TechnoBiz

KNOWLEDGE TEST

Rubber Compounding Fundamentals

8 NOVEMBER 2025

(9:30am-5:15pm) (Time Zone: India) (Online)

https://knowledgetest.technobiz.org

TechnoBiz KNOWLEDGE TEST
A Global Benchmark for Knowledge & Excellence

Rubber Compounding Fundamentals

The TechnoBiz Knowledge Test on "Rubber Compounding Fundamentals" is designed to help rubber industry professionals and technologists evaluate and strengthen their understanding of essential concepts in rubber compounding. The test covers key topics such as raw materials, formulation principles, mixing processes, additives, curing systems, and troubleshooting. It is divided into ten parts, each focusing on a specific area of compounding. Participants can complete each part according to the schedule provided. Those who successfully complete all ten parts with an average score of 60% or above will receive an official digital certificate from TechnoBiz, indicating their total score.

Test Focus & Agenda

09:30-10:00 | *Part 1* – Introduction to Rubber Compounding
10:15-10:45 | *Part 2* – Rubber Polymers and Blending
11:00-11:30 | *Part 3* – Fillers and Reinforcement Systems
11:45-12:15 | *Part 4* – Vulcanization Chemistry and Systems
12:30-13:00 | *Part 5* – Compounding Additives and Processing Aids

14:00-14:30 | *Part 6* – Mixing and Processing Technology
14:45-15:15 | *Part 7* – Testing and Evaluation of Compounds
15:30-16:00 | *Part 8* – Compound Design and Optimization
16:15-16:30 | *Part 9* – Troubleshooting and Defect Analysis
16:45-17:15 | *Part 10* – Safety, Quality, and Sustainability

Level : Basic
Language: English
Registration Fee:

- 2,000 Rs (Indians)
- 50 US$ (Foreigners)

Taxes Apply on above fees.

Test Format (Online)

- Multiple Choice
- True / False

Who Should Take This Test

- Rubber technologists and compounders
- Technical service and R&D engineers
- QA/QC and production professionals
- Students and trainees in polymer and rubber technology

Test Score Card : Participants will receive score information by email
Test Certificate: Participants who score 60% and above in the test will receive a TechnoBiz Knowledge Test Certificate issued digitally.

Registration Form

Registration Deadline : *6 November 2025*

Interested in a Customized Event for Your Organization?

The TechnoBiz Knowledge Test on "Rubber Compounding Fundamentals" can also be organized on customized schedules to suit your company's specific requirements. It can be conducted as an in-house knowledge assessment and skill development event for the benefit of your entire technical team. Interested organizations are invited to send their requirements to TechnoBiz for a customized proposal, coordination plan, and participation package tailored to your needs.

TechnoBiz KNOWLEDGE TEST

Rubber Compounding Fundamentals

Part 1 – Introduction to Rubber Compounding
- Purpose and objectives of compounding
- Functions of main ingredient categories
- Basic terminology (phr, masterbatch, pre-mix)
- Property–formulation relationships
- Overview of compounding workflow and equipment

Part 2 – Rubber Raw Materials and Blending
- Structural features and properties of NR, SBR, BR, NBR, CR, EPDM, IIR, etc.
- Polymer blending – compatibility, miscibility, and synergy
- Influence of polymer selection on compound performance
- Polymer modification and reactive blending

Part 3 – Fillers and Reinforcement Systems
- Reinforcing and non-reinforcing fillers
- Carbon black grades, structure, and surface area
- Silica and silane coupling systems
- Filler dispersion, mixing energy, and testing
- Influence on mechanical and dynamic properties

Part 4 – Vulcanization Chemistry and Systems
- Sulfur vulcanization mechanism
- Accelerators and activators – classification and roles
- Cure systems: conventional, semi-efficient, efficient
- Peroxide and resin cure systems
- Cure characteristics, reversion, and crosslink density

Part 5 – Compounding Additives and Processing Aids
- Plasticizers and softeners: types and selection
- Tackifiers, waxes, peptizers, and lubricants
- Antiozonants, antioxidants, and stabilizers
- Specialty additives: flame retardants, conductive fillers,

Part 6 – Mixing and Processing Technology
- Internal mixer principles, fill factor, and rotor design
- Mixing stages – mastication, dispersion, distribution
- Mill mixing techniques
- Common mixing defects and troubleshooting
- Influence of temperature and time on quality

Part 7 – Testing and Evaluation of Compounds
- Mooney viscosity, cure meter tests, and rheology
- Tensile, tear, hardness, and dynamic tests
- Aging, abrasion, and fatigue testing
- Correlation of properties to formulation and cure
- QA/QC interpretation and consistency checks

Part 8 – Compound Design and Optimization
- Step-by-step compound formulation process
- Balancing processability, cost, and performance
- Use of phr and mixing ratios
- Design examples: tyres, seals, gaskets, footwear, hoses
- Optimization through trial and feedback

Part 9 – Troubleshooting and Defect Analysis
- Common processing and curing issues
- Blooming, under-cure, scorch, poor dispersion
- Systematic root cause and corrective actions

Part 10 – Safety, Quality, and Sustainability
- Chemical safety, labeling, and storage
- Environmental and regulatory compliance
- Waste reduction, regrind, and recycling in compounding
- Green rubber compounds and bio-based materials
- Quality management and documentation

Contact Person
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