Indian Standard

GLOSSARY OF TERMS USED IN RUBBER INDUSTRY

PART 4 DEFINITIONS RELATING TO PROCESSING

(First Revision)

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0. FOREWORD

0.1 This Indian Standard (Part 4) (First Revision) was adopted by the Bureau of Indian Standards on 5 February 1988 after the draft finalized by the Rubber Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 This standard was originally formulated in six parts of IS : 7503 'Glossary of terms used in rubber industry', covering the following terms and definitions:

Part 1–1974 Definitions of general terms and terms pertaining to latex and physical/chemical properties and testing, commonly used in rubber trade and industry

Part 2–1976 Terms relating to compounding process, machinery and vulcanization used in rubber industry

Part 3–1979 Terms relating to calendering, coating and moulding commonly used in rubber, trade and industry

Part 4–1979 Terms relating to extrusion commonly used in rubber trade and industry

Part 5–1981 Terms relating to process

Part 6–1986 Definitions relating to cellular materials

The various terms had been grouped together in to the above six parts, as and when they came up. However, keeping in view the latest rationalized classification, existing in ISO 1382-1982, these terms have now been re-grouped into six parts (Parts 1 to 6) afresh under new rationalized and amplified classifications as follows:

Part 1 Definitions of basic terms (general terms and basic terms concerning latex)

Part 2 Definitions of additives (general terms, additives relating to vulcanization, protective agent, fillers and colours, extenders and plasticizers, special chemicals and latex additives)

Part 3 Definitions relating to properties and testing (general terms, uncured properties, properties and testing relating to cure, mechanical and physical properties, degradation properties and testing, properties and test specific for latex and chemical properties and tests)

Part 4 Definitions relating to processing (general terms processing machine and processing of latex)

Part 5 Definitions relating to products — Hoses

Part 6 Definitions relating to cellular materials

0.3 In the present revised standards, some of the terms listed below which were present in the original parts of IS : 7503 have now been deleted and some new terms have been included:

a) *Terms deleted* — Accelerated ultra, anti-cracking agent, banding time, book, calender crown, chalk, blower, clamp coefficient of vulcanization, core, density, die holder, dielectric, dielectric constant, dielectric strength, dilatancy, doubling machine, draw, dumb-bell test piece, elongation, face cloth, former, frame, gum dipping, haul-off equipment, impulse, inhibitor, insert pin, iodine number, micelle, modulus, mould finish, peak cure, pelletizer premature coagulation, rate of cure, raw rubber, relative density, rubber hydrocarbon, separating agent, sheet rubber, shrink, skimmed fabric, stock, thixotropy, tip, treated liner, under cure, viscosity, vulcanizate and warming mill.

b) *Terms added* — Adhesion strength, cure rate index, field latex, mix, Mooney viscosity, stress relaxation, and visco-elasticity.

0.4 In the preparation of this standard, assistance has been derived from the following publications:

a) ISO 1382-1982 Rubber vocabulary. International Organization for Standardization (ISO).

b) BS 3558-1980 Glossary of rubber terms. British Standards Institution.

0.5 In case there is any difference between the definitions in this glossary and those in the standards for individual materials, the latter shall prevail.

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1. SCOPE

1.1 This standard (Part 4) defines the terms *relating to processing commonly used in rubber* industry.

2. TERMINOLOGY

2.1 General

2.1.1 *Band* — Rubber or rubber compounds running continuously around a mill/calender roll.

2.1.2 *Bank* — An accumulation of material at the opening between the rolls of a mill or calender or at spreader knife.

2.1.3 *Bias Angle* — The angle at which a ply is cut with respect to the running edge.

2.1.4 *Blank or Slug (Preform)* — Piece of mix of suitable volume and shape for moulding.

2.1.5 *Blowing* — Production of a cellular material by decomposition of blowing agent.

2.1.6 *Breakdown* — Preliminary softening by mechanical work of rubber or a mix to render it more suitable for masticating, milling or mixing.

2.1.7 *Compression Moulding* — Moulding process in which the blank is placed directly in the mould cavity and compressed to shape by closure of the mould.

2.1.8 *Die Line* — Longitudinally raised identification line deliberately formed on an extrudate.

2.1.9 *Doubling* — The process of combining two layers of material by contacting the surface of one against the other, used particularly with coated fabrics.

2.1.10 *Dough* — Homogeneous viscous mass consisting of rubber mix and solvent.

2.1.11 *Embossing* — The process of impressing of a design in relief on a rubber surface.

2.1.12 *Extrusion* — The continuous shaping of a compound by passage through a die.

2.1.13 *Flash (Spew)* — Surplus material forced out from a mould on closure under pressure.

2.1.14 *Frictioning* — Process of impregnating textiles with rubber using a calender whose rolls rotate at different surface speeds.

2.1.15 *Heat Stretching/Stabilizing* — Process of adjusting the thermal, mechanical and dimensional properties of a fabric or a cord under specific combinations of temperature, tension and time.

2.1.16 *Injection Moulding* — Moulding process in which a predetermined quantity of mix is forced into a closed heated mould from a separate heating chamber.

2.1.17 *Liner* — A sheet material, treated or untreated, used to prevent the adjacent layers of rubber compound from sticking together.

2.1.18 *Mastication (Breakdown, Deprecated)* — Process of plasticizing raw rubber by the combined action of mechanical work, oxygen and/or peptizing agent frequently at elevated temperature.

2.1.19 *Mixing* — The process of incorporating the compounding ingredients into the rubber.

2.1.20 *Moulded Skin* — Surface layer of a moulding which may differ slightly from the bulk of the material in the moulding.

2.1.21 *Moulding Process* — Process of shaping a material within a mould by applying pressure and usually heat.

2.1.22 *Moulding Shrinkage* — The difference in dimensions between a moulding and mould cavity in which it was moulded, both the mould and the moulding being at normal room temperature when measured.

2.1.23 *Peptization* — The process of facilitated mastication using a peptier.

2.1.24 *Plucking* — Tearing out of isolated portion from a rubber surface during separation from a second surface.

2.1.25 *Prevulcanization (Pre-Cure)* — Deliberate partial vulcanization of rubber or latex.

2.1.26 *Processibility* — The relative ease with which raw or compounded rubbers can be handled in rubber machinery.

2.1.27 *Scorch* — The premature vulcanization of rubber mix.

2.1.28 *Sheeting (the Act of)* — The process of converting a rubber, rubber mix, or rubber dough into a specifically shaped product in which the thickness is small in proportion to the length and width.

2.1.29 *Skim Coating (the Act of)* — The process of applying a thin layer of rubber mix to a textile material without significant shear forces between rubber and the sheet.

2.1.30 *Slab Moulding* — The process of compression moulding in which a multicavity mould is charged with a single slab or sheet of mix.

2.1.31 *Strike Through* — The penetration of rubber from coated to an uncoated surface.

2.1.32 *Tack (Unvulcanized Rubber)* — The property that causes contacting surfaces of unvulcanized rubber or rubber compounds to adhere to each other.

2.1.33 *Transfer Moulding* — A process of forming and vulcanizing rubber articles by forcing a predetermined quantity of unvulcanized compound into a closed heated cavity from a heated chamber integral with the mould.

2.2 Processing Machine

2.2.1 *Autoclave (Steam-Pan)* — Closed vessel for treating rubber in steam usually under pressure.

2.2.2 *Blister Bar* — Bar parallel to a calender roll intended to minimize blistering during multiple bank calendering.

2.2.3 *Breast Roll (Off Set Roll)* — Roll whose axis is arranged parallel to that of the other rolls but not in the same vertical plane.

2.2.4 *Bumping Moulds* — The alternate application and release of external pressure to a mould before vulcanization of a rubber mix starts to vent entrapped air and gases.

2.2.5 *Calender* — A machine with two or more essentially parallel rolls, operating at selected surface speeds, nips and temperatures for such operations as sheeting, laminating, skim coating, topping and friction coating of a product to a controlled thickness and/or surface characteristics.

2.2.6 *Camber/Crown* — Convex curvature of longitudinal section of rolls of a calender to compensate for the deflection of rolls because of the pressure of rubber between them.

2.2.7 *Cold Cure* — Vulcanization at room temperature.

2.2.8 *Core Pin* — Pin, being part of a mould, to form hole in a moulding.

2.2.9 *Crimping Bar* — A bar with corrugations so arranged that, when a fabric under tension is drawn over it, longitudinal wrinkles are removed.

2.2.10 *Cross Axis* — Adjustment to the contour of the nip formed between two rolls of a calender by skewing the axis of one or more rolls relative to the other.

2.2.11 *Daylight* — An opening in a press between two superimposed platens.

2.2.12 *Die* — Attachment to an extruder to shape profile of an extrudate.

2.2.13 *Extruder* — A machine which, through the use of a screw or a hydraulic ram, continuously shapes a material by forcing it through a die or dies.

2.2.14 *Extruder Head* — That part of an extruder which houses the die or die holder.

2.2.15 *Friction Ratio* — The ratio of surface speeds of two adjacent rolls.

2.2.16 *Insert* — A foreign object moulded or inserted into a rubber part for a definite purpose.

2.2.17 *Let Off Gear* — Apparatus for releasing material from a reel or shell under controlled tension.

2.2.18 *Mixing Mill* — Machine with two driven rolls at uneven surface speeds forming a nip for masticating, plasticizing and mixing.

2.2.19 *Mould* — The form in which a rubber compound is vulcanized and given the desired shape.

2.2.20 *Mould Pressure* — Force applied by the press divided by the area of the mould.

2.2.21 *Mould Register* — Correct alignment of the parts of a mould.

2.2.22 *Nip* — The radial clearance between the rolls of a mill or calender on a line of centres.

2.2.23 *Platen* — Flat metal chest to apply heat and pressure to a mould or moulds in a press.

2.2.24 *Press* — A machine used for moulding rubber articles with pressure and temperature.

2.2.25 *Profile Calender* — Machine with two or more rolls of which at least one carries one or more circumferential design.

2.2.26 *Roll Bending* — Adjusment to the contour of the nip formed between two rolls of a calender by bending one or both rolls by means of external force.

2.2.27 *Roll Deflection* — Bending of the moving rolls particularly when rubber compound is fed into the nip.

2.2.28 *Screw* — Rotating member with a helical groove to propel raw rubber/compound through the barrel of an extruder.

2.2.29 *Shell* — A roller on which long lengths of rubber sheet or fabric are wound and temporarily stored during the process of manufacture.

2.2.30 *Spider* — Member with three or more spokes supporting the core in the head of the extruder.

2.2.31 *Spreader* — Machine for applying rubber dough or latex on the surface of sheet material by means of a blade.

2.2.32 *Spreader Chest* — That part of a spreader consisting of a heated table the function of which is to assist evaporation of solvent as the coated sheet fabric passes over it.

2.2.33 *Spreading Knife (Doctor, Doctor Blade, Doctor Knife)* — Blade used for applying dough or latex smoothly and uniformly.

2.2.34 *Strainer* — Machines designed to force rubber through metal screens to remove extraneous matter.

2.2.35 *Take-Off Gear (Wind-Up Gear)* — Apparatus for winding material on a reel or shell from a calender or spreader under controlled tension.

2.2.36 *Tee Head (Cross Head)* — Extruder head of T-shape, to divert the flow of rubber compound to a direction perpendicular to the axis of the screw for extrusion around a core.

2.2.37 *Tension Stand* — Assembly of large diameter rollers for tensioning fabrics.

2.3 Processing of Latex

2.3.1 *Agglomeration* — Reversible or irreversible joining together of latex particles.

2.3.2 *Coagulation (of Rubber Latex)* — The irreversible agglomeration of particles originally dispersed in a rubber latex to form a continuous phase of the polymer and a dispersed phase of the serum.

2.3.3 *Creaming* — A reversible process consisting of gathering, by gravitational force, rubber particles surrounded by serum near the bottom or top of the latex.

NOTE — This is generally accomplished by adding a creaming agent.

2.3.4 *Flocculation* — Formation (sometimes reversible) of loosely coherent, partially agglomerated rubber, distributed in the liquid phase of a latex.

2.3.5 *Fractional Coagulation* — Deliberate coagulation of a portion of rubber particles in the latex.

2.3.6 *Gelling* — Formation of a uniform coagulum from which the aqueous phase has not separated.