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Profile Extrusion Terms

Adiabatic Extrusion – A type of extrusion in which the only source of heat is the conversion of drive energy through the viscous resistance of the plastics mass in the extruder.

Back Pressure – The resistivity of molten plastic material to forward flow.

Barrel – The part of the extruder encasing the screw or plunger.

Barrel Liner – The sleeve forming the inner surface of the barrel.

Calendaring – The process of pressing or smoothing material between rollers.

Cladding – Sometimes referred to as “sidings,” it is extruded PVC-U boards that are used as outdoor weather-resistant façade panels.

Compound – Any plastic material prepared for subsequent manufacturing processes, specifically in extrusion, molding or calendaring.

Compression Section – The transition section of a screw channel in which a reduction in the screw channel volume occurs.

Cooling Tank – A tank typically containing water through which extrusion is constantly passed for cooling.

Crosshead Die - An extrusion die which produces an extrudate on an axis which is at an angle to that of the extruder barrel.

Cure – The technique of cross-linking a plastics material.

Decompression Section – The section of a two-stage extruder in which an increase in screw channel volume occurs.

Die – The component on a plastics extruder affixed to the extruder head through which the melt is pushed to form the desired profile.

Die Plate – The main support for the punch or mold cavity.

Draw down - Reduction in thickness of plastics emerging from the die by controlling the haul off speed

Dry Blend – A free flowing blend of compound or resin and other ingredients as prepared for an additional manufacturing operation specifically for extrusion or molding.

Embossing - The production of embossed film or sheeting.

Embossing roll - A roll having a patterned surface used to produce embossed sheeting.

Extrudate – The product or result of an extrusion process.

Extruder head - A component which may be attached to the discharge end of the extruder barrel to house the die.

Extruder size - The nominal inside diameter of the extruder barrel.

Extrusion - A continuous shaping of plastic material by forcing it under pressure through a die.

Extrusion Coating – A coating technique in which molten plastic feeds directly from an extruder die into a nip-roll assembly combined with the substrate

Extrusion Pressure - The pressure of the melt at the discharge end of the screw.

Extruder Size – The minimal inner diameter of the extruder barrel.

Gelation (compounding) - A stage in compounding material, at which it first becomes a coherent mass.

Haul-off – Also called a “caterpillar,” it is an apparatus used for the continual removal of extrudate from the die.

Heat Aging – The unique process of aging a thermoplastic or thermoset product and examining the percentage of retained physical and chemical properties after exposure to heat for a prolonged period of time.

Heating Zones - Parts of the barrel, head and die arranged for independent temperature control.

Length-to-diameter ratio (L/D ratio) - Effective screw length divided by the screw diameter and commonly expressed as a ratio to unity.

Masterbatch - A compounded resin or additive already optimally dispersed in concentration and is compatible with the main resin in the process flow.

Matting - The process of rendering a polished surface uniformly dull.

Melt – Extrusion material when heated to a molten plastic condition.

Metering Section - The flighted portion of the screw at the discharge end in which the melt is forced at a controlled rate towards the die.

Melt – Any extrusion material heated to a plastic condition.

Melt Strength – A term that refers to the strength of molten plastic.

Outer Die Ring – The element of tubing die that shapes the outer surface of a tube.

Pellets – Resins or mixtures of resins with compounding additives similar in shape or size that have been extruded or chopped into short segments to prepare them for molding operations.

Post Cure - To continue the cure of a molded article by a subsequent heating process.

Processing Aid - An additive or component in a resin to facilitate processing.

Ram Extruder – A barrel with a temperature control, wherein a plunger pushes material in a melted state to the die.

Ram Pressure - Used colloquially for the total force applied by a hydraulic ram, equal to the hydraulic pressure multiplied by the ram area.

Resin – Any of several physically similar polymerized synthetics or chemically altered natural resins, such as thermoplastic materials (polyvinyl, polystyrene, polyethylene) or thermosetting materials (polyesters, epoxies, silicones used with fillers, stabilizers, pigments).

Screw – A helically grooved rotating element inside the barrel of a screw extruder. The main purpose of a screw is to melt and feed raw material from the feeder to the die, also homogenizing, compressing and pressurizing the material.

Screw diameter - The diameter developed by the rotating flight land around the screw axis.

Screw Extruder – A machine comprised of a barrel with a temperature control, housing one or more rotating screws which pass plastic material from the feed aperture and the moves it in the form of melt under pressure through a die.

Take-up – An apparatus for reeling extruded material.

Thermoset – A term that refers to the family of materials that can be melted only once during the original processing and cannot be reprocessed after the original part is made.

Thermoplastic – Any material, such as polyethylene, PVC and ABS, which can be re-melted and reprocessed without considerable loss of properties or scrap loss.

Torpedo – An apparatus at the discharge stage of the screw to finish homogenizing and blending the melt.

Transition Section - The flighted portion of the screw between the feed and discharge sections in which the extrusion material becomes a melt.

Travelling Saw - A saw which travels with the extrudate while cutting it to length.

Trunking - An extruded PVC-U channel used to contain and protect pipes or cables.

Twin screw Extruder - An extruder with a pair of screws working together in a common barrel.

Two-stage Extruder- A screw extruder designed so that the pressure of the extrusion material drops substantially part way along the screw.

Two-stage Screw - A screw for use in a two stage extruder comprised of a decompression section which is before the final metering section.

Vacuum Sizing- A procedure utilizing a sizing die with a vacuum applied to the outer surface of the extrudate.

Vacuum Tank- A cooling tank operating under reduced pressure to control the dimensions of the extrudate.

Vent - A hole or groove in a mold to allow air or volatile matter to escape during the molding operation.

Vented Extruder - A two-stage screw extruder with an opening part way along the barrel for the removal of air and volatile matter from the plastics material.

Vinyl – A generic term for PVC, one of various compounds of ethylene that are polymerized to form resins and plastics (e.g. polyvinyl or polyethylene plastics).

Weld line - A mark formed by the union of two or more streams of material flowing together.

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