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If you're a food business, it's important to know what types of packaging are safe to use with your food businesses must: only use packaging material that is fit for its intended purpose only use material that is not likely to cause food
contamination ensure there is no likelihood that the food may become contaminated during the packaging process. What are the risks? Packaging process harmful microorganisms get into food from dirty or damaged packaging parts of
the packaging break off into food (e.g. glass or plastic fragments) chemicals leach from packaging into food type of food (e.g. some
packaging is unsuitable for oily or acidic foods) storage conditions (e.g. time, temperature, humidity) whether the food will be microwaved or heated in the packaging cleaning and sanitising the packaging for reuse use of recycled materials for packaging. Chemicals in food packaging has further information. Reduce your risk Choose the right
packaging: only use clean, undamaged, food-safe packaging buy from a reputable source know the composition of your food and check the material is food-safe) check manufacturer's instructions or symbols to confirm the packaging can take the conditions it
 will be exposed to, such as freezing, microwaving, or use in dishwashers Use packaging correctly: handle with good hygienic practices store in a secure and clean place consider how long and where food will be stored in the packaging and check it will stay safe under those conditions use appropriate cleaning and sanitising methods only reuse
packaging or other materials if safe for food (e.g. don't repeatedly use packaging designed for single use) consider using a food-safe inner liner if there's a risk of chemicals leaching into food. More information Safe Food Australia is a guide to the food safety standards in Chapter 3 of the Food Standards Code. Food packaging is under Standard 3.2.2
 clause 9. Download ASTM's paper and packaging standards are instrumental in the evaluation and testing of the physical, mechanical, and chemical properties of various pulp, paper, and paperboard materials that are processed primarily to make containers, shipping boxes and parcels, and other packaging and labeling products. These standards
help to identify characteristics such as chemical content, acidity or alkalinity, tensile breaking strength, peel adhesion, and water, oil, and tear resistance among others. Also, these paper materials and products in the
proper processing and assessment procedures to ensure their quality towards efficient commercial use. Jump to: D3097-94 Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of Food Aerosol Products (Withdrawn 2001) D3091-72(2016) Standard Test Method for Overrun of 
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Terminology of Packaging and Distribution Environments Many factors go into food packaging plants design and use packaging to protect consumers. A number of food packaging meet before any food product reaches grocery store shelves?
 Discover all of the food packaging standards industry professionals must follow with this in-depth guide. Learn about the many legal requirements food manufacturers need to include, the common types of packaging materials, and more. If you need modern food packaging standards industry professionals must follow with this in-depth guide. Learn about the many legal requirements food manufacturers need to include, the common types of packaging materials, and more. If you need modern food packaging solutions that meet every standard, use high-performance equipment from TDIs
Packsys. What Are the General Requirements of Food Packaging? Those within the food packaging industry must meet a minimum set of criteria that the Food and Drug Administration (FDA) sets. These requirements include basic information like the product name, the manufacturer's address, and an expiration or "best by" date. In addition,
packages must label the nutritional content, weight, ingredients, and any food additives within the products containing meat need additional information in line with regulations set by the U.S. Department of Agriculture. These requirements include an inspection legend, a signature line, and instructions for safe cooking and
 handling. All of these requirements exist so that consumers have full transparency about the foods they eat. They can clearly see how much the suggested serving size is and whether the food contains any potentially harmful ingredients. If any contaminants are in
the food and pose a danger to others, consumers can easily access the manufacturer's information directly on the package. Nutritional Labeling All food products come with a nutrition label that informs consumers about the food's contents. This label is a crucial component of national food packaging standards because it offers a detailed rundown of
all the vitamins, minerals, fat, and calories within a serving. The mandatory components of every nutritional label are the serving size, servings per package, and measurements (both in weight and percentage of daily value) of the following: Calories Total fat, saturated fat, and trans fat Cholesterol Sodium Total carbohydrates Dietary fiber Total
sugars and added sugars Protein Vitamin D Calcium Iron Potassium Allergen Labeling Consuming food that you know you're allergic to can be incredibly dangerous. It may cause you to go into anaphylactic shock and have difficulty breathing. For optimal safety, food allergen labeling is an essential part of all food packaging standards. The FDA
requires that food labels list any allergy-inducing ingredients or specify whether the food was produced in a building that also processes those ingredients. The most common food allergies that impact consumers are: Peanuts Shellfish Tree nuts, such as almonds, cashews, and pecans Wheat Soy Eggs Fish Milk Labeling these potentially harmful
 ingredients on every impacted food product keeps consumers with allergies safe and healthy. FDA Regulations for Food Packaging The FDA is the main government body that oversees and regulates food packaging standards. All of the regulations they put in place, including the general requirements for every product package, exist because
 consumers need this information for their health and safety. Failing to comply with these rules can mean legal trouble for any food supplier and may compromise their customers' trust and loyalty. What Are the Five Different Types of Food Packaging? There are five types of food packages that manufacturers can use for sealing their products. These
 packaging materials vary based on the shelf-life and freshness of a product as well as their durability: Cardboard food packaging is similar to cardboard and remains sturdy on shelves, yet it is a lightweight solution for packaging is the industry's leading material, given its sturdiness and ease of storage. Paperboard packaging is the industry's leading material, given its sturdiness and ease of storage.
 juice boxes. Glass packaging offers unmatched durability for display purposes. Not only will glass packaging provide excellent sealing for food freshness, but it also allows consumers to view the product. This option is also ideal for protecting food products from outside contaminants. Plastic packaging offers the most versatility since it can conform to
any shape. Perishable and non-perishable food items stay fresh when suppliers use plastic packaging is growing in today's industry because of its impressive strength and sustainability. Materials Used in Food Packaging primarily uses
jars or containers to hold pantry items like olives, pickles, and sauces. You'll find metal packaging in the form of tin cans containing fish, chicken, beans, or vegetables, as well as metal soda cans. Plastic, cardboard, and paperboard are more lightweight and appear in more packaging materials. If you pick up a case of water bottles, frozen food, or a
prepared sandwich, each of these items will likely come in plastic bottles are one of the most popular materials, while certain food items use glossy plastic known as a clamshell package. Other notable materials include paperboard boxes, flexible pouches, and skin
 packaging. Corrugated cardboard boxes and strapping material get the most use during shipping. Packaging/Nutrient Claims on Food Packaging Not all consumers look at the fine print on a food label before buying it. The nutrient claims on Food Packaging Not all consumers look at the fine print on a food label before buying it.
 public. This primarily involves any advertising centered around a product's impact on your health. For example, no product can label itself as "low-calorie," "sugar-free," or "high-fiber" unless it meets a certain standard. If a product's nutritional content aligns with industry regulations, manufacturers can display their claim anywhere on the package
 However, this claim cannot use a font that is more than twice the size of the product's Statement of Identity, which is the food's name. Sustainability Considerations for Food Packaging Distributing food products in certain types of packaging may not support the environment. The industry can improve sustainability by implementing compostable
packaging, using recycled material, and using biodegradable plastics. Glass and metal are extremely recyclable and sustainable, while some plastic packaging is not possible to recycle. In addition, production plants can focus on using renewable energy and optimizing their distribution efforts to reduce their carbon footprint. International Food
 Packaging Standards Specific food packaging standards may vary by country, but on a global level, similar trends are taking place. These include incorporating more recycled materials into the packaging to promote sustainability and targeting harmful chemicals like bisphenol A (BPA) that may be prevalent in certain product packaging. Public safety
 remains a concern for several countries, including the U.S., Canada, and France. Their authorities continue to focus on protecting infants and vulnerable people from harm by regulating the packaging materials certain products use. As technology evolves, new ingredients and chemical compounds make their way into food packaging. Many nations
are researching these novel materials and how the industry can best regulate them. Today's food packaging standards in the U.S. and abroad are complex but easy to accomplish when you have the right resources. TDI Packsys offers a range of automated packaging equipment that helps manufacturers stay productive. Contact us to learn more about
our products or speak with a specialist. The BRCGS Global Standard Packaging Materials helps a site or operation to demonstrate they are providing products that are quality assured, legally compliant, and authentic. The first packaging Materials is now in its
7th issue and has become the global industry benchmark for packaging excellence. It is not only used by food packaging producers but also by producers but also become but also by producers but also by producers but also become but also by producers but also by pro
stock where additional product processing or repacking occurs Manufacture and supply of other unconverted or semi-converted and used or incorporated Packaging Materials Issue 7 provides all you need to speak to someone?
 Submit your information and we'll be in touch Contact us BRCGS News, Food Safety, Agents and Brokers, Storage and Distribution, START, Packaging, Gluten-Free, Plant-Based, Consumer Products, Retail May 30, 2025 Industry update - Food safety developments, recalls and incidents (May 2025) Events, BRCGS News, Food Safety Americas, Food
 Safety, Packaging, Storage and Distribution, START, Agents and Brokers, Gluten-Free, Plant-Based, Ethical Trade and Responsible Sourcing, Consumer Products May 22, 2025 Delivery Partners USA 2025 will take place in Charlotte on 22 September 2025! Events, BRCGS News, Food Safety, Americas, Food Safety, Packaging, Storage and
 Distribution, START, Agents and Brokers, Gluten-Free, Plant-Based, Ethical Trade and Responsible Sourcing, Consumer Products May 21, 2025 Nominations are now open for the BRCGS Awards 2025 Americas region Read More Food contamination recalls cost companies an average of $10 million per incident—and that's before considering branch
 damage and potential health impacts. Behind many of these costly events are packaging failures that could have been prevented with proper food grade materials and compliance standards. From chemical migration to inadequate barrier properties, the risks of improper food packaging extend far beyond simple product protection. Food
manufacturers, packaging designers, and safety officers increasingly face complex choices between regulatory compliance, sustainability demands, and cost considerations. The packaging decisions you make don't just affect shelf life—they directly impact consumer safety and your legal liability. This comprehensive guide explores the ride-or-die
world of food-grade packaging, examining everything from FDA regulatory requirements to sustainable material innovations that maintain compliance while meeting growing environmental concerns. Whether you're selecting materials for a new product line or evaluating your current packaging systems, understanding these critical safety standards
helps you protect both consumers and your business reputation. Fundamentals of Food-Grade Packaging serves as the critical barrier between food products and outside contaminants, playing a pivotal role in food safety. When you understand these packaging fundamentals, you're better equipped to
make informed decisions about product protection, shelf life, and consumer safety. "Food-grade packaging comprises materials specifically tested and certified as safe for direct food contact, protecting products from contamination while maintaining quality throughout storage and distribution." Understanding Food-Grade Materials: Definition and
Importance Food-grade packaging prevents contact with food products. These materials deemed safe for direct contact with food products. These materials undergo rigorous testing to ensure they don't transfer harmful substances into food or alter its flavor, color, or texture. The right packaging prevents contamination from physical, chemical, and biological hazards throughout the
 supply chain. Not all packaging materials offer the same level of protection. Food-safe materials must meet specific composition requirements that prevent migration of unwanted chemicals into food products. This is why manufacturers must carefully select appropriate materials based on food type, shelf-life requirements, and distribution conditions.
Many consumers remain unaware that food-grade packaging also contributes significantly to sustainability efforts. Manufacturers are increasingly developing recyclable and biodegradable food-safe options that maintain the same protective qualities while reducing environmental impact - a "win-win situation" for both consumers and the planet. Key
Properties of Food-Safe Packaging Effective food-grade packaging must possess several critical properties to ensure product safety. These include barrier protection against oxygen, moisture, light, and microorganisms - all factors that can degrade food quality and safety. These include barrier protection against oxygen, moisture, light, and microorganisms - all factors that can degrade food quality and safety. These include barrier protection against oxygen, moisture, light, and microorganisms - all factors that can degrade food quality and safety.
transport, and usage conditions. Chemical stability represents another essential property. Food-safe materials shouldn't react with the food product or break down under normal conditions. Additionally, proper seal integrity prevents leakage and contamination, while tamper-evidence features assure consumers their food remains untouched until
purchase. Regulatory Framework Overview Food-grade packaging operates within strict regulations outlined in the Code of Federal Regulations Title 21. These regulations specify acceptable materials, manufacturing
 processes, and testing requirements. Internationally, various regulatory bodies enforce similar standards, including the European Food Safety Authority (EFSA) in European to ensure compliance across global markets.
Global Food Packaging Compliance Requirements Comparison Regulatory Aspect FDA (USA) EFSA (Europe) CFDA (China) FSANZ (Australia/NZ) Implementation Challenges Migration Testing Required for all FCMs Specific Migration Limits GB standards compliance AS 2070-1999 compliance AS 2070-1999 compliance Migration Testing Required for all FCMs Specific Migration Limits GB standards compliance AS 2070-1999 compliance AS 2070-1999 compliance AS 2070-1999 compliance Migration Testing Required for all FCMs Specific Migration Limits GB standards compliance AS 2070-1999 compliance AS 2070-1999 compliance Migration Testing Required for all FCMs Specific Migration Limits GB standards compliance AS 2070-1999 compliance AS 2070-1999 compliance AS 2070-1999 compliance Migration Testing Required for all FCMs Specific Migration Limits GB standards compliance AS 2070-1999 complian
compliance Positive list approach GB 9685 standards Schedule 3 compliance Varying prohibited substances Documentation FCN notifications Declaration of Compliance Health certificate Supplier declarations Different format requirements Testing Frequency Initial qualification Ongoing verification Pre-market approval Risk-based approach Cost and
time constraints Enforcement Mechanisms Recall authority Market surveillance Strict penalties system Compliance monitoring Varying severity of consequences Impact on Food Safety and Quality Proper food-grade packaging directly impacts product safety, shelf life, and overall quality. When designed correctly, packaging creates optimal conditions
that preserve nutritional value, flavor, and appearance while preventing spoilage and contamination. At Spack Machine, our FDA-compliant packaging solutions reflect our commitment to meeting these essential requirements. We understand that food safety isn't just about regulatory compliance - it's about consumer trust and product integrity
throughout the supply chain. Food manufacturers must consider how packaging materials interact with specific food products under various environmental conditions. Temperature fluctuations, humidity changes, and exposure to light can all affect packaging performance and subsequently impact food safety. # Regulatory Standards and Compliance:
Your Guide to Packaging Safety Navigating the complex world of packaging compliance regulations can seem overwhelming, but understanding these requirements is essential for any food manufacturer or distributor. Proper adherence to regulatory standards not only ensures consumer safety but also builds brand trust and prevents costly product
recalls. > "Food-grade packaging compliance involves meeting specific governmental regulations and international standards that verify materials are safe for food contact, with requirements varying by region, material type, and intended food application." ## FDA Regulations for Food Packaging The U.S. Food and Drug Administration (FDA)
maintains strict oversight of food-grade packaging through several key regulations. The most fundamental is 21 CFR 174-179, which establishes requirements for food contact substances (FCS). These regulations define acceptable materials, manufacturing practices, and testing protocols to ensure packaging safety. For manufacturers, compliance
begins with using FDA-approved materials that meet the "generally recognized as safe" (GRAS) designation or have approved Food Contact Notifications (FCNs). The FDA also requires documentation proving materials won't transfer harmful substances to food under normal use conditions. Enforcement of these regulations has intensified in recent
years, with the FDA conducting more frequent inspections and requiring more comprehensive documentation. Companies must maintain detailed records demonstrating compliance throughout their supply chain. ## International Standards and Certifications Beyond U.S. borders, manufacturers must navigate a complex landscape of international
standards. The European Union applies Regulation (EC) No 1935/2004 as its framework for food contact materials, often requiring more extensive testing than FDA standards. Meanwhile, China implements GB standards that have their own unique requirements. Global manufacturers typically seek certifications like ISO 22000 (food safety
management) and FSSC 22000 to demonstrate compliance across multiple markets. These third-party verifications help streamline the approval process and build customer confidence in packaging safety. ### Global Packaging Compliance Requirements Comparison | Regulatory Aspect | United States (FDA) | European Union | China | Japan |
                                                                                                                                                                          --- | Primary Legislation | 21 CFR 174-179 | Regulation EC 1935/2004 | GB 4806 Series | Food Sanitation Law | Medium to High | Approval Process | FCN or GRAS listing | Positive List approach | Pre-market approval | Positive List system | High | Testing
 Requirements | Migration testing | Overall & specific migration limits | GB standard tests | Material-specific tests | High | Documentation | Compliance | Border
inspection & sampling | Periodic inspections | Medium to High | ## Compliance Testing protocols. Migration testing protocols. Migration testing stands as the cornerstone, measuring how much of a substance might transfer from packaging to food under worst-case scenarios. These tests simulate various
conditions including temperature extremes, acidic or fatty food contents, and extended storage periods. Additional testing includes chemical composition analysis, microbial testing ensures the material maintains its protective properties through multiple cleaning cycles. At
Spack Machine, all our packaging solutions undergo rigorous testing to meet global safety standards. ## Documentation forms the backbone of packaging compliance. Manufacturers must maintain detailed technical files that include material specifications, supplier certifications, test reports, and
traceability records. These documents must be readily available for regulatory inspections and customer audits. The certifications needed for food-safe packaging vary by market but typically include material safety data sheets, compliance declarations, and GMP (Good Manufacturing Practice) certifications. Companies must also maintain change
control procedures to evaluate and document any modifications to materials or processes that might affect compliance remains essential, forward-thinking companies are also documenting their sustainability initiatives. This "double whammy" approach addresses both safety and environmental concerns, meeting
growing consumer demand for responsible packaging solutions. Material Selection and Safety Considerations: Choosing the Right Food-Grade Options Selecting appropriate materials for food packaging requires careful consideration of safety, functionality, and product compatibility. The right choice protects consumers while preserving food quality
and extending shelf life. Understanding these critical factors helps manufacturers make informed decisions that comply with regulations without compromising performance. "Food-grade packaging materials must meet stringent safety requirements including non-toxicity, chemical stability, and resistance to migration while maintaining the integrity
and quality of food products throughout their intended shelf life." Types of Food-Grade Materials The world of food-safe materials offers diverse options, each with unique advantages for specific applications. Plastics like polyethylene (PP), and polyethylene terephthalate (PET) remain popular due to their versatility and cost-
effectiveness. These materials provide excellent moisture barriers and can be engineered for various food types. Metals, particularly aluminum and tinplate, offer superior barrier properties against light, oxygen, and moisture. Glass provides exceptional chemical inertness and is ideal for products requiring a premium appearance or longer shelf life.
Paper-based materials, often coated or laminated with food-grade polymers, provide sustainable and compostable materials represent the newest frontier in food-grade packaging, addressing growing environmental concerns. These innovative options include polylactic acid (PLA),
polyhydroxyalkanoates (PHA), and cellulose-based materials that maintain food safety while reducing environmental impact. Material properties and Applications. Factors like moisture sensitivity, fat content, acidity, and shelf life
requirements dictate appropriate packaging choices. For example, high-fat products require materials with strong grease resistance, while acidic foods need packaging that won't degrade through chemical interaction. Temperature conditions throughout the supply chain also influence materials election. Packaging must maintain integrity during
processing (which may include hot-filling, pasteurization, or retorting) and throughout distribution and storage. At Spack Machine, our equipment accommodates various material types, allowing customers flexibility in their packaging choices. Food-Grade Material Comparison Matrix Material Type Moisture Barrier Oxygen Barrier Temperature
 Range Recycling Status Typical Applications Low-Density Polyethylene (LDPE) Excellent Poor -50°C to 80°C Recyclable (Type 5) Hot-fill applications, microwavable containers PET Good Good -40°C to 70°C Highly Recyclable (Type 1)
Beverage bottles, thermoformed trays Aluminum Foil Excellent -40°C to 40°C Recyclable Barrier layers, heat preservation Bioplastic (PLA) Moderate Poor to Moderate Poor to Moderate Poor to Moderate Poor to 40°C to 45°C Industrially Compostable Cold foods, dry goods, fresh produce Migration Testing Migration testing serves as a cornerstone of food-grade packaging safety
This critical process evaluates whether packaging components might transfer to food under normal or worst-case conditions. Testing protocols typically use food simulants (like ethanol, acetic acid, or vegetable oil) to replicate different food types under various temperature conditions. Regulations specify migration limits for overall migration (total
substances transferred) and specific migration (particular chemicals of concern). Manufacturers must document testing results as part of their compliance procedures. Spack Machine helps customers navigate these requirements through educational resources and compatible equipment design. Environmental Considerations Today's food packaging
landscape increasingly balances safety requirements with environmental responsibility. Manufacturers face growing pressure to reduce packaging waste while maintaining food safety standards. Consumers increasingly seek "earth-friendly"
packaging, creating market opportunities for brands that successfully combine safety and sustainability. Innovations like mono-material structures (easier to recycle) and responsibly sourced renewable materials demonstrate this evolving focus. The environmental impact of food-grade packaging extends beyond disposal considerations to include
manufacturing processes, transportation efficiency, and carbon footprint. Forward-thinking companies now consider the entire lifecycle when selecting packaging materials. Implementation and Best Practices: Mastering Food-Grade Packaging materials. Implementation and Best Practices: Mastering Food-Grade Packaging materials.
systematic approach that addresses quality control, proper handling, and cost management ensures both compliance and operational efficiency. These practical guidelines will help you navigate the complexities of food packaging implementation requires a
comprehensive approach including robust quality control systems, proper material handling protocols, and strategic cost management while maintaining regulatory compliance throughout the processful food-grade packaging implementation
 Begin with supplier qualification to verify material compliance with applicable regulations. Implement incoming material inspection to confirm specifications are consistently met before materials enter your operation. Regular in-process testing ensures packaging integrity throughout production. This includes seal strength testing, visual inspections,
and dimension verification. Document all quality checks systematically, maintaining traceability from raw materials through finished products. Many companies find implementing statistical process control (SPC) helps identify potential issues before they become problems. At Spack Machine, our equipment incorporates built-in quality verification
systems that monitor critical parameters during operation. These systems provide real-time feedback, allowing operators to make adjustments before quality issues develop. Our technical support team also helps customers establish appropriate quality control protocols specific to their products and packaging materials. Storage and Handling
Guidelines Proper storage and handling of packaging materials preserves their food-grade status and functional properties. Store materials in clean, dry areas with controlled temperature and humidity. Implement pest control measures and maintain appropriate separation from chemicals, cleaning agents, and non-food materials. Train personnel on
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