

permatran iii

permatran iii is a high-performance electrical insulating varnish widely used in the manufacturing and repair of electrical motors, generators, and transformers. Known for its excellent dielectric strength, thermal stability, and chemical resistance, permatran iii provides robust protection and longevity to electrical components operating under demanding conditions. This article explores the key features, applications, and benefits of permatran iii, highlighting why it remains a preferred choice in the electrical insulation industry. Additionally, the discussion will cover the technical specifications, application methods, and safety considerations to ensure optimal use of permatran iii in various industrial settings. By understanding its properties and usage guidelines, manufacturers and technicians can enhance the reliability and efficiency of their electrical equipment. The following sections provide a comprehensive overview of permatran iii and its role in modern electrical insulation solutions.

- Overview of Permatran III
- Technical Specifications and Properties
- Applications and Uses
- Application Methods and Best Practices
- Advantages and Benefits
- Safety and Handling Considerations

Overview of Permatran III

Permatran III is an insulating varnish designed to enhance the electrical and mechanical properties of coils and windings in electrical machinery. It is formulated with a blend of resins and solvents that provide superior adhesion, flexibility, and protection against environmental factors such as moisture, dust, and chemical exposure. This varnish is particularly valued in industrial settings where electrical equipment undergoes thermal cycling, vibration, and mechanical stress. The composition of permatran iii ensures that it penetrates winding coils effectively, forming a uniform insulating film that improves the dielectric strength and thermal endurance of the electrical components.

Composition and Formulation

The permatran iii varnish consists mainly of synthetic resins dissolved in organic solvents, which facilitate easy application and curing. The resins provide excellent film-forming properties, while additives enhance heat resistance and flexibility. This formulation results in a varnish that balances hardness with elasticity, allowing it to withstand the mechanical stresses encountered in rotating electrical machinery.

Historical Development

Since its introduction, permatran iii has evolved through various improvements in resin technology and solvent systems. These advancements have optimized its performance characteristics, making it suitable for a wider range of operating temperatures and environmental conditions. The continuous refinement of permatran iii reflects the growing demands of modern electrical equipment for durable and efficient insulation systems.

Technical Specifications and Properties

Understanding the technical specifications of permatran iii is essential for selecting the right insulating varnish for specific applications. Its properties directly affect the performance and longevity of electrical components.

Electrical Properties

Permatran iii exhibits high dielectric strength, typically exceeding 200 volts per mil, which ensures effective insulation against electrical breakdown. It also has low dielectric loss, contributing to energy efficiency and reduced heat generation within the coils.

Thermal Resistance

The varnish can withstand continuous operating temperatures up to 155°C (Class F insulation rating), with short-term exposure capabilities to even higher temperatures. This thermal resilience makes permatran iii suitable for motors and transformers operating in harsh thermal environments.

Chemical and Mechanical Stability

Permatran iii demonstrates excellent resistance to moisture, oils, and solvents, protecting windings from corrosion and degradation. Its mechanical properties include flexibility and adhesion, which help prevent cracking and peeling during thermal expansion and mechanical vibration.

Applications and Uses

Permatran iii is primarily used in electrical insulation applications where durability and high performance are critical. Its versatility allows it to serve various sectors and equipment types.

Electric Motors and Generators

One of the most common uses of permatran iii is as an insulating varnish for stator and rotor windings in electric motors and generators. It enhances the mechanical strength of windings and protects against electrical faults caused by insulation failure.

Transformers and Coils

In transformers, permatran iii provides insulation for coil windings, ensuring efficient operation and preventing short circuits. It is also used in inductors and other coil-based electrical components requiring robust insulation.

Rewinding and Repair

Permatran iii is frequently employed in the repair and rewinding of electrical machines. Its excellent adhesion and penetration characteristics enable it to restore insulation integrity effectively, extending the service life of repaired equipment.

Other Industrial Uses

Beyond traditional electrical machinery, permatran iii finds applications in specialized equipment such as aerospace electrical systems, automotive starters, and alternators, where reliability under extreme conditions is paramount.

Application Methods and Best Practices

Proper application of permatran iii is crucial to achieving its full insulating potential. The varnish can be applied using several methods, each suited to different manufacturing and repair environments.

Dipping and Immersion

Dipping coils or components into permatran iii allows thorough penetration and uniform coating. This method is widely used in mass production due to its efficiency and consistency.

Brush and Spray Application

For localized repairs or small batches, brush or spray application is preferred. These methods offer control over the thickness of the varnish layer and are suitable for touch-ups or complex geometries.

Curing Process

After application, permatran iii requires curing, typically through heat treatment, to evaporate solvents and solidify the insulating film. Proper curing ensures maximum hardness, adhesion, and electrical properties.

Preparation and Surface Treatment

Surface preparation is essential before applying permatran iii. Cleaning and degreasing windings improve varnish adhesion and penetration, preventing premature insulation failure.

Advantages and Benefits

Permatran iii offers numerous advantages that contribute to its widespread use in electrical insulation.

- **High Dielectric Strength:** Provides reliable electrical insulation, reducing the risk of shorts and faults.
- **Thermal Endurance:** Supports equipment operation at elevated temperatures without degradation.
- **Chemical Resistance:** Protects windings from moisture, oils, and contaminants, enhancing durability.
- **Mechanical Flexibility:** Prevents cracking and peeling under vibration and thermal cycling.
- **Versatile Application:** Suitable for new manufacturing and repair processes across multiple industries.
- **Improved Equipment Lifespan:** Enhances overall reliability and reduces maintenance costs.

Safety and Handling Considerations

Using permatran iii safely is essential to protect workers and maintain product quality. The varnish contains solvents and chemicals that require proper handling and precautions.

Personal Protective Equipment (PPE)

Operators should wear gloves, safety goggles, and protective clothing to avoid skin and eye contact. Adequate ventilation or respiratory protection is necessary to prevent inhalation of solvent fumes.

Storage and Disposal

Permatran iii should be stored in tightly sealed containers in a cool, well-ventilated area away from ignition sources. Disposal of leftover varnish and contaminated materials must comply with local environmental regulations to prevent pollution.

Environmental Impact

While permatran iii is designed for industrial use, minimizing solvent emissions and waste during application reduces environmental impact. Advances in low-VOC (volatile organic compounds) formulations are ongoing to improve sustainability.

Frequently Asked Questions

What is Permatran III?

Permatran III is the third generation of the Permatran series, which are power electronic converters used in various industrial applications for efficient energy conversion.

What are the key features of Permatran III?

Key features of Permatran III include improved efficiency, compact design, enhanced thermal management, and advanced control algorithms for better performance in industrial drives.

In which industries is Permatran III commonly used?

Permatran III is commonly used in industries such as manufacturing, automotive, renewable energy, and robotics for motor control and power conversion applications.

How does Permatran III improve energy efficiency?

Permatran III utilizes advanced semiconductor technology and optimized control software to reduce energy losses during power conversion, thereby improving overall system efficiency.

Is Permatran III compatible with existing Permatran systems?

Yes, Permatran III is designed to be backward compatible with previous Permatran models, allowing for easier upgrades and integration into existing systems.

What types of motors can be controlled by Permatran III?

Permatran III supports control of various types of motors including induction motors, synchronous motors, and brushless DC motors.

Does Permatran III support remote monitoring and diagnostics?

Yes, Permatran III includes features for remote monitoring and diagnostics, enabling real-time performance tracking and predictive maintenance.

Where can I find technical support and documentation for Permatran III?

Technical support and documentation for Permatran III can typically be found on the manufacturer's official website or through authorized distributors and service centers.

Additional Resources

1. *Permatran III: The Rise of a New Civilization*

This book explores the origins and development of Permatran III, detailing how its unique environment shaped the evolution of its inhabitants. Through vivid descriptions and expert analysis, readers gain insight into the societal structures and technological advancements that define this fascinating world. The narrative also delves into the challenges faced by the civilization as it strives for survival and progress.

2. *Ecology and Biodiversity of Permatran III*

A comprehensive study of the diverse ecosystems on Permatran III, this book highlights the planet's rich flora and fauna. It investigates the intricate relationships between species and their habitats, emphasizing conservation efforts and ecological balance. Illustrated with striking photographs and maps, it serves as an essential resource for biologists and environmental enthusiasts.

3. *The Geology and Climate of Permatran III*

This volume examines the geological formations and climatic conditions that define Permatran III's landscape. Readers will learn about the planet's tectonic activity, mineral resources, and weather patterns. The book also discusses how these factors influence human settlement and economic development on the planet.

4. *Technology and Innovation on Permatran III*

Focusing on the technological breakthroughs achieved by Permatran III's inhabitants, this book showcases their advancements in energy, transportation, and communication. It discusses the integration of sustainable technologies that minimize environmental impact. The book offers a glimpse into the future possibilities enabled by these innovations.

5. *Permatran III: Political Systems and Governance*

An in-depth analysis of the political landscape on Permatran III, this book explores the various forms of government and their evolution. It covers the challenges of maintaining order in a rapidly changing society and the role of diplomacy in interplanetary relations. Case studies illustrate the successes and failures of different governance models.

6. *Culture and Society on Permatran III*

This book delves into the rich cultural tapestry of Permatran III's people, examining their traditions, art, and social norms. It highlights the influence of environment and history on cultural expression and community life. Readers will gain an appreciation for the diversity and resilience of this vibrant society.

7. *Exploration and Colonization of Permatran III*

Detailing the history of human exploration and settlement on Permatran III, this book chronicles the challenges and triumphs faced by early colonists. It covers the logistics of space travel, adaptation to alien conditions, and the establishment of sustainable habitats. The narrative includes firsthand

accounts and scientific reports from pioneering explorers.

8. *Permatran III: Mythology and Legends*

This fascinating work explores the myths, legends, and folklore that have emerged from Permatran III's inhabitants. It analyzes how these stories reflect the planet's unique environment and the collective psyche of its people. The book also compares these traditions with those of other worlds, offering a broader perspective on myth-making.

9. *Future Prospects for Permatran III*

Looking ahead, this book discusses potential developments and challenges for Permatran III in the coming decades. Topics include technological advancements, environmental sustainability, and the possibility of interplanetary cooperation. It offers visionary scenarios that inspire hope and caution for the planet's future trajectory.

Permatran Iii

Permatran III: A Deep Dive into the Technology and its Applications

Ebook Title: Mastering Permatran III: Principles, Applications, and Advanced Techniques

Outline:

Introduction: What is Permatran III and why is it important? A brief history and overview.

Chapter 1: The Science Behind Permatran III: Detailed explanation of the underlying principles and mechanisms. Focus on the technological advancements over previous versions.

Chapter 2: Applications in Various Industries: Exploration of Permatran III's use in different sectors, including specific examples and case studies.

Chapter 3: Advanced Techniques and Troubleshooting: Advanced usage scenarios, common problems, and solutions. Includes best practices and optimization strategies.

Chapter 4: Future Trends and Developments: Discussion on potential advancements and future applications of the technology.

Conclusion: Summary of key takeaways and future outlook for Permatran III.

Permatran III: A Deep Dive into the Technology and its Applications

Permatran III represents a significant advancement in water vapor permeation analysis. This technology, employed across diverse industries, offers precise measurement of water vapor transmission rates (WVTR) through various materials. Understanding its principles and applications is crucial for researchers, engineers, and quality control professionals alike. This comprehensive guide delves into the science behind Permatran III, its diverse applications, advanced techniques,

and future prospects.

1. Introduction: Understanding the Significance of Permatran III

Permatran III, a leading water vapor permeation analyzer, builds upon the legacy of its predecessors, refining and enhancing the accuracy and efficiency of WVTR measurement. Unlike older methods that often relied on less precise techniques, Permatran III leverages advanced sensors and sophisticated algorithms to provide highly reliable data. This precision is critical across multiple industries, from packaging and pharmaceuticals to construction and electronics, where the control of moisture is paramount to product quality, shelf life, and overall performance. The ability to accurately determine the WVTR of a material allows manufacturers to optimize packaging, design more effective barriers against moisture damage, and ultimately, improve product longevity and consumer satisfaction. This introduction serves as a foundation for understanding the broader significance of Permatran III within the context of material science and quality control.

2. Chapter 1: The Science Behind Permatran III: Unraveling the Technological Advancements

Permatran III's core functionality relies on the principles of coulometric sensing. This highly sensitive technique accurately measures the amount of water vapor that permeates a test sample over a defined period. The instrument employs a precisely controlled environment, maintaining constant temperature and humidity on either side of the test specimen. The difference in water vapor partial pressure across the sample drives the permeation process. As water vapor passes through the material, it's detected by an electrochemical sensor, converting the water molecules into an electrical signal. This signal is then processed to calculate the WVTR.

Compared to earlier versions of Permatran analyzers, Permatran III boasts significant improvements in several key areas:

Enhanced Sensor Technology: More sensitive and accurate coulometric sensors reduce measurement uncertainty and improve the overall precision of the results.

Improved Temperature and Humidity Control: Precise control over environmental conditions minimizes variations and ensures consistent, reliable measurements.

Advanced Software and Data Analysis: User-friendly software simplifies the testing process and provides comprehensive data analysis capabilities, including statistical analysis and report generation.

Automated Calibration and Maintenance: Simplified calibration procedures and automated diagnostics reduce downtime and ensure the instrument's accuracy over time.

Wider Range of Test Capabilities: Permatran III typically offers a broader range of testing parameters, accommodating a wider variety of materials and applications.

Understanding these advancements is crucial for accurately interpreting the data obtained from

Permatran III and for ensuring the reliability of the results.

3. Chapter 2: Applications in Various Industries: Case Studies and Examples

The applications of Permatran III span a broad spectrum of industries, all sharing a common need for precise water vapor permeation data.

Food Packaging: Determining the WVTR of packaging materials is critical for maintaining food freshness and extending shelf life. Permatran III helps manufacturers select optimal packaging materials to minimize moisture ingress and prevent spoilage.

Pharmaceuticals: Protecting pharmaceuticals from moisture is crucial to maintaining their efficacy and stability. Permatran III is used to test the moisture barrier properties of blister packs, bottles, and other packaging components.

Electronics: Moisture can damage electronic components, leading to malfunctions and failures. Permatran III assists in the selection and quality control of materials used in electronic packaging to ensure optimal protection against moisture.

Construction Materials: Evaluating the water vapor permeability of building materials is essential for preventing condensation and maintaining a comfortable indoor environment. Permatran III allows for the accurate assessment of materials like roofing membranes, wall claddings, and insulation.

Medical Devices: Maintaining the integrity of medical devices is crucial for patient safety. Permatran III contributes to quality control by evaluating the moisture barrier properties of packaging and device components.

Each application requires careful consideration of the specific parameters and test methods to obtain reliable and relevant data. Case studies focusing on specific applications in these industries highlight the practical use and benefits of Permatran III.

4. Chapter 3: Advanced Techniques and Troubleshooting: Optimizing Performance and Addressing Challenges

Achieving optimal results with Permatran III requires a thorough understanding of advanced techniques and potential troubleshooting procedures. This chapter addresses common issues and provides practical solutions.

Sample Preparation: Proper sample preparation is crucial for accurate measurements. This section details best practices for handling and preparing test samples, ensuring consistent results.

Data Interpretation: Understanding statistical analysis techniques and error analysis is crucial for making informed decisions based on Permatran III data.

Calibration and Maintenance: Regular calibration and preventative maintenance are necessary to maintain the instrument's accuracy. This section provides guidelines for these critical processes.

Troubleshooting Common Problems: This section addresses common issues such as sensor drift, leaks in the test chamber, and data inconsistencies, providing solutions and preventative measures.

Optimization Strategies: Achieving optimal measurement conditions involves understanding the

interplay between various testing parameters, such as temperature, humidity, and sample thickness.

Mastering these advanced techniques and troubleshooting methods ensures reliable and accurate results, maximizing the value of Permatran III in any application.

5. Chapter 4: Future Trends and Developments: Looking Ahead

The field of water vapor permeation analysis is constantly evolving. Future developments in Permatran technology are likely to include:

Miniaturization and Portability: Smaller, more portable versions of Permatran analyzers will expand accessibility and facilitate on-site testing.

Increased Automation: Further automation will reduce manual intervention and enhance efficiency, improving throughput.

Improved Sensor Technology: Continued advances in sensor technology will further enhance the accuracy and sensitivity of measurements.

Integration with other analytical techniques: Integration with other characterization techniques will allow for a more comprehensive understanding of material properties.

Advanced Data Analysis Capabilities: Sophisticated data analysis algorithms and AI-powered tools will allow for faster and more robust interpretation of results.

These advancements will further solidify Permatran III's position as a leading technology for water vapor permeation analysis and expand its applications across numerous industries.

Conclusion:

Permatran III represents a cornerstone in accurate and reliable water vapor transmission rate measurement. Its widespread applications across numerous sectors underscore its importance in quality control, product development, and materials science. This guide has provided a detailed understanding of its underlying principles, applications, advanced techniques, and future outlook, equipping readers with the knowledge to effectively utilize this powerful analytical tool.

FAQs:

1. What is the difference between Permatran III and previous versions? Permatran III boasts enhanced sensor technology, improved environmental control, advanced software, and automated processes for greater accuracy, efficiency, and ease of use.

2. What types of materials can be tested with Permatran III? A wide variety of materials can be tested, including films, coatings, laminates, and fabrics. Specific compatibility depends on the sample's thickness and physical properties.
3. How long does a typical Permatran III test take? Test duration varies depending on the material's permeability and the desired accuracy. Tests can range from several hours to several days.
4. What are the common sources of error in Permatran III measurements? Sources of error include improper sample preparation, leaks in the test chamber, and inaccurate calibration.
5. What are the units of WVTR reported by Permatran III? WVTR is typically reported in units of $\text{g}/(\text{m}^2 \cdot \text{day})$ or $\text{g}/(\text{m}^2 \cdot 24\text{h})$.
6. How can I interpret the results from a Permatran III test? Results are interpreted in relation to the material's intended application and performance requirements. Statistical analysis helps to assess the significance of the data.
7. What is the cost of a Permatran III instrument? The cost of a Permatran III varies depending on the configuration and specific features.
8. What kind of training is needed to operate a Permatran III? Basic training is usually provided by the manufacturer. Extensive training may be needed for advanced applications and data analysis.
9. What is the maintenance schedule for a Permatran III instrument? Regular calibration and preventative maintenance are crucial for maintaining the instrument's accuracy and longevity. The manufacturer provides specific guidelines.

Related Articles:

1. Water Vapor Permeability Testing Methods: A comparative analysis of different WVTR measurement techniques.
2. Coulometric Sensing: Principles and Applications: A detailed explanation of coulometric sensing technology.
3. Packaging Material Selection for Moisture Protection: Guidance on choosing optimal packaging materials based on WVTR requirements.
4. The Role of Water Vapor Permeability in Food Preservation: The importance of WVTR in maintaining food quality and extending shelf life.
5. Moisture Damage in Electronics: Prevention and Mitigation: Strategies for preventing moisture-related failures in electronic devices.
6. Building Envelopes and Water Vapor Control: The importance of water vapor permeability in building construction.
7. Quality Control in Pharmaceutical Packaging: The role of WVTR testing in ensuring the quality and integrity of pharmaceutical products.
8. Advanced Data Analysis Techniques for WVTR Measurements: Methods for interpreting and analyzing WVTR data obtained from Permatran III.
9. Calibration and Maintenance of Water Vapor Permeation Analyzers: Best practices for maintaining the accuracy and longevity of Permatran III and similar instruments.

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This volume contains dozens of original investigations into the materials, chemistry, formulation and applications of waterborne coatings.

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permatran iii: *The Complete Book on Medical Plastics* NIIR Board of Consultants and Engineers, 2006-10-01 Plastics currently form one of the most important components of the medical industry. Medical device designers and engineers increasingly prefer plastics to conventional packaging materials such as metals owing to superior flexibility offered by plastics in fabrication process. Advancements in sterilization techniques shift towards disposable devices, development of enhanced plastic materials, and technological innovations are factors driving the overall market growth and expansion. The development of novel materials such as biocompatible polymers for use in medical implants will furthermore provide the required impetus for the global medical plastics market. Every day, plastics are involved in critical surgeries, life saving efforts, and routine medical procedures. Plastic materials can be sterilized hundreds of times without degradation. Lightweight plastics are used to form replacement joints, non surgical supports, and therapy equipment. Clear plastics provide visibility for transfusions, surgeries, and diagnostic equipment of all kinds and plastics can be machined, molded, or formed into almost any shape imaginable. The use of plastics in health care field encompasses several distinct markets. Plastic is used on a large scale as medical devices like disposable syringes, optical and dental products, heart valves, contact lenses and many more medical products. This way plastic has very importance in making medical devices. The medical plastics industry is set to expand rapidly over the next decade taking up increasing proportions of GDP, as countries provide healthcare to an ageing population, access to medicine expands in developing regions and new technology is developed. This book basically deals with significance of packaging for pharmaceuticals & medical industry, tablets & capsules liquids, creams and ointments, OPVC, OPP and oriented and non oriented pet containers, blister trays for ampoules, cartridge tubes etc., shrink packaging and stretch wrapping, conducting health based risk assessments of medical materials, performance properties of metallocene polyethylene, EVA, and flexible PVC films, polyurethane thin film welding for medical device applications, polyurethane film as an alternative to PVC and latex, opportunities for PVC replacement in medical solution

containers, thermoplastic silicone urethane copolymers : a new class of biomedical elastomers, selecting materials for medical products : from PVC to metallocene polyolefins, injection molding engineering plastics, assessing the performance and suitability of parylene coating etc. The present book contains the important information of plastics in medical field and their uses in various ways. This is very useful book for entrepreneurs, researchers, technocrats and technical institutions. TAGS Medical Plastic Packaging and Medical Product Manufacture, Medical Plastic Injection, Medical Plastics Manufacture, Plastic Products for Hospital and Medical Use, Medical & Surgical Plastic Products, Medical Plastic Injection Molding, Plastic Products for Medical, Plastics in Medicine, Plastic Laboratory Products and Equipment Manufacture, Medical Device Manufacturing, Medical Plastic Material and Process, Wound Dressing Formulation, Sterilization Process, Chemical Process, Physicochemical Process, Synergetic Process, Validation of Sterilization Process, Injection Molding, Non PVC Formulation, Polycarbonate Processing, Pet Conversion Process, Pet Bottles for Pharma, TPE Film Manufacture, Polyurethane Thin-Film Welding, Film Joining Method, Ultrasonic Welding, Direct Thermal Sealing, Producing Bubble, Silicones, Silicon Urethane Copolymers, Ion-Beam Processing, Medical Coating, Parylene Process, Injection Molding Machine, Reprocessing Disposable Surgical Gloves, TPE Films for Medical, Producing Bubble/Taper Tubing for Medical, Tubing-Processing Equipment, Benchtop Plastic Injection Mold, Small Plastic Injection Molding Machine, Injection Molding Machine Manufacture, Injection Moulding Machine Process, TPE Film Manufacturing, Medical Plastic Manufacturing, How to Start TPE Film Manufacturing in India, Medical Plastic Manufacturing in India, Most Profitable Ion-Beam Processing Business Ideas, TPE Film Manufacturing Projects, Small Scale Ion-Beam Processing Projects, Starting Medical Plastic Production Business, How to Start Medical Plastic Manufacturing Business, TPE Film Manufacturing Based Small Scale Industries Projects, New Small Scale Ideas in Medical Plastic Manufacturing Industry, NPCS, Niir, Process Technology Books, Business Consultancy, Business Consultant, Project Identification and Selection, Preparation of Project Profiles, Startup, Business Guidance, Business Guidance to Clients, Startup Project for Medical Tablets and Creams, Startup Project, Startup Ideas, Project for Startups, Startup Project Plan, Business Start-Up, Business Plan for Startup Business, Great Opportunity for Startup, Small Start-Up Business Project, Start-Up Business Plan for Medical Plastic Manufacturing, Start Up India, Stand Up India, Injections Making Small Business Manufacturing, Modern Small and Cottage Scale Industries, Profitable Small and Cottage Scale Industries, Setting Up and Opening Your Medical Plastic Manufacturing Business, How to Start TPE Film Manufacturing?, How to Start Successful Medical Plastic Production Business, Small Scale Commercial Medical Plastic Making, Best Small and Cottage Scale Industries, TPE Film Manufacturing Business, Profitable Small Scale Manufacturing,

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permatran iii: Polymer Permeability J. Comyn, 2012-12-06 Polymers are permeable, whilst ceramics, glasses and metals are generally impermeable. This may seem a disadvantage in that polymeric containers may allow loss or contamination of their contents and aggressive substances

such as water will diffuse into polymeric structures such as adhesive joints or fibre-reinforced composites and cause weakening. However, in some cases permeability is an advantage, and one particular area where this is so is in the use of polymers in drug delivery systems. Also, without permeable polymers, we would not enjoy the wide range of dyed fabrics used in clothing and furnishing. The fundamental reason for the permeability of polymers is their relatively high level of molecular motion, a factor which also leads to their high levels of creep in comparison with ceramics, glasses and metals. The aim of this volume is to examine some timely applied aspects of polymer permeability. In the first chapter basic issues in the mathematics of diffusion are introduced, and this is followed by two chapters where the fundamental aspects of diffusion in polymers are presented. The following chapters, then, each examine some area of applied science where permeability is a key issue. Each chapter is reasonably self-contained and intended to be informative without frequent outside reference. This inevitably leads to some repetition, but it is hoped that this is not excessive.

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food preservation sectors

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science, the use of polymeric materials is widely explored, from both an engineering and a nutraceutical point of view. Regarding the engineering application, researchers have discovered the most suitable materials for intelligent packaging which preserves the food quality and prolongs the shelf-life of the products. Furthermore, in agriculture, specific functionalized polymers are used to increase the efficiency of treatments and reduce the environmental pollution. In the nutraceutical field, because consumers are increasingly conscious of the relationship between diet and health, the consumption of high quality foods has been growing continuously. Different compounds (e.g. high quality proteins, lipids and polysaccharides) are well known to contribute to the enhancement of human health by different mechanisms, reducing the risk of cardiovascular disease, coronary disease, and hypertension. This first volume, of this two volume book, concerns the application of polymers in food packaging.

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