing aids: Specialised additives designed to enhance the injection procedure.

Prototype: A draft mould that serves as the foundation for the final mould.

Pulled gate: The area where the component was attached to the runner or sprue that was stretched or pushed out from the surface.

Purging: The process of cleansing a particular colour or kind of material from an extrusion or injection moulding machine by pushing it out with a new colour or material that will be used in a later production run, or with a different purging material that is compatible.

R

Ram: The plasticator barrel's screw moving forward to drive the melt into the mould chamber.

Reaction Injection Moulding (RIM): A low-pressure injection technique that entails the high-pressure impingement mixing of two or more reactive liquid components into a closed mould.

Reagent resistance: A plastic's capacity to tolerate chemical exposure.

Recovery time: The amount of time it takes for the screw to revolve, produce a shot, and then settle back into place.

Reinforced plastic: A blend of plastic with implanted fibre reinforcements and tensile characteristics significantly higher than those of the parent resin.

Release agent: a substance sprayed over the mould to make component removal easier.

Resin: Any polymer that serves as a foundational component for plastics.

Restricted gate: A tiny hole in an injection mould that connects the runner and cavity. This gate easily separates from the runner system when the part is expelled.

Retainer Plate: The plate used during moulding to hold demountable components including bushings, ejector pins, guide pins, and mould voids.

Retractable cores: Used when moulding components in cavities that are not perpendicular to the direction in which the item is expelled from the mould

Rib: A moulded part's reinforcing element.

Ring gate: Allows the melt to circulate around the core prior to filling the hole by encircling it.

Rockwell Hardness: A measurement of a material's surface hardness.

Runner balancing: The process of creating a runner system that fills all of the cavities simultaneously at the proper temperature for the component by applying the right quantity of melt at the right pressure.

Runner design: not only getting the melt into the cavity, but also utilising the runner as a flow control device by situating the gate and adjusting the runner's size to regulate the filling pattern inside the cavity.

Runner system: In injection moulding, this phrase can refer to the sprues, runners, and gates that make up the overall resin feeding system.

Runner: The feed tube of an injection mould, typically with a circular cross section, that joins the cavity gate and sprue.

Runnerless moulding: A mould where the runners are heated and protected from the chilled cavities.

S

Screw travel: The amount of forward motion the screw takes when the mould cavity is being filled.

Shear rate: The speed at which a melted layer covers a layer beneath it.

Shear strength: The highest stress necessary to shear the specimen so that the moving portion entirely clears the stationary portion.

Shear stress: The shearing force divided by the area.

Short shot: When the mould or its cavities are not filled all the way to the top.

Shot capacity: This is the most plastic weight that can be displaced or injected in a single injection stroke, usually measured in polystyrene.

Shot: A single moulding machine cycle.

Shrinkage allowance: The dimensional allowance required in moulds to account for the plastic compound's cooling-related shrinkage.

Shrinkage: Contraction that occurs when a portion cools completely or partially.

Side-draw Pins: Projections that must be removed prior to the item being expelled from the mould in order to core a hole in a direction other than the mould's closure line.

Sink mark: A depression caused by a large local change in the wall section that appears on the part's surface.

Skin: A layer at the material's surface that is comparatively thick.

Slide: A protrusion inside the mould that forms the component's geometry.

Slip agent: Lubricating additive used both during and just after plastic production.

Solvents: Compounds with the capacity to dissolve other substances.

Specific gravity: The ratio of a material's density to that of water at ambient temperature (73F) and standard atmospheric pressure (1 ATM).

Specific volume: The reciprocal of density, or the volume of a material's weight unit.

Spiral flow: A test used to examine the processability of various resins that involves injecting a sample into a spiral mould.

Splay marks: Abnormal racing of the melt in the mould resulting in scant or surface flaws on the moulded component.

Split-Ring mould: Built in a channel using a split-ring mould, allowing undercuts to occur in the moulded component.

Sprue bushing: An aperture for transporting the melt that is created by a hardened steel insert in the mould that takes the nozzle.

Sprue gate: A hole that allows melt to go from the nozzle into the mould chamber.

Sprue lock: The resin that an undercut keeps in the cold-slug well.

Sprue: The feed hole made in injection moulding that sits between the runner system or cavity and the nozzle.

Stabiliser: A substance added to various plastics to help keep their chemical and physical characteristics at appropriate levels for the duration of the material's manufacturing and/or the components manufactured from it.

Stack moulds: Made up of two or more identical moulds arranged one below the other so that more pieces may be produced in a cycle.

Stationary platen: The huge front plate of an injection moulding press, to which the mould's front plate is fixed.

Stiffness: The ability of a material to withstand elastic displacement under stress.

Strain: The length change per unit of original length, or the ratio of the test specimen's elongation to gauge length.

Stress: The force per unit area applied that causes or tends to cause deformation in a body.

Stress concentrators: High stresses are concentrated at abrupt changes in the part's shape.

Stress cracking: Three different forms: 1. Cracking by thermal stress. 2. Physical stress cracking. 3. Cracking due to chemical stress

Stress relaxation: Constant effort with a steady decline in tension.

Stress-Crack: A plastic's internal or external cracks brought on by tensile strains lower than its momentary mechanical strength.

Striations: Surface marks that are visible on moulded parts to show the direction of melt flow or impingement.

Stripper plate: A plate used to remove force plugs or core pins from a moulded item. The mould opening initiates the stripper plate's function.

Structural foam moulding: The method of moulding thermoplastic products with a cellular core and integrated solid skins in a single step.

Subgate: The doorway from the runner that leads to the area below the dividing line.

Suck-back: The screw returns too soon once the melt has cooled down due to insufficient pressure on the sprue. Sink marks on the completed component might result from some of the melt expanding back into the nozzle in the cavities or runner system.

T

Tab Gate: A tiny detachable tab, often perpendicular to the component for ease of removal, that is roughly the same thickness as the moulded object.

Tackifiers: Additives that improve a material's capacity for bonding or adhesiveness.

Tensile modulus: The proportion of nominal stress to corresponding strain in a material below its proportional limit.

Tensile strength/ break: The highest stress that a material can bear before cracking under a force that stretches it.

Tensile strength/ yield: The highest stress at which a material can be stretched without breaking.

Thermal conductivity: A material's capacity to transfer heat.

Thermal degradation: Heat-induced material deterioration.

Thermal Shut-Off: Obstruction is caused by the substance freezing.

Thermoelasticity: The rubber-like flexibility that a stiff material exhibits when its temperature rises.

Thermoforming: The method of moulding a thermoplastic sheet into a three-dimensional shape by clamping it within a frame and heating it until it becomes pliable and soft.

Thermoplastic elastomers: a class of polymers that may be stretched repeatedly without causing the form of the unstressed section to change.

Thermoset: A polymer that remains solid when heated

Thermal stress cracking (TSC): Excessive exposure to high temperatures can cause some thermoplastic resins to craze and break.

Thin wall moulding: The moulding of plastic components with wall thicknesses is known as thin wall moulding.005 through.060.

Tie-Bar Spacing: The distance on an injection moulding machine between the horizontal tie-bars.

Toggle: A kind of clamping device that presses on the knee joint to apply pressure. In a press, a toggle is used to shut and apply pressure to a mould.

Tolerance: A defined tolerance for errors in measurements, weighing, and other related processes, as well as for variations in weight or dimensions from the norm.

Tonnage: An indicator of the injection moulding machine's clamping force that is commonly used to classify these machines.

Transfer moulding: The method of creating objects by combining plastic ingredients in a chamber and then packing the entire mixture into a heated mould to harden it.

Transition temperature: The temperature at which a polymer transitions from a hard and comparatively brittle state to one that is fluid or stretchy.

U

Ultimate strength: The highest unit stress that a material can bear during a compression, tension, flexural, or shear test when an applied load is applied.

Ultrasonic insertion: Vibratory mechanical pressure applied at ultrasonic frequencies is used to insert a metal insert into a thermoplastic component.

Undercut: An extension or depression that makes it difficult to remove a two-piece rigid mould.

Underflow: The prevailing flow over the other of two opposing flows. The reduced flow reverses direction, resulting in a weaker structural structure and inferior surface appearance.

Unidirectional Flow Pattern: Throughout the filling, plastic flows in a single direction with a straight flow front.

Uniform Cooling Time: To prevent warping, the part should cool at the same rate throughout.

V

Vacuum forming: The technique of drawing a heated plastic sheet up against the surface of a mould by forcing air out from between the mould and the sheet.

Valve gating: A kind of gate in which spring tension holds a pin within the gate or channel. This gate compresses the plastic in the runner as the injection stroke advances.

Vent: A small hole or tube carved into the cavity to release gases or air as the melt fills it.

Vented barrel: A unique barrel unit that has a vent opening above the screw's compression area to let gases escape before injecting melt into the mould.

Vertical flash ring: In a positive or semi-positive mould, the space between the force plug and the cavity's vertical wall. Furthermore the ring of extra melt that enters this clearance area after escaping the cavity.

Vicat softening point: The temperature at which a specimen will be penetrated by a flat-ended needle with a uniform rate of temperature increase and under a certain stress.

Virgin material: Any resin or plastic compound that hasn't undergone any processing or usage outside of what was necessary for its initial production.

Viscoelasticity: Although plastics have properties similar to those of solids, such as elasticity, strength, and form-stability, they also have properties similar to liquids, such as flow, which varies with time, temperature, pace, and quantity of loading.

Viscosity: A liquid's resistance to flow.

Void: An empty void in a solid substance.

W

Wall thickness: The plastic part's cross sectional thickness.

Warpage: A plastic object's post-mould dimensional deformation.

Water absorption: A thermoplastic material's capacity to take in water from its surroundings.

Welding: There are numerous heat-softening techniques for joining thermoplastic parts, including butt fusion, spin welding, ultrasonic, and hot gas.

Wisps: Finer than strings, yet just as similar. When the mould is overpacked or somewhat pushed open, they might also appear as faint flashes. Wisps can also result from misalignment or mould-parting-line degradation.

Y

Yield point: The first point on the stress-strain curve where a rise in strain happens without an increase in stress is known as the yield point in tensile testing.

Yield strength: The stress at which a material displays a certain limiting divergence from the proportionality of stress to strain.

Young's Modulus: The ratio of tensile stress to tensile strain below the proportional limit.