# GLOSSARY OF TERMS

**Acceptance** - The act of an authorized representative of the purchaser by which the purchaser assumes for himself, or as agent of another, ownership of existing and identified supplies tendered, or approves specific services required, as partial or complete performance of the contract on the part of the contractor.

**Applied Skin** - A thin surface of elastomeric material.

**Audit** - Systematic and independent examination and evaluation to determine whether results comply with planned arrangements.

**Autoclave** - A pressure vessel into which materials or articles can be placed and exposed to steam under pressure. It is commonly used for vulcanization.

**Backrinding** - Defect in which the rubber adjacent to the mold parting line shrinks below the level of the molded product, often leaving the parting line ragged and torn.

**Batch** - The product of the one mixing operation.

**Bench Marks** - Marks of known separation applied to a specimen and used to measure strain.

**Blister** - A cavity or sac that deforms the surface of a material.

**Bloom** - A liquid or solid material that has migrated to the surface of a rubber, thereby changing the appearance of the rubber.

**Bulk Density** - The weight in air of a unit volume of material including both permeable and impermeable voids normal to the material.

**Capability Analysis** - Statistical examination of a process to determine whether the process is contained within specification tolerance.

**Cell** - A single small cavity surrounded partially or completely by walls.

**Cellular Material** - A generic term for materials containing many cells (either open, closed, or both) dispersed throughout the mass.

**Cellular Rubbers** - Rubber products which contain cells or small hollow receptacles. The cells may either be open or interconnecting or closed and not interconnecting.

**Closed Cell** - A cell totally enclosed by its walls and hence not interconnecting with other cells.

**Collapse** - Inadvertent densification of a cellular material during its manufacture resulting from breakdown of its cellular structure.

**Compound** - An intimate admixture of a polymer with all the ingredients necessary for the finished article.

**Compression Set** - The residual deformation after removal of the force which has subjected the specimen to compression.

**Control Plan** - A formal written description for controlling processes, addressing all critical and significant characteristics, to assure the repeatability of the processes.

**Cored Cellular Material** - Cellular material containing a multiplicity of holes (usually, but not necessarily, cylindrical, in shape) molded or cut into the material in some pattern normally perpendicular to the largest surface, and extending part or all the way through the piece.

**Corrective Action** - Steps undertaken to correct, change and improve a process which has produced product that does not meet requirements or is out of statistical control.

**Cure** - The act of vulcanization. See vulcanization.

**Cut** - The distance between cuts or parallel faces of articles produced by repetitive slicing or cutting of long preshaped rods or tubes such as lathe cut washers.

**Damping** - The extent of dissipation of oscillatory motion and the consequent decay of the motion.

**Decay** - Internal friction in any free vibratory system will cause the motion to gradually decrease to the vanishing point. This decrease is frequently called “Decay.”

**Dense Rubber** - A solid rubber product with no voids or cells.

**Design of Experiments (DOE)** - A formal pattern for conducting experiments and making observations about the relationships among a limited number of factors, deliberately varied to obtain as much information as possible from a minimum number of experiments.

**Durometer** - An instrument for measuring the indentation hardness of rubber; also, sometimes used as a synonym for hardness.

**Expanded Rubber** - Cellular rubber having closed cells made from a solid rubber compound.

**Failure Mode and Effect Analysis (FMEA)** - An analytical technique that provides a methodical way to examine a design or process for possible ways in which failure could occur, followed by an analysis of the causes of potential failure.

**Fillet** - A narrow concavely curved strip of rubber in the angle where the rubber and insert meet in a molded rubber product.

**Finish, Mold** - The quality or appearance of the machined surface of a mold.

**Finish, Product** - The quality or appearance of the surface of a rubber product.

**Fissure** - A split or crack in a cellular material.

**Flash** - Excess rubber on a molded product resulting from cavity overflow at the parting lines where the mold sections are separated.

**Gasket (Mechanical)** - A deformable material clamped between essentially stationary faces to prevent the passage of matter through an opening or joint.

**Gate** - (rubber injection or transfer mold) - The orifice used to

control the flow of rubber, and through which a shaped cavity in a mold is filled with rubber.

**Grain** - The uni-directional orientation of rubber or filler particles resulting in anisotropy of a rubber compound.

**Insert** - A part, usually metal, which is placed in a mold and appears as an integral part of the molded product.

**Inspection** - The examination and testing of supplies or services (including, when appropriate, raw materials, components, and intermediate assemblies) to determine whether they conform to contract requirements.

**Inspection By Attributes** - Inspection whereby either the unit of product is classified simply as conforming or nonconforming, or the number of departures from requirements is counted and recorded with respect to a given requirement or set of requirements.

**Inspection By Variables** - Inspection wherein a specified quality characteristic on a unit of product is measured on a continuous scale, such as pounds, inches, feet per second, etc., and a measurement is recorded.

**IRHD (International Rubber Hardness)** - For complete definition see ASTM D 1415-88 Standard Test Method for Rubber Property - International Hardness.

**Lot (Inspection)** - A specific quantity of similar material, or a collection of similar units, offered for inspection and acceptance at one time. A lot is either accepted or rejected as a whole on the basis of examination and/or test carried out on a portion of the lot.

**Mandrel** - A bar, serving as a core, around which rubber is extruded, forming a center hole.

**Open Cell** - A cell not totally enclosed by its walls and hence interconnecting with other cells.

**Piece** - The portion of the sample that is prepared for testing.

**Porosity** - The presence of numerous small cavities or open spaces.

**Post Cure** - A second cure that is sometimes given to products after an original shaping or performing partial cure.

**Preferred Numbers** - Preferred numbers are the conventionally rounded off term values or geometric series, including the integral powers of 10 and having as ratios the following factors:

$$\sqrt[5]{10}\ \sqrt[10]{10}\ \sqrt[20]{10}\ \sqrt[40]{10}\ \sqrt[80]{10}$$

**Source:** *International Standards Organization (ISO) Recommendation R-3, Preferred Numbers.*

**Process Capability** - The results of the monitoring of a process to determine if specifications are being met.

**Quality Assurance** - Planned actions necessary to provide adequate confidence that a product will satisfy given requirements for quality.

**Quality Function Deployment (QFD)** - A management system which involves all elements in the designing, manufacturing, and marketing of a product.

**Quality Plan** - A formal comprehensive written scheme that assures repeatability and achieves excellence in a process or product.

**Rebound** - Rebound is a measure of the resilience, usually as the percentage of vertical return of a body which has fallen and bounced.

**Register** - The accurate matching of the plates of a mold.

**Reliability (gage)** - Overall performance of measuring equipment, taking into account accuracy, repeatability, reproducibility, stability, and linearity.

**Repeatability (gage)** - The variation in measurements obtained when one operator uses the same gage for measuring the identical characteristics of the same parts.

**Reproducibility** - The variation in the average of measurements made by different operators using the same gage when measuring identical characteristics of the same parts.

**Resilience** - The ratio of energy output to energy input in a rapid (or instantaneous) full recovery of a deformed specimen.

**Resonance** - In forced vibration systems resonance exists when the exciting frequency exactly equals the natural frequency of the spring (rubber body) and mass system.

**Rubber** - A material that is capable of recovering from large deformations quickly and forcibly, and can be, or already is, modified to a state in which it is essentially insoluble (but can swell) in boiling solvent, such as benzene, methyl ethyl ketone, and ethanol-toluene azeotrope.

A rubber in its modified state, free of diluents, retracts within 1 min. to less than 1.5 times its original length after being stretched at room temperature (18 to 29 °C) to twice its length and held for 1 min. before release.

**Rubber Latex** - Colloidal aqueous emulsion of an elastomer.

**Sample** - A unit, collection of units, or a section of a unit taken from a sampling lot.

**Sample (Inspection)** - The number of units taken from a lot for the purpose of examination or test.

**Sampling Plan** - A procedure which specifies the number of units of product from a lot which are to be inspected, and the criterion for acceptability of the lot.

**Shore A Hardness** - An indentation method of rating the hardness of rubber using a Shore Durometer with the A scale from 0 to 100.

**Shrinkage** - Contraction of molded rubber upon cooling.

**Skin** - A relatively dense layer at the surface of a cellular material.

**Splice** - The uniting of 2 parts of a rubber product to form a continuous length.

**Sponge Rubber** - Cellular rubber consisting predominantly of open cells made from a solid rubber compound.

**Spring Rate** - Spring rate is the ratio of the stress (force) to the strain (deflection).

**Statistical Process Control (SPC)** - The use of statistical techniques as a means of monitoring and controlling the quality of a product or process.

**Surface Ground** - The grinding of the surface of a rubber product to produce close dimensional tolerances.

**Swelling** - The increase in volume or linear dimensions of a specimen immersed in a liquid or exposed to a vapor.

**Tear Strength** - The maximum load required to tear apart a specified specimen, the load acting substantially parallel to the major axis of the test specimen.

**Tensile Strength** - The maximum tensile stress applied during stretching a specimen to rupture.

**Tensile Stress** - The applied force per unit of original cross-sectional area of a specimen.

**Tensile Stress At Given Elongation** - The tensile stress required to stretch a uniform section of a specimen to a given elongation.

**Tension Set** - The extension remaining after a specimen has been stretched and allowed to retract.

**Testing** - An element of inspection; generally denotes the determination by technical means of the properties or elements of supplies, of components thereof, including functional operation, and involves the application of established scientific principles, procedures, and equipment.

**Thermoplastic Rubber** - Rubber that does not require chemical vulcanization and will repeatedly soften when heated and stiffen when cooled; and which will exhibit only slight loss of its original characteristics.

**Thermosetting Rubber** - Chemically vulcanized rubber that cannot be remelted or remolded without destroying its original characteristics.

**Total Indicator Reading (TIR)** - The full dial indicator reading observed when the indicator is in contact with a part surface during one full revolution of the part about its datum axis.

**Ultimate Elongation** - The maximum elongation prior to rupture.

**Void** - A cavity unintentionally formed in a cellular material and substantially larger than the characteristic individual cells.

**Vulcanization** - An irreversible process during which a rubber compound through a change in its chemical structure (for example, cross-linking) becomes less plastic and more resistant to swelling by organic liquids and elastic properties are conferred, improved, or extended over a greater range of temperature.

**Waiver Request** - A formal document submitted by a contractor to a purchaser for the purpose of requesting acceptance of the designated non-conforming supplies or services, or for requesting temporary relief from a technical requirement of the contract.

**Water Absorption** - The increase in weight and volume after immersion in water.