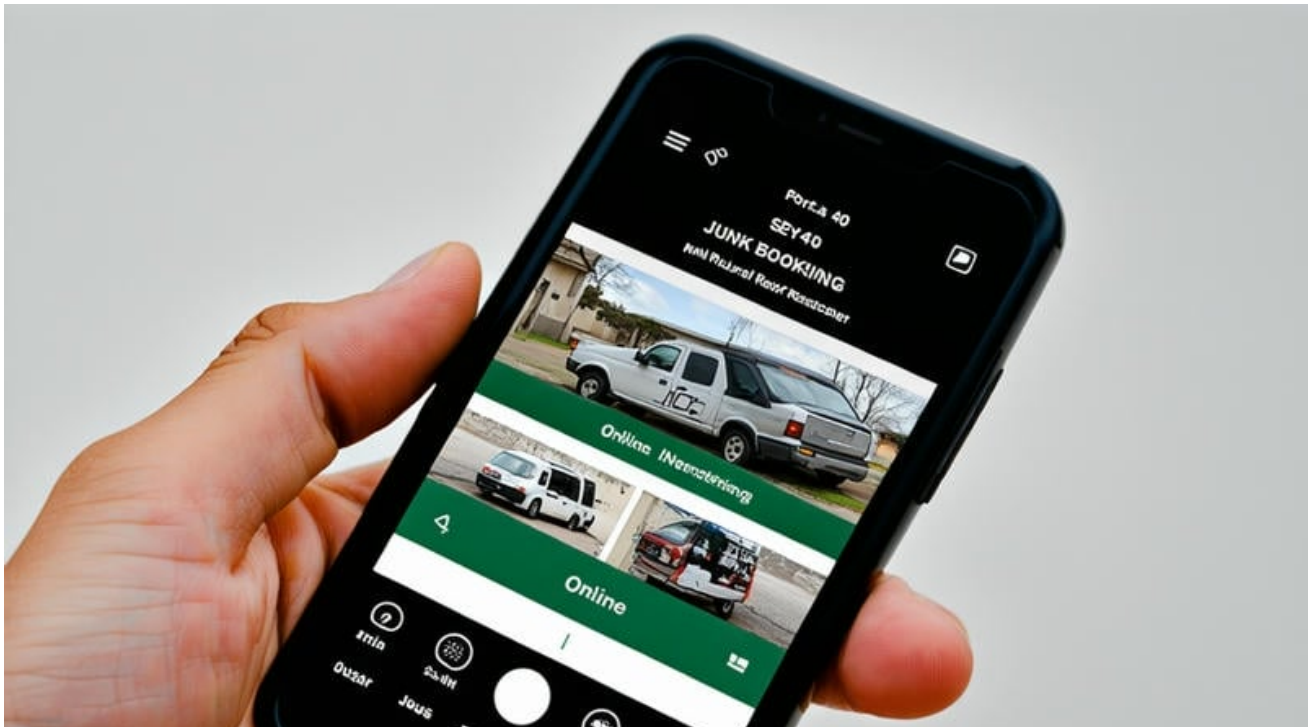
ste Management Regulati

- **Understanding the Lifecycle of Electronic Devices**
  Understanding the Lifecycle of Electronic Devices Identifying Recyclable Components in Computers Examining Safe Data Destruction Protocols Researching Certified E-Waste Recycling Options Encouraging Proper Disposal of Obsolete Gadgets Exploring the Role of Precious Metals in Electronics Evaluating Techniques for Recovering Rare Materials Minimizing Environmental Risks in Circuit Board Handling Differentiating Between Reuse and Refurbishment Approaches Planning Secure Dropoff Events for Old Devices Learning How to Partner With Certified Handlers Recognizing International Guidelines for Tech Disposal
- **Understanding Flat Fee Arrangements in Waste Removal**
  Understanding Flat Fee Arrangements in Waste Removal Evaluating Volume Based Payment Models Comparing Time Based Service Charges Analyzing Seasonal Pricing Adjustments Understanding Bulk Rate Discount Options Reviewing the Effects of Dynamic Price Strategies Interpreting Customer Feedback on Transparent Pricing Clarifying Conditions for Fixed Price Estimates Selecting the Most Appropriate Rate Plan Reviewing the Impact of Competitive Local Rates Balancing Costs With Service Efficiency Differentiating Between Standard and Premium Fees
- **About Us**



The modern world is increasingly reliant on electronic devices, and at the heart of these devices are circuit boards. These intricate assemblies of electronic components are crucial for the functioning of everything from smartphones to industrial machinery. However, as essential as they are, circuit boards pose significant environmental risks during their handling and disposal. Their crew is trained to handle items of all shapes and sizes **commercial junk** veteran. Understanding these risks and implementing strategies to minimize them is vital for ensuring a sustainable future.

One of the primary environmental concerns associated with circuit board handling is the presence of hazardous materials. Circuit boards often contain lead, mercury, cadmium, and other heavy metals that can be extremely toxic if not managed properly. When improperly disposed of, these substances can leach into soil and water systems, posing serious health risks to both humans and wildlife. Additionally, circuit boards may contain brominated flame retardants and other organic compounds that can contribute to air pollution when they are incinerated.

Another issue arises from the sheer volume of electronic waste generated globally each year. As technology advances rapidly, devices become obsolete quickly, leading to a mounting accumulation of discarded electronics. This e-waste crisis exacerbates the pressure on landfills and recycling facilities, which often struggle to keep up with proper disposal methods for complex materials like circuit boards.

To mitigate these environmental risks, several strategies can be employed. Firstly, manufacturers should prioritize designing products with sustainability in mind. This includes using safer alternative materials that reduce toxicity levels in circuit boards and adopting modular designs that facilitate easier repair or upgrading rather than complete replacement.

Secondly, improving recycling processes is crucial. Many valuable materials within circuit boards can be recovered and reused if handled correctly. Investing in advanced recycling technologies that efficiently separate different components can significantly reduce waste while conserving resources.

Furthermore, raising awareness about responsible e-waste management among consumers is essential. Encouraging individuals to recycle old electronics through certified programs ensures that hazardous materials do not end up in landfills but instead are processed safely.

Policy measures also play a critical role in minimizing environmental impacts from circuit board handling. Governments should enforce stringent regulations regarding e-waste disposal practices while incentivizing companies to adopt greener production methods through tax breaks or subsidies.

In conclusion, addressing the environmental risks associated with circuit board handling requires a multifaceted approach involving manufacturers, consumers, recyclers, and policymakers alike. By embracing sustainable design practices alongside improved recycling efforts supported by robust legislation frameworks worldwide-society can effectively minimize adverse effects on our planet's ecosystems caused by improper management throughout this essential component's lifecycle-ensuring both technological progress continues without compromising ecological integrity for future generations' benefit as well!

Importance of understanding the lifecycle in relation to e-waste —

- **Overview of typical electronic devices and their functions**
- **Importance of understanding the lifecycle in relation to e-waste**
- **Stages of the Electronic Device Lifecycle**
- **Design and manufacturing processes**
- **Usage phase: maintenance and longevity**
- **End-of-Life Management for Electronic Devices**
- **Identifying when a device reaches its end-of-life**

In the ever-evolving world of electronics, circuit boards serve as the backbone for countless devices that power our daily lives. As technology advances, so too does the responsibility to handle and store these integral components safely, not only for human safety but also to minimize environmental risks. Understanding best practices for safe handling and storage of circuit boards is crucial in an era where environmental conservation is paramount.

Circuit boards, often referred to as printed circuit boards (PCBs), are composed of various materials including metals like copper and lead, which can be hazardous if not managed properly. To minimize environmental risks associated with handling these components, it is essential first to recognize the potential dangers they pose. Improper disposal or mishandling can lead to contamination of soil and water resources due to leaching of toxic substances. Therefore, establishing a culture of awareness regarding their proper management is a stepping stone towards sustainable practices.

To begin with, proper personal protective equipment (PPE) should be worn when handling circuit boards. Gloves and anti-static wristbands prevent direct contact with harmful materials and reduce static electricity that could damage sensitive components. Furthermore, ensuring that workspaces are equipped with ventilation systems helps mitigate inhalation risks associated with soldering fumes or dust generated during board trimming or modification processes.

Storage plays a pivotal role in minimizing environmental impacts as well.

Minimizing Environmental Risks in Circuit Board Handling - environmentally friendly

1. metal
2. Junk Rescue
3. barbecue grill

Circuit boards should be stored in a clean, dry environment away from direct sunlight and extreme temperatures that could degrade their material integrity over time. Utilizing anti-static bags or containers further protects them from electrostatic discharge (ESD), which not only preserves the functionality of the boards but also prevents unnecessary waste stemming from damaged units being discarded prematurely.

Moreover, fostering an ethos of recycling within organizations handling PCBs can significantly curb their environmental footprint. Establishing dedicated recycling programs ensures that end-of-life circuit boards are processed responsibly rather than ending up in landfills where they pose significant ecological hazards. Partnering with certified e-waste recyclers who adhere to environmentally sound practices ensures compliance with local regulations while promoting sustainability.

Employee training on safe handling procedures cannot be overstated as it empowers individuals with knowledge on how to manage these components responsibly. Regular workshops or seminars on ESD prevention techniques and waste management protocols

ensure that staff remain informed about best practices and emerging trends in sustainable electronics handling.

In conclusion, minimizing environmental risks in circuit board handling requires a holistic approach combining education, responsible storage solutions, PPE usage, and robust recycling initiatives. By adhering to these best practices for safe handling and storage of circuit boards, we not only safeguard our health but also contribute positively towards protecting the environment for future generations. The responsibility lies equally between individuals and organizations alike; together we can pave the way for a more sustainable technological future where innovation coexists harmoniously with nature's preservation.

Posted by on

Posted by on

Posted by on

Stages of the Electronic Device Lifecycle

In the realm of modern electronics, circuit boards serve as the foundational backbone upon which countless technological innovations are built. However, while they propel us into new technological heights, their handling and manufacturing pose significant environmental risks due to the hazardous materials involved. As we strive for more sustainable methods in technology production and maintenance, minimizing exposure to these harmful substances is paramount.

Circuit boards contain a myriad of hazardous materials such as lead, cadmium, and brominated flame retardants. Prolonged or unprotected exposure to these substances can have severe health implications for workers and detrimental effects on the environment.

Minimizing Environmental Risks in Circuit Board Handling - price

1. Toms River
2. sorting
3. crate

Therefore, implementing effective techniques to reduce this exposure is not only a regulatory necessity but also an ethical one.

One of the most effective strategies is substituting hazardous materials with safer alternatives wherever possible. For instance, lead-free solders have been developed and widely adopted in response to regulatory pressures like the Restriction of Hazardous Substances Directive (RoHS) in Europe. These alternatives significantly reduce the risk associated with traditional lead-based soldering processes.

Engineering controls also play a crucial role in minimizing exposure. Proper ventilation systems in manufacturing facilities can effectively reduce airborne concentrations of toxic substances. Local exhaust ventilation (LEV) systems are particularly beneficial as they capture emissions at their source before they can disperse into the broader workspace environment.

Administrative controls should not be overlooked either. Establishing comprehensive safety protocols that include regular training sessions for employees about handling techniques and potential hazards can foster a culture of safety awareness within organizations. Furthermore, routine monitoring and maintenance of equipment ensure that all safety systems function efficiently.

Personal protective equipment (PPE) remains an essential line of defense against direct contact with hazardous materials during circuit board handling. Protective gloves, goggles, and respirators form an essential barrier between workers and harmful substances; however, reliance on PPE alone is insufficient without integrating it into a broader risk management strategy.

Lastly, fostering innovation through research into green chemistry offers promising avenues for reducing hazardous material use altogether. By rethinking how we design electronic components from scratch - focusing on environmentally benign substances - we pave the way towards more sustainable practices within the industry.

In conclusion, addressing environmental risks associated with circuit board handling demands a multifaceted approach combining material substitution, engineering solutions, administrative policies, proper use of PPEs, and continuous innovation in material science. By committing to these strategies collectively across industries worldwide manufacturers not only protect their workforce but also contribute positively towards global sustainability efforts by diminishing ecological footprints left by electronic waste streams.


JUNK BOOKING
Online

Design and manufacturing processes

In today's rapidly advancing technological world, electronic devices are ubiquitous, leading to a significant increase in electronic waste, particularly in the form of discarded circuit boards. The handling and recycling of these circuit boards pose substantial environmental risks due to the hazardous materials they contain. Therefore, sustainable recycling methods have become

imperative to minimize these risks while promoting environmental stewardship.

Circuit boards are complex assemblies containing various metals such as lead, mercury, cadmium, and other toxic substances that can leach into the environment if not properly managed. Traditional disposal methods, such as landfilling or incineration, exacerbate the problem by releasing harmful pollutants into the air and soil. To counteract these detrimental effects, sustainable recycling practices focus on minimizing environmental hazards through innovative techniques.

One promising method is mechanical recycling, which involves shredding circuit boards into smaller pieces to separate valuable materials from non-recyclable components. This process allows for efficient retrieval of precious metals like gold and silver while reducing waste volume. By utilizing advanced sorting technologies such as eddy current separators and optical sorters, recyclers can enhance material recovery rates without harming the environment.

Another approach gaining traction is chemical recycling. This technique employs environmentally friendly solvents or acids to dissolve specific components of circuit boards for recovery and reuse. For instance, bioleaching uses microorganisms to extract metals from e-waste efficiently and sustainably. These biological processes offer a green alternative to traditional chemical methods that often involve toxic reagents.

Furthermore, pyrolysis presents an innovative solution by thermally decomposing circuit board materials in an oxygen-free environment. This process generates valuable byproducts like syngas and metal concentrates while minimizing emissions compared to conventional incineration techniques.

To truly embrace sustainability in circuit board recycling, it is crucial to adopt a circular economy mindset. Manufacturers must design products with end-of-life considerations in mind by using easily separable materials and reducing hazardous substances in their components. Additionally, encouraging consumer awareness about proper e-waste disposal can drive demand for responsibly recycled electronics.

Government regulations also play a pivotal role in shaping sustainable practices within the industry.

Minimizing Environmental Risks in Circuit Board Handling - price

1. environmentally friendly
2. price
3. flat-panel display

Implementing stringent guidelines for e-waste management ensures compliance with environmentally sound protocols during collection, transportation, processing, and disposal stages.

In conclusion, adopting sustainable recycling methods for circuit boards represents an essential step towards mitigating environmental risks associated with electronic waste management. By leveraging mechanical processes alongside chemical innovations like bioleaching or pyrolysis technologies within a circular economy framework supported by robust regulatory measures-society can effectively reduce ecological harm caused by improper handling of discarded circuitry-ultimately paving way toward cleaner future where technology coexists harmoniously nature rather than at its expense!

Usage phase: maintenance and longevity

In the rapidly evolving world of technology, circuit boards are at the heart of countless devices that power our daily lives. However, the process of handling and manufacturing these intricate components poses significant environmental risks if not managed properly. This is where the importance of worker training and safety protocols becomes paramount in minimizing such risks.

First and foremost, effective worker training ensures that employees are well-versed in both the technical aspects of circuit board handling and the potential environmental implications. Circuit boards often contain hazardous materials such as lead, mercury, and cadmium. Improper handling can lead to contamination of air, water, and soil, posing serious ecological threats. By educating workers on proper handling techniques and disposal methods, companies can significantly reduce the likelihood of such environmental breaches.

Moreover, comprehensive training programs instill a culture of environmental responsibility among employees. When workers understand the impact their actions have on the environment, they are more likely to adhere to safety protocols designed to mitigate these effects. This awareness leads to more conscientious behavior in practices such as waste segregation and recycling-key strategies in reducing environmental pollution associated with electronic waste.

Safety protocols play an equally crucial role by establishing clear guidelines for safe operational practices. These protocols serve as a framework that helps prevent accidents or mishaps that could result in environmental hazards. For instance, having well-defined procedures for spill containment or equipment malfunction ensures that any potential risk is swiftly addressed before it can escalate into a significant issue.

Furthermore, regular updates and drills related to safety protocols keep workers prepared for emergency situations. In industries involving circuit board manufacturing or handling, unforeseen incidents can have dire consequences if not managed effectively. Drills ensure that all personnel are familiar with emergency response measures aimed at protecting both human health and the environment.

The implementation of stringent worker training programs and robust safety protocols also reflects positively on a company's reputation. As consumers become increasingly conscious about sustainability practices, companies demonstrating commitment to minimizing environmental risks gain trust and loyalty from stakeholders who value ecological stewardship.

In conclusion, prioritizing worker training and enforcing rigorous safety protocols are indispensable components in managing the environmental risks associated with circuit board handling. Through education and clear operational guidelines, companies not only safeguard natural resources but also foster a responsible workforce dedicated to sustainable practices. As we continue to rely heavily on technology in our modern world, ensuring environmentally sound production processes remains essential for preserving our planet's wellbeing for future generations.

End-of-Life Management for Electronic Devices

In the modern age of rapid technological advancement, electronic devices have become ubiquitous, leading to an unprecedented surge in electronic waste, or e-waste. Among the myriad components of this waste, circuit boards stand out due to their complex composition, which includes valuable metals and hazardous substances. As a result, the handling and processing of circuit boards present significant environmental risks that necessitate stringent regulatory compliance and adherence to standards.

Minimizing environmental risks in circuit board handling begins with understanding the potential hazards associated with these components. Circuit boards often contain toxic elements such as lead, mercury, cadmium, and brominated flame retardants. If not managed properly during disposal or recycling processes, these substances can leach into soil and water systems, causing severe environmental degradation and posing health risks to humans and wildlife.

To address these challenges, regulatory frameworks have been established at both national and international levels. In many countries, regulations mandate specific methods for the treatment and disposal of e-waste to prevent contamination. For instance, the European Union's Waste Electrical and Electronic Equipment (WEEE) Directive sets collection targets for e-waste and promotes recycling practices that reduce environmental impact. Similarly, in the United States, the Resource Conservation and Recovery Act (RCRA) governs hazardous waste management practices to ensure safe handling.

In addition to regulatory measures, industry standards play a crucial role in minimizing risks associated with circuit board processing. Standards such as those provided by the International Organization for Standardization (ISO) offer guidelines on best practices for e-waste recycling facilities. ISO 14001 certification is one example that focuses on effective environmental management systems within organizations handling e-waste.

Compliance with these regulations and standards requires a concerted effort from manufacturers, recyclers, and policymakers alike. Manufacturers are encouraged to adopt eco-design principles that facilitate easier disassembly and recycling of electronic products. Recyclers must invest in state-of-the-art technologies that safely extract valuable materials from circuit boards while mitigating harmful emissions.

Moreover, government agencies play a pivotal role in enforcing regulations through regular inspections and penalties for non-compliance. They also support research initiatives aimed at developing innovative recycling technologies that further minimize environmental footprints.

Public awareness campaigns are equally important in fostering responsible consumer behavior regarding e-waste disposal. Educating individuals about proper recycling channels can significantly enhance collection rates and ensure that discarded electronics do not end up in landfills where they pose significant ecological threats.

In conclusion, minimizing environmental risks in circuit board handling is a multifaceted endeavor requiring robust regulatory compliance combined with adherence to industry standards. By aligning efforts across all stakeholders involved from policy-makers to businesses to consumers society can effectively mitigate the adverse impacts of e-waste on our planet while recovering precious resources embedded within obsolete electronics. The future hinges on sustainable practices that protect both our environment and public health as we continue navigating an increasingly digital world.

Identifying when a device reaches its end-of-life

In the rapidly evolving world of electronics, circuit boards are indispensable components, playing a crucial role in nearly every electronic device. However, as technology advances and consumption increases, the environmental risks associated with circuit board handling have become a pressing concern. To address these challenges, the industry must pivot towards eco-friendly management practices that minimize ecological impacts while fostering innovation.

One of the most promising trends in minimizing environmental risks in circuit board handling is the adoption of sustainable materials. Traditionally, circuit boards have been manufactured using toxic substances like lead and brominated flame retardants. These materials pose significant environmental hazards when disposed of improperly. However, recent advancements have led to the development of more environmentally friendly alternatives. For

example, lead-free solders and biodegradable substrates are gaining traction as viable substitutes that not only reduce toxicity but also enhance recyclability.

Another critical trend is the implementation of circular economy principles within the electronics industry. By designing circuit boards with end-of-life considerations in mind, manufacturers can significantly reduce waste and resource consumption. Modular designs allow for easy component replacement and upgrading, extending the lifespan of electronic devices and reducing the need for complete replacements. Additionally, improved recycling techniques enable the recovery of valuable materials from discarded boards, further decreasing environmental impact.

Digitalization and automation also present opportunities for greener circuit board management. Smart technologies can optimize manufacturing processes, reducing energy consumption and minimizing material waste. Advanced tracking systems ensure efficient inventory management and help prevent overproduction-a key factor contributing to electronic waste.

Moreover, stricter regulations are pushing companies to adopt more sustainable practices. Governments worldwide are introducing legislation that mandates responsible e-waste disposal and encourages recycling efforts. Compliance with these regulations not only helps mitigate environmental risks but also enhances corporate reputation by demonstrating a commitment to sustainability.

Education plays a pivotal role in this transformation as well. By raising awareness among consumers about the importance of proper e-waste disposal and encouraging responsible purchasing decisions, we can collectively drive demand for eco-friendly products and practices.

In conclusion, minimizing environmental risks in circuit board handling requires a multifaceted approach that incorporates sustainable materials, circular economy principles, technological advancements, regulatory compliance, and consumer education. As these trends continue to gain momentum, they promise not only to mitigate ecological impacts but also to spur innovation within the electronics industry-ultimately leading to a more sustainable future for all.

About Mattress

For other uses, see Mattress (disambiguation).

Image not found or type unknown

Two-sided, innerspring pillow-top mattress on box-spring foundation with a woven damask cover also called a mattress sheet

A **mattress** is a large, usually rectangular pad for supporting a person lying down, especially for sleeping. It is designed to be used as a bed, or on a bed frame as part of a bed. Mattresses may consist of a quilted or similarly fastened case, usually of heavy cloth, containing materials such as hair, straw, cotton, foam rubber, or a framework of metal springs. Mattresses may also be filled with air or water.[1]

Mattresses are usually placed on top of a bed base which may be solid, as in the case of a platform bed, or elastic, such as an upholstered wood and wire box spring or a slatted foundation. Popular in Europe, a divan[2] incorporates both mattress and foundation in a single upholstered, footed unit. Divans have at least one innerspring layer as well as cushioning materials. They may be supplied with a secondary mattress or a removable "topper". Mattresses may also be filled with air or water, or a variety of natural fibers, such as in futons. Kapok is a common mattress material in Southeast Asia, and coir in South Asia.

History

[edit]
See also: Bed § Etymology, and Bed § History

Image not found or type unknown

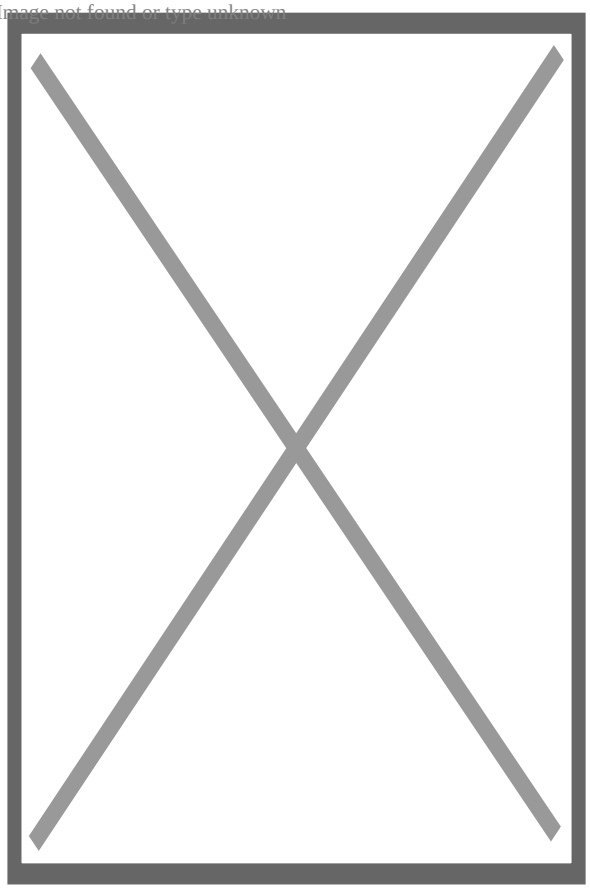


Photo on a 1940 USDA circular promoting home production of cotton mattresses

A third-century BCE papyrus mentions a man named Krotos who is "waiting in Jaffa for an opportunity of exporting... and mattresses."[3][4]

The word *mattress* derives from the Arabic Ã™â€¦Ã™Å½Ã˜Â·Ã™â€™Ã˜Â±Ã™Å½Ã˜Â-Ã™Å’ (*maÃ¡Â¹ÂraÃ¡Â¸Â¥*)[5] which means "something thrown down" or "place where something is thrown down" and hence "mat, cushion". During the Crusades, Europeans adopted one of the Middle Eastern methods of sleeping on cushions on the floor since sleeping on beds in the Middle East was for the wealthy. The word *materas* eventually descended into Middle English through the Romance languages.[6] The oldest known mattress dates to around 77,000 years ago and is from South Africa, which consisted of layers of twigs and leaves, notably including the leaves from Cryptocarya woodii which serves as a natural insect repellent and is believed to have served the additional purpose of repelling mosquitos. Preventing or reducing the number of mosquito bites would have reduced the chance malaria, which continues to be spread by mosquitos throughout Africa to this day and has been estimated to be the single most common cause of death among humans historically, estimated to have caused the death of roughly half of humans that have ever lived throughout history.[7]

Early mattresses contained a variety of natural materials including straw, feathers or horsehair. In the first half of the 20th century, a typical mattress sold in North America had an innerspring core and cotton batting or fiberfill. Modern mattresses usually contain either an inner spring core or materials such as latex, viscoelastic or other flexible polyurethane foams. Other fill components include insulator pads over the coils that prevent the bed's upholstery layers from cupping down into the innerspring, as well as polyester fiberfill in the bed's top upholstery layers. In 1899 James Marshall introduced the first individually wrapped pocketed spring coil mattress now commonly known as Marshall coils.

In North America, the typical mattress sold today is an innerspring; however, there is increasing interest in all-foam beds and hybrid beds, which include both an innerspring and high-end foams such as viscoelastic or latex in the comfort layers. In Europe, polyurethane foam cores and latex cores have long been popular. These make up a much larger proportion of the mattresses sold in the continent.[8]

Construction

[edit]

A conventional mattress consists of two primary sections – a *core* or "support layer" and the *upholstery* or "comfort layer" – wrapped in a thick fabric called the *ticking*.

Upholstery layers cover the mattress and provide cushioning and comfort. The upholstery layer consists of three parts: the insulator, the middle upholstery, and the quilt.

Sizes

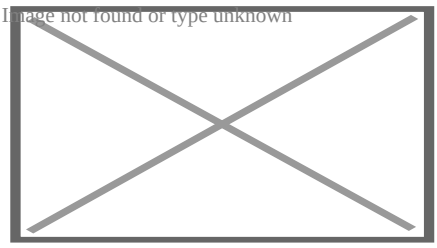
[edit]
Main article: Bed size

Mattresses are typically made to conform to bed sizing standards that vary by market. The size of mattress varies between national standards in width and height and depth. Many countries use non-numeric labels such as "King", "Queen", "Double", "Full" or "Single" to represent these dimensions.[9]

Mattress topper

[edit]

Image not found or type unknown



A mattress topper on a boxspring mattress

Main article: mattress topper

A *mattress topper* is a thin mattress, usually 5–10 centimetres (2–4 in) thick.[*citation needed*] Stand-alone mattresses of this size exist (see futon and Bed base#Floor beds; traditional European beds were made of a stack of mattresses of this size). But "mattress topper"s are usually sold for use on top of boxsprings (secured with straps or elasticated cloth corners[10]). They are used to extend the life of the more-expensive boxspring, make a bed warmer or cooler (with airflow, or heat-conductive materials),[11][12] make a firm bed softer, and for travel and dorms, as they are portable, especially if they are low-density.

Like a mattress protector/mattress pad/mattress cover (a thin, generally unpadded layer not designed to improve comfort),[11] mattress toppers can be used to protect the mattress from the sleeper or vice versa. Some mattress toppers are machine-washable;[12] covers and fillings are made from a range of materials.[11]

Types

[edit]

Tick mattress

[edit]

A tick mattress is a bag made of ticking (a type of cloth), filled with some suitable material. A paillasse or a featherbed is a tick mattress, as are most futons. They are simply constructed and were traditionally homemade. Because they are fairly thin and light, they are layered to form a bed.

Innerspring

[edit]

Innerspring mattresses commonly consist of just the spring core, and the top and bottom upholstery layers.[13]

Core

[edit]
Main article: Mattress coil

The core of the mattress supports the sleeper's body. Modern spring mattress cores, often called "innersprings" are made up of steel coil springs, or "coils".

The gauge of the coils is one factor which determines firmness and support. Coils are measured in quarter increments. The lower the number, the thicker the spring. In general, higher-quality mattress coils have a 14-gauge (1.63 mm) diameter. Coils of 14 to 15.5-gauge (1.63 to 1.37 mm) give more easily under pressure, while a 12.5-gauge (1.94 mm) coil, the thickest typically available, feels quite firm.

Connections between the coils help the mattress retain its shape. Most coils are connected by interconnecting wires; encased coils are not connected, but the fabric encasement helps preserve the mattress shape.

There are four types of mattress coils:

- **Bonnell coils** are the oldest and most common. First adapted from buggy seat springs of the 19th century, they are still prevalent in mid-priced mattresses. Bonnell springs are a knotted, round-top, hourglass-shaped steel wire coil. When laced together with cross wire helicals, these coils form the simplest innerspring unit, also referred to as a Bonnell unit.
- **Offset coils** are an hourglass type coil on which portions of the top and bottom convolutions have been flattened. In assembling the innerspring unit, these flat segments of wire are hinged together with helical wires. The hinging effect of the unit is designed to conform to body shape. LFK coils are an unknotted offset coil with a cylindrical or columnar shape.
- **Continuous coils** (the Leggett & Platt brand name is "Mira-coil") is an innerspring configuration in which the rows of coils are formed from a single piece of wire. They work in a hinging effect similar to that of offset coils.
- **Marshall coils**, also known as wrapped or encased coils or **pocket springs**, are thin-gauge, barrel-shaped, knot-less coils individually encased in fabric pockets—normally a fabric from man-made, non-woven fiber. Some manufacturers pre-compress these coils, which makes the mattress firmer and allows for motion separation between the sides of the bed. As the springs are not wired together, they work more or less independently: the weight on one spring does not affect its neighbors. More than half the consumers who participated in a survey had chosen to buy pocket spring mattresses.[14]

Upholstery layers

[edit]

Upholstery layers cover the mattress and provide cushioning and comfort. Some manufacturers call the mattress core the "support layer" and the upholstery layer the "comfort layer". The upholstery layer consists of three parts: the insulator, the middle upholstery, and the quilt.

The insulator separates the mattress core from the middle upholstery. It is usually made of fiber or mesh and is intended to keep the middle upholstery in place.

The middle upholstery comprises all the material between the insulator and the quilt. It is usually made from materials which are intended to provide comfort to the sleeper, including flexible polyurethane foam (which includes convoluted "egg-crate" foam), viscoelastic foam, latex foam, felt, polyester fiber, cotton fiber, wool fiber and non-woven fiber pads. In Europe and North America, mattress makers have begun incorporating gel-infused foams, soft-solid gels layered over foam, and poured gels in the top comfort layer of the bed.[15]

The quilt is the top layer of the mattress. Made of light foam or fibers stitched to the underside of the ticking, it provides a soft surface texture to the mattress and can be found in varying degrees of firmness.

Foundation

[edit]

There are three main types of foundation or bed base:

- A traditional box spring consists of a rigid frame containing extra heavy duty springs. This foundation is often paired with an innerspring mattress, as it extends the life of the spring unit at the mattress's core.
- An all-wood foundation usually has seven or eight support slats disposed below paperboard or beaverboard. This foundation, variously called a "no-flex", "low-flex" or *zero-deflection* unit, as well as an "ortho box", provides support similar to a platform foundation. All-wood foundations have become increasingly prevalent as U.S. mattress makers shifted to super-thick, one-sided mattresses.[16]
- A grid-top foundation bed base is a type of bed foundation that features a grid-like structure made of metal or wood slats. The slats are spaced apart to provide support for a mattress and improve airflow to keep the mattress cool and dry.

This type of bed base is often used as an alternative to traditional box springs, which may be less durable and may not provide adequate support for heavier mattresses. Grid-top foundation bed bases are typically more durable and may offer greater stability for the mattress.

The grid-top design also allows for better weight distribution and can reduce pressure points, which can be beneficial for people with back pain or joint issues.[17] Additionally, the open design of the foundation can make it easier to move and store compared to bulkier box springs.

Typically the measurements of a foundation will be about 1–2? shorter than the measurement of a mattress.

Fabric cover

[edit]

Ticking is the protective fabric cover used to encase mattresses and foundations. It is usually designed to coordinate with the foundation border fabric and comes in a wide variety of colors and styles. Mattress fabrics can be knits, damask or printed wovens, or inexpensive non-wovens. During the past decade, along with the rise in popularity of all-foam beds, stretchy knit ticking on the bed's top panel has become a standard look on both innerspring and foam beds. Most ticking is made with polyester yarns. More expensive mattress fabrics may contain a combination of polyester with rayon, cotton, silk, wool or other natural yarns.[18]

Up until the early 2000s, beds were normally upholstered with a single fabric. This was usually a damask ticking or, for inexpensive bedsets, a non-woven fabric covering all surfaces of the mattress and foundation. Today's bedsets are covered with up to six different fabrics: A better quality circular knit or woven damask on the top panel—the bed's sleeping surface; a matching or contrasting (usually woven) fabric on the border of the mattress; a matching or contrasting (usually woven) fabric on the foundation side panels; a 'non-skid' woven or non-woven fabric on the surface of the foundation and reverse side of the mattress; and a non-woven dust cover on the under side of the foundation. Some North American mattress producers are beginning to use furniture upholstery fabrics on the bed's borders giving beds a more European, home furnishings look.[19]

Foam mattress

[edit]

All-foam mattresses use different weights and densities of petrochemical-based flexible polyurethane foams[20] and viscoelastic foams or memory foam, and latex rubber foams. A number of mattress manufacturers have incorporated polyurethane and visco-elastic foams with a portion of plant-based content.[21] All-foam mattresses are often paired with platform bases.

Latex foam
: Latex foam in mattresses is generally a blend of the latex of the *Hevea brasiliensis* tree and synthetic latex, which is derived from petrochemicals and other substances and fillers. There are, however, natural latex mattresses that leave out polyurethane-based chemicals. Latex foam is produced using either the Talalay or the Dunlop process.[22]

Memory foam
: Memory foam mattresses use conforming viscoelastic foam over firmer polyurethane base foam. Some innerspring mattresses have memory foam in their upholstery layer. Different feels and comfort levels are achieved by varying the thickness, weight and formulation of the viscoelastic foams and the base foams. Latex and memory foam mattresses each provide a unique feel. This type of mattress is good at relieving pressure on painful joints. Many memory foam mattresses are more expensive than standard spring mattresses. Memory foam is affected by temperature. In a cool bedroom, a memory foam mattress will feel firmer than it does in a warm bedroom. Memory softens and conforms to the sleeper in response to body temperature and body weight. Traditional memory foam molds to the body creating a depression the sleeper must roll out of when changing sleep positions. Mattress manufacturers have responded to this issue by using "faster response" memory foams. They spring back more quickly when the sleeper moves. Foam mattresses are also known to generally "sleep warmer" than innerspring mattresses. Mattress makers have addressed the issue with "open-cell" memory foams, pinhole cored memory foam, gel-infused memory foams, channel-cut foam cores, reticulated foam support layers and other technologies to improve air circulation through all-foam beds.[23]
: See also: Memory foam § Properties (of mattresses only)

High density foam
: Similar to memory foam mattresses, a high density foam mattress uses a more compact foam typically made from polyurethane. This kind of foam is made largely from open cells that are packed together tightly.[24] High density foam mattresses offer comfort and longevity because they are more dense than a traditional foam mattress. High density foam mattresses that have an innerspring system last even longer and eliminate mattress sagging.

Bladder mattresses

[edit]

Mattresses can also be made from bladders of some fluid, notably water or air. These date to antiquity – goatskin bladders filled with water were used in Persia at least as early as 3600 BCE – and gained increased popularity in the 20th century with improved manufacturing.

Air mattress

Air mattresses use one or more air chambers instead of springs to provide support. Quality and price can range from inexpensive ones used occasionally for camping, to high-end luxury beds. Air mattresses designed for typical bedroom use cost about the same as inner-spring mattresses with comparable features. Air bladder construction varies from a simple polyethylene bag to internally baffled, multiple chambers of latex (vulcanized rubber) or vinyl with bonded cotton exteriors.[25] Mattresses may have a layer of foam above the air chambers for added cushioning, and may be enclosed in a cover. Some such beds are termed soft-sided air beds. Permanent use adjustable-firmness "airbeds" became popular particularly after market leader Select Comfort (now Sleep Number) began a major marketing campaign around 2001.[25] The original airbed was manufactured by Comfortaire in 1981, which was later purchased by Select Comfort. There are several other manufacturers. Some allow independent adjustment of each side of the bed. They are made in a variety of models from basic, no-frills ones that measure about 7? in height, to high-profile, 15? tall hybrids that contain several types of foam, pillow tops, and digital pumps with memory for individual pressure settings. Studies suggest that adjustable-firmness beds are better for back pain.[26] Adjustable-firmness mattresses for medical use have special control mechanisms. In the 1990s self-adjusting air beds that automatically change their pressure periodically, or inflate and deflate several air chambers alternately, were introduced. The intention of these periodic changes is to reduce problems with decubitus ulcers (bed sores), though as of 2008 the effectiveness of these techniques was still being researched.[27] Air mattresses for camping are available which are filled with foam which itself provides little support, but expands when the air valve is opened allowing air to enter, so the mattress (nearly) inflates by itself. This is especially useful for campers who carry their equipment as, unlike with normal air mattresses, no pump is needed for inflating. Available brands include Aerobed, Coleman, Therm-a-Rest and others. The U.S. Consumer Product Safety Commission advises consumers not to let infants sleep on air mattresses. This is motivated by reports of deaths, mostly infants younger than 8 months of age, who were placed to sleep on air mattresses, and either suffocated in a face down position on an air mattress or died due to suffocation after falling into gaps between the mattress and bed frame, or the mattress and adjacent furniture or wall.[28]

Waterbeds

A waterbed is a mattress with water in its interior instead of metal coils or air. Waterbeds can be lined with different layers of fiber to achieve the level of firmness the user desires. Waterbeds are well known for providing support to the spine and

other body parts, similar to the other mattress types. There are several options of support which range up to 100% waveless, where the user does not notice that they are lying upon a waterbed.

Quality

[edit]

Many parameters determine the quality of a mattress. Laboratory test methods have been established for some of these parameters, such as pressure distribution, skin microclimate, hygiene, edge support, and long-term stability. Some of these have been developed by Duncan Bain, working on behalf of the UK's Medicines and Healthcare products Regulatory Agency.[29]

Other parameters, such as firmness, are more specific to the sleeper. In general, firm mattresses are recommended for stomach and some back sleepers, soft mattresses are recommended for side sleepers, and medium mattresses are recommended for the majority of back sleepers. Double mattresses are available with a softer and a firmer part, or with adjustable firmness levels, to accommodate sleepers with different preferences who share a bed.

Ergonomics

[edit]

In 2003, a randomized-controlled trial found that medium-firm mattresses assessed using the Hs scale from the European Committee for Standardization were associated with less pain;[30] this study has been cited by clinical practice guidelines on lower back pain.[31] In 2015, a systematic review of studies concluded that medium-firm, custom-inflated mattresses were best for pain and neutral spinal alignment.[26]

Lifespan

[edit]

The term mattress lifespan refers to the duration in which all types of mattress can retain their original support and comfort.[*citation needed*] Mattresses deteriorate over time, and the lifespan of a mattress depends on a variety of factors, notably materials, manufacturing quality, care, and the rigorousness of use. A poor quality foam comfort layer can deteriorate noticeably in 1 year, while a quality latex core can last 20 years or more; innerspring cores typically last around 10 years. The comfort layer is almost invariably the first area to fail, which is why mattresses are often double-sided, to extend

the lifespan. A separate topper may be used instead of or in addition to a comfort layer, which reduces wear and is replaceable without replacing the entire mattress. The majority of high-end mattresses have a lifespan of between 7–10 years but it can last beyond 10 years and more depending on the level of care.

In the United States, mattress warranties are typically for 10 years or 20 years, sometimes 25 years, though this specifically addresses manufacturing defects and faster-than-normal deterioration, not expected deterioration with time. In the United States, as of 2008 there is a general expectation that mattresses should last about 10 years, and this is the average number of years Americans keep mattresses, though this varies by age group.[32] This expectation is based on a number of factors, including sales pitches; the expectation that mattresses will last the length of their warranty, hence 10 years or 20 years, accordingly; and comparison with other household items.[32]

The mattress replacement cycle is a key driver of income and profits for the mattress industry – a five-year replacement cycle yields double the sales of a 10-year replacement cycle, for instance – so the mattress industry has a financial incentive to shorten the replacement cycle. Notably, the International Sleep Products Association (ISPA) established the Better Sleep Council (BSC) in 1979 with the stated goal to "shorten the mattress replacement cycle", in addition to encouraging people to "invest in better bedding".[33]

An industry-funded 2006 study by researchers at Oklahoma State University (funded by the BSC)[34] of 59 people with poor sleep who received free new replacement mattresses for their existing mattresses 5 years or older (average age 9.5 years) found improved sleep, particularly when the existing mattresses were cheap.[35] A follow-up paper by some of the same authors with additional statistical analysis reinforced these conclusions.[36] The BSC has subsequently cited this study in the ISPA-published news magazine for mattress manufacturers, BedTimes, to advocate a more frequent replacement cycle, specifically to "consider replacing a mattress every five to seven years"; the recommendation is based largely on this study.[32][37]

Maintenance and care

[edit]

Wear problems occur with most mattresses and can include sagging, mildew, and staining. These are prevented by proper support, rotation and flipping, keeping it dry, and using a mattress pad or protector. Some symptoms of a broken or worn-out mattress include springs which can be felt poking through the upholstery layer, visible permanent sagging or deformity, lumpiness, and excessive squeaking.

Mattresses require a solid foundation which does not itself sag – a sagging foundation, such as by weak slats on a wide bed, will in turn cause the mattress to sag. Consistently

sleeping in the same place and body position causes excessive wear, and thus rotating or flipping mattresses is used to reduce this: double-sided mattresses can be alternately flipped width-wise (about the long axis) and length-wise (about the shorter axis), or alternately flipped and rotated; while single-sided mattresses are only rotated, which is simpler but less effective. Flipping/rotation schedules vary between materials and manufacturers, but typically recommended is monthly for the first six months and every two or three months thereafter. Foundations should also be rotated, if possible, though less frequently – rotating box springs twice a year is recommended. While sagging is undesirable, some level of indentation (about 8 cm (3.1 in)) is natural if natural materials are used in a comfort layer.

Excessive wear on mattresses can occur when folding and bending takes place, placing heavy objects in one spot, or excess force on the handles, will also cause more rapid deterioration. Care should particularly be taken during transport or storage.

Mattresses require ventilation to remain dry and prevent mildew, and thus should not be placed directly on the floor or on a solid surface – slats or a box spring provide space for airflow, while solid wood or plywood (as in cheap bunkie boards) does not. Additional ventilation is recommended for natural materials, in which case leaving the mattress "naked" after stripping sheets (for example while laundering) is recommended. If a mattress is allowed to become damp, for example by wet cleaning, mildew may develop inside the upholstery; cleaning with a vacuum cleaner or mild surface cleanser and a slightly damp cloth avoids this.

Mattresses absorb fluids and stains readily, notably from nightly sweating (which results in a yellow stain), seminal (or Cowper) stains which are darker,[38] menstrual fluids which are dark red,[39] and other bodily fluids in addition to accidental spills. These visibly stain the ticking and seep through into lower layers. In addition to being unhygienic, hard to launder, and unsightly, such stains typically void a warranty. Thus a mattress protector is suggested to protect the mattress; this can be removed and cleaned separately, and replaced if damaged.

Industry

[edit]

Companies often specialize in a particular type of mattress, such as innerspring, latex, and airbed, although as latex and airbeds have become more popular, they have become more common.

United States of America

[edit]

Mattresses which are mostly the same are often sold under different brand names;[40] two of the largest brands, Serta and Simmons, became owned by the same company after a private equity buyout.[41] Simmons, founded in the late 1800s, was bought and sold multiple times and faced bankruptcy after a major decline in the bedding industry in the 2000s.[41] The International Sleep Products Association was founded in 1915 and releases a report on U.S. mattress sales. Another association, Specialty Sleep Association, represents companies such as Innomax and Boyd Specialty focused on latex, waterbeds, and airbeds. However, Select Comfort, which produces airbeds (a specialty bed), is a member of the ISPA.[42]

Originally founded in 1881, the Sealy Corporation was purchased by Tempur-Pedic in 2012, which had introduced an all foam (TEMPUR-Material) brand into the United States in 1992.[43]

Adjustable beds have become a trend and are more compatible with certain types of mattresses such as latex or memory foam. These are particularly popular in Europe, and for one business accounted for 25% of beds in Sweden in 2010 and 70% of beds in the Netherlands.[44]

In the 2010s, affiliate marketing became a major part of the business model for direct-to-consumer online mattress companies such as Amerisleep.[45] Later, companies like Casper and Purple, with venture capital and funding followed and helped grow the global mattress industry to $28.5 billion dollar in 2018.[46][47] According to experts, there are over 175 bed-in-a-box mattress companies in the United States.[48] Mattress suggestion methods are emerging in response to the crowded retail marketplace.[49]

Another large company, Spring Air, went bankrupt in 2009 and was purchased by one of its former executives.

Comfortaire, founded in 1981, was the first to specialize in airbeds.[50] It was later bought by Select Comfort.

Spain

[edit]

Pikolin, founded in 1948, is one of the largest manufacturers of mattresses.

See also

[edit]

- Bed frame
- Duvet
- International Sleep Products Association
- Law label – the "Do Not Remove Tag Under Penalty of Law" label
- Matratzenlager – mattress room in mountain huts
- Orthopedic mattress
- Sleeping pad – for camping

References

[edit]

1. **^** *"Mattress". Dictionary.com. Retrieved 9 March 2021.*
2. **^** *"Divan". Dictionary.com. Retrieved 2012-05-26.*
3. **^** P. Cairo Zen I 59093 257 BCE
4. **^** CIJ III p 22
5. **^** mattress (n.) - Online Etymology Dictionary
6. **^** "Mattress: Word History". Archived 2007-03-23 at the Wayback Machine *The American Heritage Dictionary*.
7. **^** *Wayman, Erin (14 December 2011). "The World's Oldest Mattress". Smithsonian. Retrieved 6 March 2017.*
8. **^** Nelles, Barbara. "The Inside Story". *BedTimes Magazine*. July 2009. Retrieved 2011-9-1
9. **^** *"National Bed Federation Bed Buyers' Guide" (PDF). National Bed Federation. 2018. Archived from the original (PDF) on 2019-01-01. Retrieved 2019-01-26.*
10. **^** *Plumridge, Jo (18 January 2022). "The best mattress toppers 2022: supreme sleep comfort is here". TechRadar.*
11. ^ ***a b c*** *Ullman, Michelle. "Add to the Comfort of Your Bed With the Right Kind of Mattress Topper". The Spruce.*
12. ^ ***a b*** *Rabideau, Camryn. "After 2 Days of Testing, Here Are Our Favorite Mattress Toppers of 2022". The Spruce.*
13. **^** *Haex, Bart (2005). Back and Bed: Ergonomic Aspects of Sleeping. CRC Press. p. 57. ISBN 978-0-415-33297-2.*
14. **^** *"Mattresses: Choosing the best type of mattress". Which?. Consumers Association. Archived from the original on 12 March 2015.*
15. **^** James, Gary. "Gel foams meet fast-growing demand Archived 2012-10-05 at the Wayback Machine". *BedTimes Magazine*. October 2012. Retrieved 2012-9-26.
16. **^** *Nelles, Barbara (February 2012). "New features rev up steel frames & support systems". BedTimes Magazine. Retrieved 11 February 2014.*
17. **^** *"Best Mattress for Back Pain". National Council on Aging. NCOA. Archived from the original on 4 April 2024.*

18. **^** Nelles, Barbara. "Dress up: Mattress fabrics take on many roles" Archived 2013-11-04 at the Wayback Machine. *BedTimes Magazine*, November 2009. Retrieved 2011-8-21.
19. **^** Nelles, Barbara. "Judging a bed by its cover". *BedTimes Magazine*. October 2011. Retrieved 2012-1-2.
20. **^** "Flexible Polyurethane Foams (FPFs) Used in Upholstered Furniture and Bedding". Archived 2011-09-06 at the Wayback Machine American Chemistry Council: Center for the Polyurethanes Industry. 2008. Retrieved Aug. 15, 2011.
21. **^** "Product Watch: Green foams grabbing the spotlight". *BedTimes Magazine*. Feb. 2010. Retrieved Aug. 15, 2011.
22. **^** "The future of foam: An ever-widening sphere of influence. *BedTimes" Magazine*. February 2003. Retrieved Aug. 15, 2011.
23. **^** Nelles, Barbara. "Trends in Springs and Foam". BedTimes Magazine, Aug. 2011. Retrieved 2013-8-13
24. **^** *"What is High Density Foam". Wise Geek.*
25. ^ ***a b*** *Nelles, Barbara (June 2006). "What's in the air? | BedTimes". bedtimesmagazine.com. Archived from the original on 2016-03-01. Retrieved 2016-03-08.*
26. ^ ***a b*** *Radwan, Ahmed; Fess, Philip; James, Darcy; Murphy, John; Myers, Joseph; Rooney, Michelle; Taylor, Jason; Torii, Alissa (2015). "Effect of different mattress designs on promoting sleep quality, pain reduction, and spinal alignment in adults with or without back pain; systematic review of controlled trials". Sleep Health.* ***1*** *(4): 257–267. doi:10.1016/j.sleh.2015.08.001. PMID 29073401.*
27. **^** Alternating pressure air mattresses as prevention for pressure ulcers: A literature review International Journal of Nursing Studies, Volume 45, Issue 5, Pages 784-801 (May 2008)
28. **^** Air Mattresses are Not for Infants. Bethesda, MD: U.S. Consumer Product Safety Commission, 2012.
29. **^** Bain, Duncan. "Pressure Reducing Mattresses". MHRA. April 2004.
30. **^** *Mufraggi, Nicole; Real, María Teresa Gil del; Zamora, Javier; Muriel, Alfonso; Gestoso, Mario; Guillén, Pedro; Ruano, Domingo; Ferrer, Enrique; Sánchez-Vera, Manuel; Martín-Rodríguez, José Gerardo; Peña, Andrés; Abraira, Víctor; Kovacs, Francisco M. (2003-11-15). "Effect of firmness of mattress on chronic non-specific low-back pain: randomised, double-blind, controlled, multicentre trial". The Lancet.* ***362*** *(9396): 1599–1604. doi:10.1016/S0140-6736(03)14792-7. PMID 14630439. S2CID 25087984.*
31. **^** *Chou, Roger; Qaseem, Amir; Snow, Vincenza; Casey, Donald; Cross, J. Thomas; Shekelle, Paul; Owens, Douglas K.; Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians (2007-10-02). "Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society". Annals of Internal Medicine.* ***147*** *(7): 478–491. doi:10.7326/0003-4819-147-7-200710020-00006. ISSN 1539-3704. PMID 17909209.*

32. ^ ***a b c*** *"Oklahoma State University research shows the importance of new mattress". BedTimes. April 2008.*
33. **^** "BSC builds on a quarter century of PR to move industry forward". *BedTimes Magazine*. September 2004. Retrieved 2012-9-30.
34. **^** *Jacobson, BH; Boolani, A; Smith, DB (2009). "Changes in back pain, sleep quality, and perceived stress after introduction of new bedding systems". J Chiropr Med.* ***8*** *(1): 1–8. doi:10.1016/j.jcm.2008.09.002. PMC 2697581. PMID 19646380.*
35. **^** *Jacobson, Bert H.; Boolani, Ali; Smith, Doug B. (Mar 2009). "Changes in back pain, sleep quality, and perceived stress after introduction of new bedding systems". J Chiropr Med.* ***8*** *(1): 1–8. doi:10.1016/j.jcm.2008.09.002. PMC 2697581. PMID 19646380.*
36. **^** *Jacobson, Bert H.; Wallace, T. J.; Smith, Doug B.; Kolb, T. (2008). "Grouped comparisons of sleep quality for new and personal bedding systems". Applied Ergonomics.* ***39*** *(2): 247–54. doi:10.1016/j.apergo.2007.04.002. PMID 17597575.*
37. **^** *Nancy Butler (April 2008). "Better Sleep Council consumer research findings on mattresses and sleep". BedTimes.*
38. **^** *Silenieks, Edmund; Kobus, Hilton J.; Scharnberg, Jordana (2002). "Improving the effectiveness of fluorescence for the detection of semen stains on fabrics". Journal of Forensic Sciences.* ***47*** *(4): 1–5. PMID 12136990.*
39. **^** Richman, Gina S., et al. "Simulation procedures for teaching independent menstrual care to mentally retarded persons". *Applied research in mental retardation* 7.1 (1986): 21–35.
40. **^** *Segal, David (2010-10-09). "Mattress Complaints: It's Going to Be a Bumpy Night". The New York Times. ISSN 0362-4331. Retrieved 2016-03-07.*
41. ^ ***a b*** *Creswell, Julie (2009-10-04). "At Simmons, Bought, Drained and Sold, Then Sent to Bankruptcy". The New York Times. ISSN 0362-4331. Retrieved 2016-03-07 .*
42. **^** *"Conversation with ISPA Chair Kathy Roedel | BedTimes". bedtimesmagazine.com. February 2016. Retrieved 2016-03-07.*
43. **^** *Banerjee, Devin; Callan, James; Helyar, John (27 September 2012). "Tempur-Pedic Agrees to Acquire Sealy for $2.20 a Share". Bloomberg.com. Retrieved 2016-03-07.*
44. **^** *Wadler, Joyce (2010-02-10). "New Beds Are Much More Than Places to Rest". The New York Times. ISSN 0362-4331. Retrieved 2016-03-07.*
45. **^** *Segran, Elizabeth (2018-08-20). "The $29 billion battle to own how America sleeps is heating up". Fast Company. Retrieved 2019-09-28.*
46. **^** *"Mattress startup Casper valued at $1.1B with new funding". TechCrunch. Retrieved 2019-09-28.*
47. **^** *"Mattress Market Size, Share, Trend | Global Industry Report, 2019-2025". www.grandviewresearch.com. Retrieved 2019-09-28.*
48. **^** *Wu, Jasmine (2019-08-18). "There are now 175 online mattress companies—and you can't tell them apart". CNBC. Retrieved 2019-09-28.*
49. **^** *Salas, Amanda (2018-09-29). "Sit 'n Sleep's bedMATCH technology matches you with the mattress best suited for your body". FOX11. Retrieved 2021-06-12.*

50. ^ *"Specialty Sleep mattresses go mainstream | BedTimes". bedtimesmagazine.com . 2015-11-19. Retrieved 2016-03-07.*

External links

[edit]

- Image not found or type unknown The dictionary definition of *mattress* at Wiktionary
- v
- t
- e

Mattress manufacturers

- Boll & Branch
- Casper Sleep
- Chittenden & Eastman Company
- Dorel
- Eight Sleep
- Hästens
- Helix Sleep
- IKEA
- King Koil
- Leggett & Platt
- Lo Monaco
- McRoskey
- Pikolin
- Saatva
- Savoir Beds
- Serta Simmons
  - Beautyrest
  - Serta
  - Simmons
  - Tuft & Needle
- Shifman
- Simba Sleep
- Sit 'n Sleep
- Sleep Country Canada
  - Bloom
  - Endy Sleep
- Sleep Number
- Spring Air
  - Chattam & Wells
  - Spring Air
- Tempur Sealy International
  - Sealy
  - Stearns & Foster
  - Tempur-Pedic
- Therm-a-Rest
- Vispring

- v
- t
- e

Bedding

Adult beds (bed sizes)	○ *Banig* ○ Box-bed ○ Bunk bed ○ Cage bed ○ Rope bed ○ Camp bed ○ Canopy bed ○ Daybed ○ Four-poster bed ○ Futon ○ Hammock ○ Hospital bed ○ *Kang* bed-stove ○ *Lit à la Turque* ○ Loft bed ○ *Charpai* ○ Murphy bed ○ *Petate* ○ Platform bed ○ Polish bed ○ Sleigh bed ○ Sofa bed ○ Trundle bed
Infant beds	○ Bassinet ○ Cradle (bed) ○ Infant bed ○ Toddler bed
Bed components	○ Bed frame ○ Bed sheet ○ Bed skirt ○ Cot side ○ Footboard ○ Headboard
Mattresses	○ Air mattress ○ Cambodian mat ○ Tick mattress ○ Mahjong mat ○ Mattress pad ○ Mattress protector ○ Memory foam ○ Orthopedic mattress ○ Waterbed

Bed bases

- Box-spring
- Bunkie board
- Storage bed

Blankets

- Afghan
- Comforter
- Duvet
- Duvet cover
- Electric blanket
- Hudson's Bay point blanket
- Lizhnyk
- Patchwork quilt
- Photo blanket
- Quilt
- *Razai*
- Security blanket
- Silk comforter
- Sleeping bag
- Sleeved blanket
- Weighted blanket

Pillows

- Acupressure pillow
- Bamboo wife
- Bolster
- Contour leg pillow
- Cushion
- *Dakimakura*
- Eye pillow
- Orthopedic pillow
- Sex pillow
- Speaker pillow
- Throw pillow

Related items

- Bed warmer
- Couch
- Nightstand
- Blanket fort

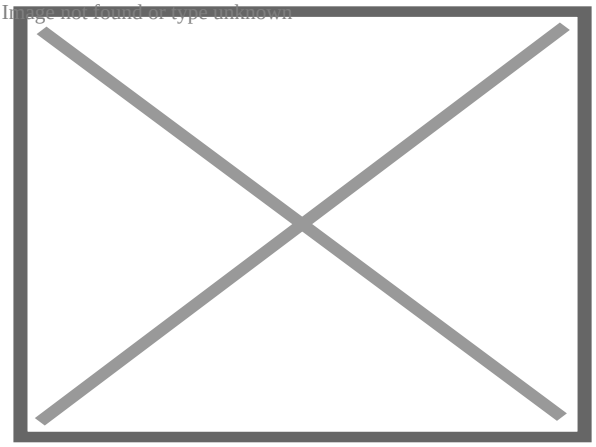
- Image not found or type unknown Category
- Image not found or type unknown Commons

Authority control databases: National Image not found or type unknown **Edit this at Wikidata**

- Germany
- United States
- Israel
- BnF data
- Israel

About Dump truck

For other uses, see Dump truck (disambiguation).
Not to be confused with Garbage truck.



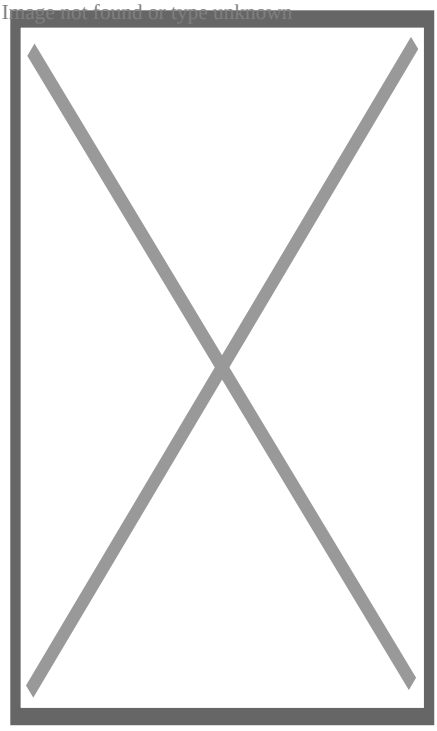
Freightliner Business Class M2 Dump Truck

A **dump truck**, known also as a **dumping truck**, **dump trailer**, **dumper trailer**, **dump lorry** or **dumper lorry** or a **dumper** for short, is used for transporting materials (such as dirt, gravel, or demolition waste) for construction as well as coal. A typical dump truck is equipped with an open-box bed, which is hinged at the rear and equipped with hydraulic rams to lift the front, allowing the material in the bed to be deposited ("dumped") on the ground behind the truck at the site of delivery. In the UK, Australia, South Africa and India the term applies to off-road construction plants only and the road vehicle is known as a **tip lorry**, **tipper lorry** (UK, India), **tipper truck**, **tip truck**, **tip trailer** or **tipper trailer** or simply a **tipper** (Australia, New Zealand, South Africa).

History

[edit]

Image not found or type unknown



The Graff & Hipple Wagon Dumper, c. 1884, showing an early lever-based dumping mechanism

The dump truck is thought to have been first conceived in the farms of late 19th century western Europe. Thornycroft developed a steam dust-cart in 1896 with a tipper mechanism.[1] The first motorized dump trucks in the United States were developed by small equipment companies such as The Fruehauf Trailer Corporation, Galion Buggy Co. and Lauth-Juergens among many others around 1910.[2] Hydraulic dump beds were introduced by Wood Hoist Co. shortly after. Such companies flourished during World War I due to massive wartime demand. August Fruehauf had obtained military contracts for his semi-trailer, invented in 1914 and later created the partner vehicle, the semi-truck for use in World War I. After the war, Fruehauf introduced hydraulics in his trailers. They offered hydraulic lift gates, hydraulic winches and a dump trailer for sales in the early 1920s. Fruehauf became the premier supplier of dump trailers and their famed "bathtub dump" was considered to be the best by heavy haulers, road and mining construction firms.[3][4][5]

Companies like Galion Buggy Co. continued to grow after the war by manufacturing a number of express bodies and some smaller dump bodies that could be easily installed on either stock or converted (heavy-duty suspension and drivetrain) Model T chassis prior to 1920. Galion and Wood Mfg. Co. built all of the dump bodies offered by Ford on their heavy-duty AA and BB chassis during the 1930s.[6][7] Galion (now Galion Godwin Truck Body Co.) is the oldest known truck body manufacturer still in operation today.

The first known Canadian dump truck was developed in Saint John, New Brunswick, when Robert T. Mawhinney attached a dump box to a flatbed truck in 1920. The lifting

device was a winch attached to a cable that fed over sheave (pulley) mounted on a mast behind the cab. The cable was connected to the lower front end of the wooden dump box which was attached by a pivot at the back of the truck frame. The operator turned a crank to raise and lower the box.[8][9]

From the 1930s Euclid, International-Harvester and Mack contributed to ongoing development. Mack modified its existing trucks with varying success. In 1934 Euclid became the first manufacturer in the world to successfully produce a dedicated off-highway truck.[10]

> A dump truck with continuous track wheels crosses a river and dumps its load in Kanagawa, Japan

Types

[edit]

Today, virtually all dump trucks operate by hydraulics and they come in a variety of configurations each designed to accomplish a specific task in the construction material supply chain.

Standard dump truck

[edit]

A *standard dump truck* is a truck chassis with a dump body mounted to the frame. The bed is raised by a vertical hydraulic ram mounted under the front of the body (known as a front post hoist configuration), or a horizontal hydraulic ram and lever arrangement between the frame rails (known as an underbody hoist configuration), and the back of the bed is hinged at the back of the truck. The tailgate (sometimes referred to as an end gate) can be configured to swing up on top hinges (and sometimes also to fold down on lower hinges)[11] or it can be configured in the "High Lift Tailgate" format wherein pneumatic or hydraulic rams lift the gate open and up above the dump body. Some bodies, typically for hauling grain, have swing-out doors for entering the box and a metering gate/chute in the center for a more controlled dumping.

In the United States most standard dump trucks have one front steering axle and one (4x2[a] *4-wheeler*) or two (6x4 *6-wheeler*) rear axles which typically have dual wheels on each side. Tandem rear axles are almost always powered,[b] front steering axles are also sometimes powered (4x4, 6x6). Unpowered axles are sometimes used to support extra weight.[c] Most unpowered rear axles can be raised off the ground to minimize wear when the truck is empty or lightly loaded, and are commonly called "lift axles".[12][

13]

European Union heavy trucks often have two steering axles. Dump truck configurations are two, three, and four axles. The four-axle *eight wheeler* has two steering axles at the front and two powered axles at the rear[14] and is limited to 32 metric tons (35 short tons; 31 long tons) gross weight in most EU countries.[15] The largest of the standard European dump trucks is commonly called a "centipede" and has seven axles. The front axle is the steering axle, the rear two axles are powered, and the remaining four are lift axles.[16]

The shorter wheelbase of a standard dump truck often makes it more maneuverable than the higher capacity semi-trailer dump trucks.

An Ashok Leyland Comet dump truck, an example of a very basic 4Ãƒâ€”2 dump truck use

- Image not found or type unknown

An Ashok Leyland Comet dump truck, an example of a very basic 4×2 dump truck used for payloads of 10 metric tons (11.0 short tons; 9.8 long tons) or less
US 4-axle with lift axle

- Image not found or type unknown

US 4-axle with lift axle

EU four-axle with two steering axles

Image not found or type unknown

EU four-axle with two steering axles

Semi trailer end dump truck

[edit]

Image not found or type unknown

6×4 semi-tractor with two-axle trailer

A *semi end dump* is a tractor-trailer combination wherein the trailer itself contains the hydraulic hoist. In the US a typical semi end dump has a 3-axle tractor pulling a 2-axle trailer with dual tires, in the EU trailers often have 3 axles and single tires. The key advantage of a semi end dump is a large payload. A key disadvantage is that they are very unstable when raised in the dumping position limiting their use in many applications where the dumping location is uneven or off level.[17] Some end dumps make use of an articulated arm (known as a stabilizer) below the box, between the chassis rails, to stabilize the load in the raised position.

Frame and Frameless end dump truck

Depending on the structure, semi trailer end dump truck can also be divided into frame trailer and frameless trailer.[18]

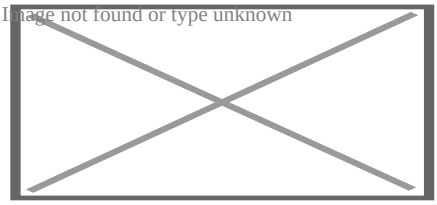
The main difference between them is the different structure. The frame dump trailer has a large beam that runs along the bottom of the trailer to support it. The frameless dump trailer has no frame under the trailer but has ribs that go around the body for support and

the top rail of the trailer serves as a suspension bridge for support.

The difference in structure also brings with it a difference in weight. Frame dump trailers are heavier. For the same length, a frame dump trailer weighs around 5 ton more than a frameless dump trailer.

Transfer dump truck

[edit]



Example of a transfer truck and two trailers

A **transfer dump truck** is a standard dump truck pulling a separate trailer with a movable cargo container, which can also be loaded with construction aggregate, gravel, sand, asphalt, klinkers, snow, wood chips, triple mix, etc.

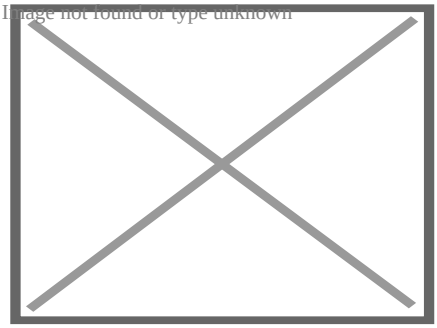
The second aggregate container on the trailer ("B" box),[19] is powered by an electric motor, a pneumatic motor or a hydraulic line. It rolls on small wheels, riding on rails from the trailer's frame into the empty main dump container ("A" box). This maximizes payload capacity without sacrificing the maneuverability of the standard dump truck. Transfer dump trucks are typically seen in the western United States due to the peculiar weight restrictions on highways there.

Another configuration is called a triple transfer train, consisting of a "B" and "C" box. These are common on Nevada and Utah Highways, but not in California. Depending on the axle arrangement, a triple transfer can haul up to 129,000 kilograms (284,000 pounds) with a special permit in certain American states. As of 2007, a triple transfer costs a contractor about $105 an hour, while a A/B configuration costs about $85 per hour.

Transfer dump trucks typically haul between 26 and 27 short tons (23.6 and 24.5 t; 23.2 and 24.1 long tons) of aggregate per load, each truck is capable of 3–5 loads per day, generally speaking.

Truck and pup

[edit]

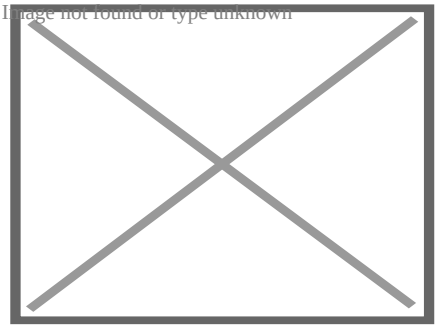


Truck and pup dump truck

A *truck and pup* is very similar to a transfer dump. It consists of a standard dump truck pulling a dump trailer. The pup trailer, unlike the transfer, has its own hydraulic ram and is capable of self-unloading.

Superdump truck

[edit]



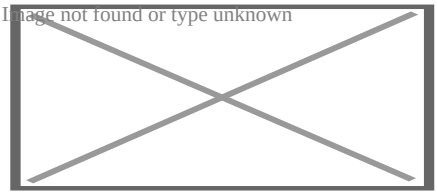
Fruehauf super dump with GMC tractor

A *super dump* is a straight dump truck equipped with a trailing axle, a liftable, load-bearing axle rated as high as 13,000 pounds (5,897 kg). Trailing 11 to 13 feet (3.35 to 3.96 m) behind the rear tandem, the trailing axle stretches the outer "bridge" measurement—the distance between the first and last axles—to the maximum overall length allowed. This increases the gross weight allowed under the federal bridge formula, which sets standards for truck size and weight. Depending on the vehicle length and axle configuration, Superdumps can be rated as high as 80,000 pounds (36,287 kg)

GVW and carry 26 short tons (23.6 t; 23.2 long tons) of payload or more. When the truck is empty or ready to offload, the trailing axle toggles up off the road surface on two hydraulic arms to clear the rear of the vehicle. Truck owners call their trailing axle-equipped trucks Superdumps because they far exceed the payload, productivity, and return on investment of a conventional dump truck. The Superdump and trailing axle concept were developed by Strong Industries of Houston, Texas.

Semi trailer bottom dump truck

[edit]



Bottom dump trailer.

A semi bottom dump, bottom hopper, or belly dump is a (commonly) 3-axle tractor pulling a 2-axle trailer with a clam shell type dump gate in the belly of the trailer. The key advantage of a semi bottom dump is its ability to lay material in a windrow, a linear heap. In addition, a semi bottom dump is maneuverable in reverse, unlike the double and triple trailer configurations described below. These trailers may be found either of the windrow type shown in the photo or may be of the cross spread type, with the gate opening front to rear instead of left and right. The cross spread type gate will actually spread the cereal grains fairly and evenly from the width of the trailer. By comparison, the windrow-type gate leaves a pile in the middle. The cross spread type gate, on the other hand, tends to jam and may not work very well with coarse materials.

Double and triple trailer bottom dump truck

[edit]

Double and *triple bottom dumps* consist of a 2-axle tractor pulling one single-axle semi-trailer and an additional full trailer (or two full trailers in the case of triples). These dump trucks allow the driver to lay material in windrows without leaving the cab or stopping the truck. The main disadvantage is the difficulty in backing double and triple units.

The specific type of dump truck used in any specific country is likely to be closely keyed to the weight and axle limitations of that jurisdiction. Rock, dirt, and other types of materials commonly hauled in trucks of this type are quite heavy, and almost any style of truck can be easily overloaded. Because of that, this type of truck is frequently configured to take advantage of local weight limitations to maximize the cargo. For example, within the United States, the maximum weight limit is 40 short tons (36.3 t; 35.7 long tons) throughout the country, except for specific bridges with lower limits. Individual states, in some instances, are allowed to authorize trucks up to 52.5 short tons (47.6 t; 46.9 long tons). Most states that do so require that the trucks be very long, to spread the weight over more distance. It is in this context that double and triple bottoms are found within the United States.

Bumper Pull Dump Trailer

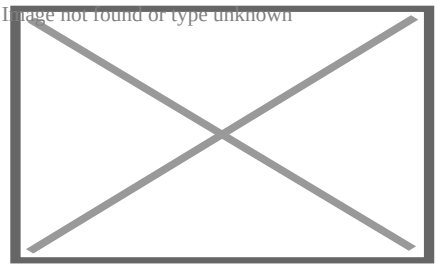
[edit]

Bumper Pull personal and commercial Dump Trailers come in a variety of sizes from smaller 6x10 7,000 GVWR models to larger 7x16 High Side 14,000[20] GVWR models.

Dump trailers come with a range of options and features such as tarp kits, high side options, dump/spread/swing gates, remote control, scissor, telescop, dual or single cylinder lifts, and metal locking toolboxes. They offer the perfect solution for a variety of applications, including roofing, rock and mulch delivery, general contractors, skid steer grading, trash out, and recycling.

Side dump truck

[edit]



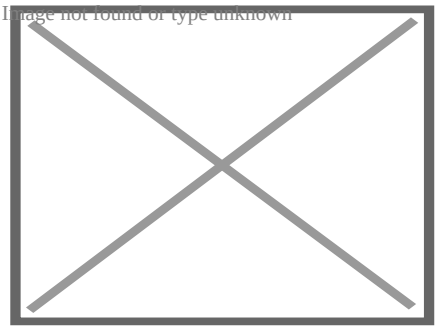
Side Dump Industries Train Set.

A *side dump truck* (SDT) consists of a 3-axle tractor pulling a 2-axle semi-trailer. It has hydraulic rams that tilt the dump body onto its side, spilling the material to either the left

or right side of the trailer. The key advantages of the side dump are that it allows rapid unloading and can carry more weight in the western United States. In addition, it is almost immune to upset (tipping over) while dumping, unlike the semi end dumps which are very prone to tipping over. It is, however, highly likely that a side dump trailer will tip over if dumping is stopped prematurely. Also, when dumping loose materials or cobble sized stone, the side dump can become stuck if the pile becomes wide enough to cover too much of the trailer's wheels. Trailers that dump at the appropriate angle (50° for example) avoid the problem of the dumped load fouling the path of the trailer wheels by dumping their loads further to the side of the truck, in some cases leaving sufficient clearance to walk between the dumped load and the trailer.

Winter service vehicles

[edit]



Dump truck with snowplow

Many *winter service vehicles* are based on dump trucks, to allow the placement of ballast to weigh the truck down or to hold sodium or calcium chloride salts for spreading on snow and ice-covered surfaces. Plowing is severe service and needs heavy-duty trucks.

Roll-off trucks

[edit]

A *Roll-off* has a hoist and subframe, but no body, it carries removable containers. The container is loaded on the ground, then pulled onto the back of the truck with a winch and cable. The truck goes to the dumpsite, after it has been dumped the empty container is taken and placed to be loaded or stored. The hoist is raised and the container slides down the subframe so the rear is on the ground. The container has rollers on the rear

and can be moved forward or back until the front of it is lowered onto the ground. The containers are usually open-topped boxes used for rubble and building debris,[21] but rubbish compactor containers are also carried. A newer hook-lift system ("roller container" in the UK) does the same job, but lifts, lowers, and dumps the container with a boom arrangement instead of a cable and hoist.[22][23]

Roll-off with box container

- Image not found or type unknown

Roll-off with box container
Roller container

- Image not found or type unknown

Roller container

Off-highway dump trucks

[edit]

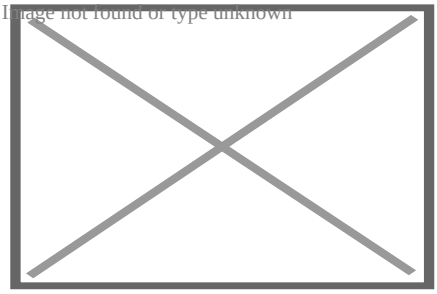
Off-highway dump trucks[24] are heavy construction equipment and share little resemblance to highway dump trucks. Bigger off-highway dump trucks are used strictly off-road for mining and heavy dirt hauling jobs. There are two primary forms: rigid frame and articulating frame.

The term "dump" truck is not generally used by the mining industry, or by the manufacturers that build these machines. The more appropriate U.S. term for this strictly off-road vehicle is "haul truck" and the equivalent European term is "dumper".

Haul truck

[edit]

Main article: Haul truck

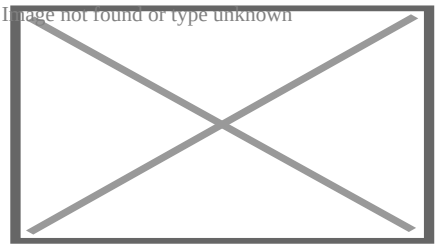


Small 200 Ton Caterpillar Haul truck.

Haul trucks are used in large surface mines and quarries. They have a rigid frame and conventional steering with drive at the rear wheel. As of late 2013, the largest ever production haul truck is the 450 metric ton BelAZ 75710, followed by the Liebherr T 282B, the Bucyrus MT6300AC and the Caterpillar 797F, which each have payload capacities of up to 400 short tons (363 t; 357 long tons). The previous record holder being the Canadian-built Terex 33-19 "Titan", having held the record for over 25 years. Most large-size haul trucks employ Diesel-electric powertrains, using the Diesel engine to drive an AC alternator or DC generator that sends electric power to electric motors at each rear wheel. The Caterpillar 797 is unique for its size, as it employs a Diesel engine to power a mechanical powertrain, typical of most road-going vehicles and intermediary size haul trucks. Other major manufacturers of haul trucks include SANY, XCMG, Hitachi, Komatsu, DAC, Terex, and BelAZ.

Articulated hauler

[edit]
Main article: Articulated hauler



Articulated dump truck or dumper

An articulated dumper is an all-wheel-drive, off-road dump truck. It has a hinge between the cab and the dump box but is distinct from a semi-trailer truck in that the power unit is a permanent fixture, not a separable vehicle. Steering is accomplished via hydraulic cylinders that pivot the entire tractor in relation to the trailer, rather than rack and pinion steering on the front axle as in a conventional dump truck. By this way of steering, the trailer's wheels follow the same path as the front wheels. Together with all-wheel drive

and low center of gravity, it is highly adaptable to rough terrain. Major manufacturers include Volvo CE, Terex, John Deere, and Caterpillar.

U-shaped dump truck

[edit]

U-shaped dump trucks, also known as tub-body trucks, is used to transport construction waste, it is made of high-strength super wear-resistant special steel plate directly bent, and has the characteristics of impact resistance, alternating stress resistance, corrosion resistance and so on.

1. Cleaner unloading U-shaped dump truck, there is no dead angle at the corners of the cargo box, it is not easy to stick to the box when unloading, and the unloading is cleaner.

2. Lightweight The U-shaped cargo box reduces its own weight through structural optimization. Now the most common U-shaped dump is to use high-strength plates. Under the premise of ensuring the strength of the car body, the thickness of the plate is reduced by about 20%, and the self-weight of the car is reduced by about 1 ton, which effectively improves the utilization factor of the load mass.

3. Strong carrying capacity. Using high-strength steel plate, high yield strength, better impact resistance and fatigue resistance. For users of ore transportation, it can reduce the damage of ore to the container.

4. Low center of gravity The U-shaped structure has a lower center of gravity, which makes the ride more stable, especially when cornering, and avoids spilling cargo.

5. Save tires The U-shaped cargo box can keep the cargo in the center, and the tires on both sides are more evenly stressed, which is beneficial to improve the life of the tires.

Dangers

[edit]

Collisions

[edit]

Dump trucks are normally built for some amount of off-road or construction site driving; as the driver is protected by the chassis and height of the driver's seat, bumpers are either placed high or omitted for added ground clearance. The disadvantage is that in a collision with a standard car, the entire motor section or luggage compartment goes under the truck. Thus, the passengers in the car could be more severely injured than would be common in a collision with another car. Several countries have made rules that new trucks should have bumpers approximately 40 cm (16 in) above ground in order to protect other drivers. There are also rules about how long the load or construction of the truck can go beyond the rear bumper to prevent cars that rear-end the truck from going under it.[25]

Tipping

[edit]

Another safety consideration is the leveling of the truck before unloading. If the truck is not parked on relatively horizontal ground, the sudden change of weight and balance due to lifting of the body and dumping of the material can cause the truck to slide, or even to tip over.[26] The live bottom trailer is an approach to eliminate this danger.

Back-up accidents

[edit]

Because of their size and the difficulty of maintaining visual contact with on-foot workers, dump trucks can be a threat, especially when backing up.[27] Mirrors and back-up alarms provide some level of protection, and having a spotter working with the driver also decreases back-up injuries and fatalities.[28]

Manufacturers

[edit]

- Ashok Leyland
- Asia MotorWorks
- Astra Veicoli Industriali
- BelAZ
- BEML
- Case CE
- Caterpillar Inc.

- DAC
- Daewoo
- Dart (commercial vehicle)
- Eicher Motors
- Euclid Trucks
- FAP
- HEPCO
- Hitachi Construction Machinery
- Hitachi Construction Machinery (Europe)
- Iveco
- John Deere
- Kamaz
- Kenworth
- Kioleides
- Komatsu
- KrAZ
- Leader Trucks
- Liebherr Group
- Mack Trucks
- Mahindra Trucks & Buses Ltd.
- MAN SE
- Mercedes-Benz
- Navistar International
- New Holland
- Peterbilt
- SANY
- Scania AB
- ST Kinetics
- Tata
- Tatra (company)
- Terex Corporation
- Volvo Construction Equipment
- Volvo Trucks
- XCMG

See also

[edit]

icon Transport portal

- Cement mixer truck
- Road roller
- Combine harvester
- Tractor
- Crane construction (truck)

- Bulldozer
- Forklift
- Dumper
- Garbage truck
- Live bottom trailer
- Rear-eject haul truck bodies

Notes

[edit]

1. **^** Number of wheels × number of powered wheels, with dual tires counted as a single wheel.
2. **^** Some very heavy-duty trucks have a "tridem" with 3 powered axles.
3. **^** Dump trucks are usually used locally, and are only subject to state limits, which can be heavier than interstate limits

References

[edit]

1. **^** "An Automobile Dust-Cart". The Automotor and Horseless Carriage Journal, October 1897, p24
2. **^** *Wood, Donald (2001). Dump Trucks. 729 Prospect Ave. Osceola, WI 54020: MBI Publishing Company. pp. 6–9.*cite book: CS1 maint: location (link)
3. **^** *"The Fruehauf Trailer Historical Society". singingwheels.com.*
4. **^** *"Terrific Transportation Inventions by Laura Hamilton Waxman Copyright 2014 by Lerner Publishing Group, Inc., pp 20". lernerbooks.com.*
5. **^** Home Front Heroes: A Biographical Dictionary of Americans During Wartime. Edited by Benjamin F. Shearer, November 30, 2006, Volume 1, pp 319, Greenwood Publishing Group, Inc., Westport, Connecticut
6. **^** *Wood, Donald (2001). Dump Trucks. 729 Prospect Ave. Osceola, WI 54020: MBI Publishing Company. pp. 11–30.*cite book: CS1 maint: location (link)
7. **^** *Wanger, James (1994). Ford Trucks Since 1905. Motorbooks Intl.*
8. **^** Mario Theriault, *Great Maritime Inventions 1833-1950*, Goose Lane Editions, 2001, p. 71
9. **^** *"Saint John, New Brunswick First". new-brunswick.net. Archived from the original on 2010-02-18. Retrieved 2008-04-30.*
10. **^** *"Classic Machines: Euclid's R-15 dump truck - Contractor Magazine". Retrieved 2021-09-07.*
11. **^** *"Dump Truck Operator Manual" (PDF). Galion-Godwin Truck Body Co. Archived from the original (PDF) on 19 October 2013. Retrieved 13 September 2016.*
12. **^** *"WorkStar (sales brochure)" (PDF). internationaltrucks.com. 2016. Archived from the original (PDF) on 20 December 2016. Retrieved 21 Sep 2016.*
13. **^** *"Granite Series (sales brochure)". macktrucks.com. 2016. Retrieved 21 Sep 2016*

.

14. ^ *"Fruehauf Legendary Excellence (sales site)". Fruehauf Ltd. 2016. Retrieved 21 Sep 2016.*
15. ^ *"Council Directive 96/53/EC laying down for certain road vehicles circulating within the Community the maximum authorized dimensions in national and international traffic and the maximum authorized weights in international traffic". eur-lex.europa.eu. Retrieved 22 Sep 2016.*
16. ^ *"Home". rsa.ie. Retrieved January 15, 2010.*
17. ^ *"Dump Equipment Operation and Service Manual" (PDF). East Manufacturing. 2000. pp. 1-15 to 1-17. Archived from the original (PDF) on 2021-11-18. Retrieved 2016-09-21.*
18. ^ *"Frame And Frameless Dump Trailers". Semi Trailers Manufacturer, Semi Trucks for Sale - Three Horses Trailer.*
19. ^ *Patrice Raunet - Los Angeles - California (14 December 2007). "TRANSFER DUMP TRUCKS - B-BOX". Archived from the original on 2021-12-22 – via YouTube.*
20. ^ *"Dump Trailers For Sale in GA | A&A Center Trailers". www.aacenter.net. Retrieved 2023-03-04.*
21. ^ *"Operation, Installation, Service, and Parts Manual for Tandem Cable Roll-off Hoist" (PDF). galbreathproducts.com. 2005. Archived from the original (PDF) on 24 September 2016. Retrieved 23 Sep 2016.*
22. ^ *"Ã•Å¸Ã•ÂµÃ‘â‚¬Ã•ÂµÃ•Â²Ã•Â¾Ã•Â·Ã•ÂºÃ•Â° Ã•Â½Ã•ÂµÃ•Â³Ã•Â°Ã•Â±Ã•Â°Ã‘â‚¬Ã•Â¸Ã‘â€šÃ•Â½Ã‘â€¹Ã‘â€¦ Ã•Â³Ã‘â‚¬Ã‘Æ’Ã•Â·Ã•Â¾Ã•Â Ã•Â² Ã•Å¡Ã‘â‚¬Ã•Â°Ã‘Â•Ã•Â½Ã•Â¾Ã•Â´Ã•Â°Ã‘â‚¬Ã•Âµ, Ã•Â² Ã•Â¡Ã‘â€šÃ•Â°Ã•Â²Ã‘â‚¬Ã•Â¾Ã•Â¿Ã•Â¾Ã•Â»Ã•Âµ, Ã•Â² Ã•Â Ã•Â¾Ã‘Â•Ã‘â€šÃ•Â¾Ã•Â²Ã• Ã•Â² Ã•Å¡Ã‘â‚¬Ã‘â€¹Ã•Â¼Ã‘Æ’ Ã•Â¸ Ã•Â¿Ã•Â¾ Ã•Â²Ã‘Â•Ã•ÂµÃ•Â¹ Ã•Â Ã•Â¾Ã‘Â•Ã‘Â•Ã•Â¸Ã•â€ť-oligarh.ru (in Russian). Retrieved 2021-03-19.*
23. ^ *"Galbreath Hoists (company site)". Ggalbreathproducts.com. 2016. Retrieved 23 Sep 2016.*
24. ^ *"The Super Haul Truck" (PDF). Britannia Mine Museum. BC Museum of Mining Education Services. Archived from the original (PDF) on 2012-03-11. Retrieved 2017-12-20.*
25. ^ *"Vehicles underrun protection arrangements". Archived from the original on 2011-06-05. Retrieved 2008-12-26.*
26. ^ *"Owners Manual Dump Trailers" (PDF). Mac Trailers. 2010. pp. 22–26. Archived from the original (PDF) on 23 September 2016. Retrieved 21 September 2016.*
27. ^ *A Laborer Dies in a Street Work Zone after Being Backed Over by a Dump Truck*. Fatality Assessment and Control Evaluation (FACE) Program. National Institute for Occupational Safety and Health. California Case Report: 07CA001.
28. ^ *"A Construction Inspector Dies After Being Backed Over by a Ten-wheel Asphalt Dump Truck". Fatality Assessment and Control Evaluation (FACE) Program. 15 December 2020.* National Institute for Occupational Safety and Health. California FACE Investigation 00CA005.

Look up ***dump truck*** in Wiktionary, the free dictionary.

Image not found or type unknown

Wikimedia Commons has media related to ***Dump trucks***.

Authority control databases: National Image not found or type unknown **Germany**

Edit this at Wikidata

About New Hanover County

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Driving Directions in New Hanover County

Driving Directions From El Arriero Taqueria 1 to The Dumpo Junk Removal & Hauling

Driving Directions From Ruth's Kitchen to The Dumpo Junk Removal & Hauling

Driving Directions From Umaii Thai Restaurant to The Dumpo Junk Removal & Hauling

Driving Directions From The Xtra Mile to The Dumpo Junk Removal & Hauling

**https://www.google.com/maps/dir/Zaxbys+Chicken+Fingers+%26+Buffalo+Wings/The+
77.8303757,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJ8yPpN6-MqYkR-**

xnxo3XdNL4!2m2!1d-77.8303757!2d34.2635141!1m5!1m1!1sChIJx5IXJrSNqYkR-YL-JMS0RK4!2m2!1d-77.8239897!2d34.2723577!3e0

**https://www.google.com/maps/dir/BLUE+SURF+Arboretum+West/The+Dumpo+Junk+R
77.8270297,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJB3U6-96NqYkRiX8jIVXmSlw!2m2!1d-77.8270297!2d34.25585!1m5!1m1!1sChIJx5IXJrSNqYkR-YL-JMS0RK4!2m2!1d-77.8239897!2d34.2723577!3e0**

**https://www.google.com/maps/dir/Brooklyn+Pizza+Co./The+Dumpo+Junk+Removal+%2
77.8268447,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJM7Fmv6-MqYkRWD4Uxc59g0g!2m2!1d-77.8268447!2d34.2625028!1m5!1m1!1sChIJx5IXJrSNqYkR-YL-JMS0RK4!2m2!1d-77.8239897!2d34.2723577!3e0**

**https://www.google.com/maps/dir/Catch/The+Dumpo+Junk+Removal+%26+Hauling/@3
77.8387329,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJUYztCVWLqYkRe0cKT2wg
77.8387329!2d34.2578763!1m5!1m1!1sChIJx5IXJrSNqYkR-YL-JMS0RK4!2m2!1d-77.8239897!2d34.2723577!3e0**

Driving Directions From Masonboro Island Reserve to The Dumpo Junk Removal & Hauling

Driving Directions From Poplar Grove Plantation to The Dumpo Junk Removal & Hauling

Driving Directions From Bluethenthal Wildflower Preserve to The Dumpo Junk Removal & Hauling

Driving Directions From Masonboro Island Reserve to The Dumpo Junk Removal & Hauling

**https://www.google.com/maps/dir/Wilmington+Riverwalk/The+Dumpo+Junk+Removal+
77.9499727,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-77.9499727!2d34.2352196!1m5!1m1!1sChIJx5IXJrSNqYkR-YL-JMS0RK4!2m2!1d-77.8239897!2d34.2723577!3e0**

**https://www.google.com/maps/dir/The+Children%27s+Museum+of+Wilmington/The+Du
77.9474781,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
77.9474781!2d34.2327918!1m5!1m1!1sChIJx5lXJrSNqYkR-YL-JMS0RK4!2m2!1d-
77.8239897!2d34.2723577!3e0**

**https://www.google.com/maps/dir/Wilmington+Railroad+Museum/The+Dumpo+Junk+R
77.9506249,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
77.9506249!2d34.2416931!1m5!1m1!1sChIJx5lXJrSNqYkR-YL-JMS0RK4!2m2!1d-
77.8239897!2d34.2723577!3e0**

**https://www.google.com/maps/dir/Battleship+North+Carolina/The+Dumpo+Junk+Remo
77.9543704,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
77.9543704!2d34.2365524!1m5!1m1!1sChIJx5lXJrSNqYkR-YL-JMS0RK4!2m2!1d-
77.8239897!2d34.2723577!3e0**

Reviews for

Image not found or type unknown

Greg Wallace

(5)

I highly recommend Dumpo Junk Removal. Very professional with great pricing and quality work.

Image not found or type unknown

Howard Asberry

(5)

The manager was very helpful, knowledgeable and forthright. He definitely knew what he was talking about and explained everything to me and was very helpful. I'm looking forward to working with him

Image not found or type unknown

Kelly Vaughn

(5)

Great service with professionalism. You can't ask for more than that!

Image not found or type unknown

Kirk Schmidt

(5)

They are great with junk removal. Highly recommend them

Image not found or type unknown

Jennifer Davidson

(5)

Great work! Bryce and Adrian are great!

Minimizing Environmental Risks in Circuit Board Handling**View GBP**

Check our other pages :

- **Selecting the Most Appropriate Rate Plan**
- **Minimizing Environmental Risks in Circuit Board Handling**
- **Reviewing the Impact of Competitive Local Rates**

Frequently Asked Questions

What are the primary environmental risks associated with circuit board handling in e-waste processing?

The primary environmental risks include the release of toxic substances such as lead, mercury, and brominated flame retardants; improper disposal leading to soil and water contamination; air pollution from incineration processes; and health hazards to workers exposed to harmful chemicals.

How can e-waste processing facilities minimize the release of hazardous materials during circuit board handling?

Facilities can minimize hazardous releases by implementing safe dismantling techniques, using advanced recycling technologies that safely extract valuable metals without emitting toxins, employing proper ventilation systems, and adhering to strict environmental regulations and standards.

What measures should be taken to protect workers involved in circuit board handling from environmental risks?

To protect workers, facilities should provide adequate personal protective equipment (PPE), conduct regular training on safe handling practices, ensure proper ventilation and air filtration systems are in place, implement robust health monitoring programs, and enforce compliance with safety protocols.

How can consumers contribute to minimizing the environmental risks associated with circuit board disposal?

Consumers can help by properly recycling their electronic devices at certified e-waste recycling centers rather than disposing of them in landfills or via informal channels. They can also support manufacturers that adopt eco-friendly design principles and participate in take-back programs.

The Dumpo Junk Removal

Phone : +19103105115

City : Wilmington

State : NC

Zip : 28411

Address : Unknown Address

Google Business Profile

Company Website : **https://thedumpo.com/**

USEFUL LINKS

junk removal

hauling junk

removal wilmington

residential junk

removal services

Sitemap

Privacy Policy

About Us

Follow us