

Chloroform Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Grade (Technical Grade, Alcohol Stabilized Grade, Fluorocarbon Grade), By End User (Construction, Agriculture, Transportation, Healthcare, Chemical, Industrial, Others), By Region & Competition, 2020-2035F

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Abstracts

Global Chloroform Market was valued at 757.88 Thousand Tonnes in 2024 and is expected to reach 1020.36 Thousand Tonnes by 2035 with a CAGR of 2.77% during the forecast period.

Chloroform, with the chemical formula CHCl_3 , is colorless and has a distinct sweet odor. It is widely employed in pharmaceuticals, agrochemicals, and manufacturing processes. The rising demand for pharmaceutical products, particularly in developing regions, is a significant driver for chloroform usage. As the pharmaceutical industry grows, so does the need for solvents like chloroform in drug formulation and research and development processes. With the need to enhance crop yield and pest management, the agricultural sector increasingly relies on chloroform in producing effective agrochemical products. The expansion of modern farming techniques further propels this demand.

Chloroform is classified as a hazardous air pollutant, leading to stringent regulations governing its production, use, and disposal. Compliance with these regulations can increase operational costs for manufacturers, impacting market growth. Exposure to chloroform has been linked to various health risks, including potential carcinogenic effects. These health concerns may prompt industries to seek safer alternatives, posing

a challenge to the market.

Key Market Drivers

Growing Demand of Chloroform in Healthcare Industry

Chloroform has several critical applications within the healthcare sector. Historically recognized for its anesthetic properties, chloroform was widely used in surgical procedures before the advent of safer alternatives. Although its use as an anesthetic has declined, chloroform remains a vital solvent in laboratory settings, particularly in the extraction and purification of pharmaceutical compounds.

The therapeutic effectiveness of chloroform can be enhanced when combined with desflurane. Desflurane is indicated for both the induction and maintenance of anesthesia in adults, as well as for the maintenance of anesthesia in pediatric patients. Initially, desflurane is quickly eliminated from the lungs, with a small portion of the metabolite trifluoroacetic acid being excreted in the urine. Only 0.02% of the inhaled dose is recovered as urinary metabolites.

One of the primary applications of chloroform in healthcare is its role in the synthesis of various pharmaceutical intermediates and active ingredients. Its ability to dissolve a wide range of organic compounds makes it an ideal solvent for the production of numerous medications, including analgesics, anesthetics, and anti-inflammatory drugs. As the pharmaceutical industry continues to expand, the demand for chloroform as a solvent and reagent in drug formulation is likely to grow.

The rising investment in pharmaceutical research and development (R&D) is another significant factor driving the demand for chloroform in the healthcare industry. With the increasing focus on developing new drugs and therapies, researchers often require high-purity solvents like chloroform to conduct experiments and synthesize compounds effectively. The expansion of R&D initiatives, particularly in the fields of oncology, neurology, and infectious diseases, is expected to further boost the demand for chloroform.

Moreover, the trend toward personalized medicine, which tailors treatments to individual patients, is fostering the need for innovative drug formulations. Chloroform plays a crucial role in this process by facilitating the extraction of bioactive compounds from natural sources, allowing for the development of targeted therapies that enhance patient outcomes.

Growing Demand of Chloroform in Agriculture Industry

Chloroform is commonly used as a solvent in the production of agrochemicals, including herbicides, insecticides, and fungicides. Its ability to dissolve a wide range of organic compounds makes it an ideal choice for formulating effective agricultural products. Chloroform enhances the stability and performance of agrochemicals, enabling better penetration and efficacy in pest control. As farmers increasingly adopt advanced agricultural practices, the demand for chloroform in the formulation of innovative agrochemicals is expected to rise.

Chloroform fumigation-extraction is utilized to estimate soil microbial biomass by measuring the extractable organic biomass present in the soil. This method is suitable for both aerobic and anaerobic conditions across the entire pH range of soil, irrespective of land use type. Although chloroform fumigation can impact soil fauna, the carbon contribution from these organisms is typically minimal (less than 5 percent) and can generally be considered negligible.

To meet the growing demand of agricultural production, farmers are turning to modern agricultural techniques and high-performance agrochemicals that can enhance crop yields. Chloroform-based formulations have shown promising results in improving the efficiency of pest and weed control, making them essential for modern agricultural practices. This growing focus on maximizing agricultural output drives the demand for chloroform in the market.

The shift towards integrated pest management (IPM) strategies in agriculture has further fueled the demand for chloroform. IPM emphasizes the use of multiple pest control methods, including biological, cultural, and chemical practices, to minimize the reliance on synthetic pesticides. Chloroform plays a crucial role in the formulation of selective and effective pest control agents that align with IPM principles. As more farmers adopt IPM practices to sustainably manage pests, the demand for chloroform in agricultural applications is anticipated to grow.

The agriculture industry is increasingly prioritizing crop protection to combat the challenges posed by pests, diseases, and environmental stressors. Chloroform-based agrochemicals are known for their effectiveness in protecting crops from various threats, thus ensuring a reliable food supply. The growing awareness of the importance of crop protection is leading to higher demand for chloroform in formulating advanced agrochemical products. This trend is expected to positively impact the global chloroform

market as agricultural producers seek effective solutions to safeguard their crops.

Key Market Challenges

High Cost of Production

Chloroform, chemically known as trichloromethane (CHCl_3), is typically produced through the chlorination of methane or other hydrocarbons. The production process involves several steps, including chlorination, separation, and purification. Each of these steps incurs various costs related to raw materials, energy consumption, labor, and compliance with safety and environmental regulations.

The primary feedstock for chloroform production is methane, which is subject to price fluctuations based on market dynamics, supply chain disruptions, and geopolitical factors. The volatility in raw material prices directly impacts the cost of chloroform production, making it challenging for manufacturers to maintain profitability.

The chloroform production process is energy-intensive, requiring substantial amounts of electricity and heat. Rising energy prices, particularly in regions with high energy demands, further escalate the overall production costs. As manufacturers seek to optimize energy efficiency, investments in advanced technologies may be necessary, adding to the initial capital expenditure.

The chloroform manufacturing process is governed by strict environmental and safety regulations due to its classification as a hazardous substance. Compliance with these regulations often necessitates the implementation of costly safety measures, emissions control technologies, and waste management systems. These added expenses contribute significantly to the overall cost of production.

The complexity of the production process requires skilled labor, which can be costly. In regions where labor rates are high, the overall production expenses can increase significantly, impacting the competitiveness of chloroform manufacturers.

Key Market Trends

Growing Focus on Health and Safety

One of the primary drivers of the health and safety trend in the chloroform market is the increasing regulatory scrutiny imposed by governments and health organizations.

Regulatory agencies, such as the Environmental Protection Agency (EPA) in the United States and the European Chemicals Agency (ECHA), have established stringent guidelines for the use and handling of chloroform due to its classification as a potential carcinogen and toxic substance.

In response to these regulations, manufacturers and users of chloroform are compelled to enhance their safety protocols and compliance measures. Companies must invest in training programs, safety equipment, and robust monitoring systems to ensure that their operations align with regulatory standards. This shift not only protects workers and the environment but also positions companies favorably in a market that increasingly values safety and responsibility.

The growing focus on health and safety has led to the implementation of enhanced workplace safety practices in industries that utilize chloroform. Companies are adopting best practices to minimize exposure risks among employees, including implementing engineering controls, using personal protective equipment (PPE), and establishing emergency response protocols.

Moreover, organizations are prioritizing the development of safety cultures that emphasize the importance of health and well-being. By fostering an environment where safety is paramount, businesses can reduce accidents, injuries, and illnesses associated with chloroform exposure. This proactive approach not only enhances employee morale but also mitigates potential liabilities and costs related to workplace incidents.

Segmental Insights

Grade Insights

Based on Grade, Technical Grade have emerged as the fastest growing segment in the Global Chloroform Market in 2024. Chloroform is used as a solvent or intermediary in the production of other chemicals like refrigerants, dyes, and plastics. With the global chemical industry expanding, particularly in emerging markets, demand for technical grade chloroform is rising accordingly.

In laboratory settings, technical grade chloroform is employed as a solvent for extraction and purification processes. Its ability to dissolve fats, oils, and other organic substances makes it a critical component in research and development labs.

Technical grade chloroform is also used in the agrochemical industry for the formulation of pesticides and herbicides. As agriculture becomes more mechanized and reliant on chemical inputs to increase yield, the demand for chloroform in this segment has increased.

The production of technical grade chloroform involves fewer purification processes, which results in lower costs. This makes it a preferred choice for manufacturers looking to optimize production costs without compromising on quality for industrial uses.

Due to its widespread use and simpler production process, technical grade chloroform is more readily available in the market. Its accessibility and lower price point make it an attractive option for industries operating on tight budgets or requiring large volumes of solvents.

End User Insights

Based on End User, Construction have emerged as the fastest growing segment in the Global Chloroform Market during the forecast period. A primary factor contributing to the growing demand for chloroform in the construction industry is its role in the production of polyvinyl chloride (PVC). PVC is a versatile plastic widely used in construction for products such as pipes, window frames, roofing materials, and flooring. Chloroform serves as a key solvent in the manufacturing process of PVC, specifically in the production of intermediates like trichloroethylene, which are essential for the synthesis of the final product.

As global construction projects continue to expand, especially in emerging economies, the demand for PVC has surged, driving the need for chloroform. The versatility, durability, and cost-effectiveness of PVC make it an indispensable material in modern construction, further solidifying the role of chloroform in the sector.

The rapid expansion of infrastructure development, including residential, commercial, and industrial projects, has increased the consumption of construction materials that require chloroform in their production. Large-scale projects such as highways, bridges, and urban developments are boosting the demand for chemical intermediates, including those produced using chloroform.

Governments worldwide are investing heavily in infrastructure development to stimulate economic growth and address urbanization challenges. This has created a ripple effect across supply chains, where demand for materials like PVC and other chloroform-based

products has seen a notable increase. As the global construction industry continues to grow, so does the need for chloroform in these key applications.

Regional Insights

Based on Region, Asia Pacific have emerged as the dominating region in the Global Chloroform Market in 2024. Asia Pacific, particularly countries like China, India, and Southeast Asia, has experienced rapid industrialization over the past few decades. This growth has fueled the demand for chloroform, which is a key component in several industrial processes, including the production of refrigerants, solvents, and pharmaceuticals. The region's expanding industrial base has created a robust demand for chloroform, particularly in manufacturing and chemical processing, positioning Asia Pacific as the dominant region in the global market.

The pharmaceutical and chemical industries in Asia Pacific are among the fastest-growing in the world. Chloroform is widely used as a solvent and reagent in pharmaceutical manufacturing, making it indispensable for the production of various drugs and medical compounds. Additionally, the growth of the chemical sector, driven by increasing domestic and export demand for products like solvents, adhesives, and agrochemicals, has further strengthened the region's dominance in the chloroform market. China's position as a global chemical manufacturing hub plays a pivotal role in this market leadership.

Governments in Asia Pacific have implemented supportive policies and regulations to boost their chemical manufacturing industries. These favorable conditions include relaxed environmental regulations in some countries, investment incentives, and subsidies aimed at promoting domestic production of essential chemicals like chloroform. Additionally, the availability of low-cost labor, raw materials, and energy has allowed manufacturers to produce chloroform more competitively, further enhancing the region's global market position.

Several countries in Asia Pacific, particularly China and India, have increased their investments in research and development (R&D) to improve the efficiency and sustainability of chemical production processes. R&D efforts are also focused on creating innovative applications for chloroform, particularly in the pharmaceutical and agrochemical sectors. This focus on innovation has allowed the region to maintain a competitive edge in the global chloroform market by continuously improving production methods and exploring new applications.

Key Market Players

Medical Isotopes, Inc.

MP Biomedicals, LLC

Oxford Lab Fine Chem LLP

Alpha Chemika

Arihant Chemical

Solvay S.A.

Tokuyama Corporation

Shin-Etsu Chemical Co., Ltd.

Occidental Petroleum Corporation

Merck KGaA

Report Scope

In this report, the Global Chloroform Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Chloroform Market, By Grade:

- o Technical Grade
- o Alcohol Stabilized Grade
- o Fluorocarbon Grade

Chloroform Market, By End User:

- o Construction
- o Agriculture
- o Transportation
- o Healthcare
- o Chemical
- o Industrial
- o Others

Chloroform Market, By Region:

- o North America
 - ? United States
 - ? Canada
 - ? Mexico
- o Europe
 - ? France
 - ? United Kingdom
 - ? Italy
 - ? Germany
 - ? Spain
- o Asia Pacific

? China

? India

? Japan

? Australia

? South Korea

o South America

? Brazil

? Argentina

? Colombia

o Middle East & Africa

? South Africa

? Saudi Arabia

? UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Chloroform Market.

Available Customizations:

Global Chloroform Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

Contents

1. PRODUCT OVERVIEW

- 1.1. Market Definition
- 1.2. Scope of the Market
 - 1.2.1. Markets Covered
 - 1.2.2. Years Considered for Study
 - 1.2.3. Key Market Segmentations

2. RESEARCH METHODOLOGY

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Key Industry Partners
- 2.4. Major Association and Secondary Sources
- 2.5. Forecasting Methodology
- 2.6. Data Triangulation & Validation
- 2.7. Assumptions and Limitations

3. EXECUTIVE SUMMARY

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, and Trends

4. IMPACT OF COVID-19 ON GLOBAL CHLOROFORM MARKET

5. GLOBAL CHLOROFORM MARKET OUTLOOK

- 5.1. Market Size & Forecast
 - 5.1.1. By Value & Volume
- 5.2. Market Share & Forecast
 - 5.2.1. By Grade (Technical Grade, Alcohol Stabilized Grade, Fluorocarbon Grade)
 - 5.2.2. By End User (Construction, Agriculture, Transportation, Healthcare, Chemical, Industrial, Others)
 - 5.2.3. By Region

- 5.2.4. By Company (2024)
- 5.3. Market Map

6. NORTH AMERICA CHLOROFORM MARKET OUTLOOK

- 6.1. Market Size & Forecast
 - 6.1.1. By Value & Volume
- 6.2. Market Share & Forecast
 - 6.2.1. By Grade
 - 6.2.2. By End User
 - 6.2.3. By Country
- 6.3. North America: Country Analysis
 - 6.3.1. United States Chloroform Market Outlook
 - 6.3.1.1. Market Size & Forecast
 - 6.3.1.1.1. By Value & Volume
 - 6.3.1.2. Market Share & Forecast
 - 6.3.1.2.1. By Grade
 - 6.3.1.2.2. By End User
 - 6.3.2. Mexico Chloroform Market Outlook
 - 6.3.2.1. Market Size & Forecast
 - 6.3.2.1.1. By Value & Volume
 - 6.3.2.2. Market Share & Forecast
 - 6.3.2.2.1. By Grade
 - 6.3.2.2.2. By End User
 - 6.3.3. Canada Chloroform Market Outlook
 - 6.3.3.1. Market Size & Forecast
 - 6.3.3.1.1. By Value & Volume
 - 6.3.3.2. Market Share & Forecast
 - 6.3.3.2.1. By Grade
 - 6.3.3.2.2. By End User

7. EUROPE CHLOROFORM MARKET OUTLOOK

- 7.1. Market Size & Forecast
 - 7.1.1. By Value & Volume
- 7.2. Market Share & Forecast
 - 7.2.1. By Grade
 - 7.2.2. By End User
 - 7.2.3. By Country

7.3. Europe: Country Analysis

7.3.1. France Chloroform Market Outlook

7.3.1.1. Market Size & Forecast

7.3.1.1.1. By Value & Volume

7.3.1.2. Market Share & Forecast

7.3.1.2.1. By Grade

7.3.1.2.2. By End User

7.3.2. Germany Chloroform Market Outlook

7.3.2.1. Market Size & Forecast

7.3.2.1.1. By Value & Volume

7.3.2.2. Market Share & Forecast

7.3.2.2.1. By Grade

7.3.2.2.2. By End User

7.3.3. United Kingdom Chloroform Market Outlook

7.3.3.1. Market Size & Forecast

7.3.3.1.1. By Value & Volume

7.3.3.2. Market Share & Forecast

7.3.3.2.1. By Grade

7.3.3.2.2. By End User

7.3.4. Italy Chloroform Market Outlook

7.3.4.1. Market Size & Forecast

7.3.4.1.1. By Value & Volume

7.3.4.2. Market Share & Forecast

7.3.4.2.1. By Grade

7.3.4.2.2. By End User

7.3.5. Spain Chloroform Market Outlook

7.3.5.1. Market Size & Forecast

7.3.5.1.1. By Value & Volume

7.3.5.2. Market Share & Forecast

7.3.5.2.1. By Grade

7.3.5.2.2. By End User

8. ASIA PACIFIC CHLOROFORM MARKET OUTLOOK

8.1. Market Size & Forecast

8.1.1. By Value & Volume

8.2. Market Share & Forecast

8.2.1. By Grade

8.2.2. By End User

8.2.3. By Country

8.3. Asia Pacific: Country Analysis

8.3.1. China Chloroform Market Outlook

8.3.1.1. Market Size & Forecast

8.3.1.1.1. By Value & Volume

8.3.1.2. Market Share & Forecast

8.3.1.2.1. By Grade

8.3.1.2.2. By End User

8.3.2. India Chloroform Market Outlook

8.3.2.1. Market Size & Forecast

8.3.2.1.1. By Value & Volume

8.3.2.2. Market Share & Forecast

8.3.2.2.1. By Grade

8.3.2.2.2. By End User

8.3.3. South Korea Chloroform Market Outlook

8.3.3.1. Market Size & Forecast

8.3.3.1.1. By Value & Volume

8.3.3.2. Market Share & Forecast

8.3.3.2.1. By Grade

8.3.3.2.2. By End User

8.3.4. Japan Chloroform Market Outlook

8.3.4.1. Market Size & Forecast

8.3.4.1.1. By Value & Volume

8.3.4.2. Market Share & Forecast

8.3.4.2.1. By Grade

8.3.4.2.2. By End User

8.3.5. Australia Chloroform Market Outlook

8.3.5.1. Market Size & Forecast

8.3.5.1.1. By Value & Volume

8.3.5.2. Market Share & Forecast

8.3.5.2.1. By Grade

8.3.5.2.2. By End User

9. SOUTH AMERICA CHLOROFORM MARKET OUTLOOK

9.1. Market Size & Forecast

9.1.1. By Value & Volume

9.2. Market Share & Forecast

9.2.1. By Grade

- 9.2.2. By End User
- 9.2.3. By Country
- 9.3. South America: Country Analysis
 - 9.3.1. Brazil Chloroform Market Outlook
 - 9.3.1.1. Market Size & Forecast
 - 9.3.1.1.1. By Value & Volume
 - 9.3.1.2. Market Share & Forecast
 - 9.3.1.2.1. By Grade
 - 9.3.1.2.2. By End User
 - 9.3.2. Argentina Chloroform Market Outlook
 - 9.3.2.1. Market Size & Forecast
 - 9.3.2.1.1. By Value & Volume
 - 9.3.2.2. Market Share & Forecast
 - 9.3.2.2.1. By Grade
 - 9.3.2.2.2. By End User
 - 9.3.3. Colombia Chloroform Market Outlook
 - 9.3.3.1. Market Size & Forecast
 - 9.3.3.1.1. By Value & Volume
 - 9.3.3.2. Market Share & Forecast
 - 9.3.3.2.1. By Grade
 - 9.3.3.2.2. By End User

10. MIDDLE EAST AND AFRICA CHLOROFORM MARKET OUTLOOK

- 10.1. Market Size & Forecast
 - 10.1.1. By Value & Volume
- 10.2. Market Share & Forecast
 - 10.2.1. By Grade
 - 10.2.2. By End User
 - 10.2.3. By Country
- 10.3. MEA: Country Analysis
 - 10.3.1. South Africa Chloroform Market Outlook
 - 10.3.1.1. Market Size & Forecast
 - 10.3.1.1.1. By Value & Volume
 - 10.3.1.2. Market Share & Forecast
 - 10.3.1.2.1. By Grade
 - 10.3.1.2.2. By End User
 - 10.3.2. Saudi Arabia Chloroform Market Outlook
 - 10.3.2.1. Market Size & Forecast

- 10.3.2.1.1. By Value & Volume
- 10.3.2.2. Market Share & Forecast
 - 10.3.2.2.1. By Grade
 - 10.3.2.2.2. By End User
- 10.3.3. UAE Chloroform Market Outlook
 - 10.3.3.1. Market Size & Forecast
 - 10.3.3.1.1. By Value & Volume
 - 10.3.3.2. Market Share & Forecast
 - 10.3.3.2.1. By Grade
 - 10.3.3.2.2. By End User

11. MARKET DYNAMICS

- 11.1. Drivers
- 11.2. Challenges

12. MARKET TRENDS & DEVELOPMENTS

- 12.1. Merger & Acquisition (If Any)
- 12.2. Product Launches (If Any)
- 12.3. Recent Developments

13. GLOBAL CHLOROFORM MARKET: SWOT ANALYSIS

14. PORTERS FIVE FORCES ANALYSIS

- 14.1. Competition in the Industry
- 14.2. Potential of New Entrants
- 14.3. Power of Suppliers
- 14.4. Power of Customers
- 14.5. Threat of Substitute Products

15. COMPETITIVE LANDSCAPE

- 15.1. Medical Isotopes, Inc.
 - 15.1.1. Business Overview
 - 15.1.2. Company Snapshot
 - 15.1.3. Products & Services
 - 15.1.4. Financials (As Reported)

- 15.1.5. Recent Developments
- 15.1.6. Key Personnel Details
- 15.1.7. SWOT Analysis
- 15.2. MP Biomedicals, LLC
- 15.3. Oxford Lab Fine Chem LLP
- 15.4. Alpha Chemika
- 15.5. Arihant Chemical
- 15.6. Solvay S.A.
- 15.7. Tokuyama Corporation
- 15.8. Shin-Etsu Chemical Co., Ltd.
- 15.9. Occidental Petroleum Corporation
- 15.10. Merck KGaA

16. STRATEGIC RECOMMENDATIONS

17. ABOUT US & DISCLAIMER

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