

# ADVANCED LABORATORY EQUIPMENT & MACHINERY

BUILT FOR CONSISTENCY,  
ACCURACY, AND GLOBAL STANDARDS

**Intirc**  
LABS

From Elastomer to Compound: End-to-End Lab Equipment Solutions

# LABORATORY EQUIPMENT



Laboratory Internal Mixer (Intermeshing Closed-Chamber Rubber Mixing)

Laboratory Rolling Mill (Two-roll mill)

Rubber Molding (Lab Press)

Splitting Machine (Rubber Sheet Preparation)

Dynamic Mechanical Analyzer (DMA)

Flexometer (Gabometer)

Differential Scanning Calorimeter (DSC)

Thermogravimetric Analyzer (TGA)

FTIR Spectroscopy (Fourier-Transform Infrared Spectroscopy)

Carbon and Sulfur Analyzer

Surface Area and Porosity Analyzer

Oxygen Permeation Analyzer

Mooney Viscometer (Viscosity Testing)

Moving Die Rheometer (MDR; Cure Characteristics)

Dynamic Rubber Process Analyzer (D-RPA)

Automated Tensile Tester

Universal Testing Machine

Rebound Resilience Tester (Elastic Recovery Testing)

Hardness Tester (Shore A)

Laboratory Abrasion Tester (LAT-100)

DIN Abrasion Tester

DeMattia Fatigue Tester (Flex Cracking Resistance)

Ozone and UV Resistance

Intrinsic Strength Analyzer (ISA; Fatigue Resistance)

Instrumented Chip and Cut Analyzer (ICCA; Cut & Chip Resistance)

Densimeter

DisperTester

Rapid Plastimeter with Ageing Oven (Plasticity Retention Index)

Automatic Tack Tester

# LABORATORY ANALYSIS



- Storage modulus ( $E'$ ) – stiffness
- Loss modulus ( $E''$ ) – energy dissipation
- $\tan \delta$  (loss factor) – balance between grip and energy loss
- Glass transition temperature ( $T_g$ )
- Enthalpy changes during melting, curing, or crystallization
- Curing onset and peak temperature
- Oxidative stability
- Total and staged mass loss
- Component ratios
- Decomposition onset and rate
- Qualitative identification of molecular structures
- IR spectra used for compound comparison
- VOC and gas phase analysis (via TGA-FTIR setup)
- Sulfur content (%) or ppm
- Specific surface area ( $\text{m}^2/\text{g}$ )
- Pore volume and pore size distribution
- Oxygen Transmission Rate (OTR,  $\text{cc}/\text{m}^2/\text{day}$ )
- Permeability coefficient
- Tensile strength and modulus
- Elongation
- Mooney viscosity
- Viscosity curve
- Minimum and maximum torque
- Scorch time ( $t_{s1}$ ,  $t_{s2}$ )
- Cure time ( $t_{90}$ ,  $t_{95}$ )
- Cure rate index
- Storage/loss modulus ( $S'$ ,  $S''$ ,  $S^*$ ,  $G'$ ,  $G''$ ,  $G^*$ )
- Tan delta
- Carbon content (%) or ppm

# LABORATORY ANALYSIS

- Rolling resistance
- Payne's effect, strain sweep, temperature sweep, frequency sweep
- Analysis of raw elastomer or compound molecular properties
- Discovery of processing indicators
- Vulcanized dynamic performance
- Process simulations
- Rebound resilience
- Elastic energy return
- Shore A hardness
- Abrasion index (relative wear rate)
- Abrasion resistance (wear resistance index)
- Wet and dry conditions simulations
- Time or cycles to crack initiation
- Crack length or growth rate
- Crack formation and severity
- Time to visible degradation
- Intrinsic strength
- Fatigue threshold and crack initiation point
- Energy to chip/cut
- Damage area or depth
- Resistance index
- Specific gravity ( $\text{g/cm}^3$ )
- Apparent and true density
- Dispersion index
- Agglomerate size and count
- Filler uniformity
- Initial plasticity ( $P_0$ )
- Aged plasticity ( $P_1$ )
- PRI (%)
- Peak tack force (N)
- Adhesion curve
- Energy of separation

# LABORATORY- EQUIPMENT







## Pioneering Rubber Material Research

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