

Cold Chain Transportation Market Forecasts to 2034 – Global Analysis By Transportation Mode (Road Transportation, Rail Transportation, Air Transportation, and Sea Transportation), Temperature Range, Vehicle Type, Technology, Service Type, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Cold Chain Transportation Market is accounted for \$17.2 billion in 2026 and is expected to reach \$38.9 billion by 2034, growing at a CAGR of 10.7% during the forecast period. Cold Chain Transportation refers to the logistics network that maintains temperature-controlled conditions throughout the movement of perishable goods including fresh produce, frozen foods, dairy products, pharmaceuticals, vaccines, and biologic materials from point of origin to final destination. It encompasses refrigerated road vehicles, rail containers, air freight cold compartments, and sea reefer containers, supported by continuous temperature monitoring, IoT tracking, and compliance documentation systems.

Market Dynamics:

Driver:

Surging pharmaceutical and vaccine distribution requirements amplifying cold chain demand

The global pharmaceutical sector's expanding biologics pipeline, including mRNA vaccines, monoclonal antibodies, and cell and gene therapies, requires stringent temperature-controlled transportation across the entire distribution chain to preserve

product efficacy. Growing biopharmaceutical manufacturing in emerging markets is generating new distribution corridors requiring cold chain connectivity. Regulatory tightening of pharmaceutical Good Distribution Practice guidelines across major markets is mandating enhanced temperature monitoring and chain-of-custody documentation, driving adoption of advanced IoT-enabled cold chain transport solutions.

Restraint:

Energy-intensive operations and high infrastructure investment requirements

Refrigerated transportation consumes significantly more fuel than ambient freight operations, with diesel-powered refrigeration units adding 20–30% to vehicle operating costs compared to standard commercial vehicles. The capital cost of refrigerated transport equipment, including insulated trailer bodies, cryogenic systems, and telematics monitoring hardware, substantially exceeds that of conventional freight assets. Cold storage facilities required at origin, transit, and destination points represent multi-million-dollar infrastructure investments with long payback periods. In emerging markets with unreliable power infrastructure, maintaining consistent cold chain temperatures during vehicle loading, transit stops, and last-mile delivery presents operational reliability challenges that increase spoilage risk and insurance costs.

Opportunity:

Expanding organized retail and e-commerce grocery demanding last-mile cold delivery

The rapid growth of online grocery shopping and meal kit delivery services is creating unprecedented demand for temperature-controlled last-mile logistics capabilities connecting urban fulfillment centers with residential consumers. Urban cold chain infrastructure, including micro-fulfillment hubs, electric refrigerated delivery vehicles, and smart temperature monitoring platforms, is attracting substantial investment from grocery retailers, food tech companies, and logistics operators. As consumer expectations for cold food quality and delivery convenience continue rising, the economics of premium last-mile cold chain services are becoming increasingly viable across dense urban markets globally.

Threat:

Regulatory compliance complexity and food safety liability exposure

Cold chain transportation operators face an increasingly stringent and geographically fragmented regulatory landscape governing temperature excursion reporting, product recall responsibilities, and carrier liability for spoilage losses. Food safety legislation such as the U.S. FDA Food Safety Modernization Act's Sanitary Transportation Rule imposes specific temperature monitoring, documentation, and training requirements that increase operational overhead for transportation providers. Cross-border cold chain shipments must navigate diverse national food and pharmaceutical import regulations, with inspection delays at customs creating temperature risk for time-sensitive perishable cargoes.

Covid-19 Impact:

The COVID-19 pandemic generated unprecedented demand for cold chain transportation through the global distribution of billions of vaccine doses requiring ultra-cold or refrigerated handling. This historic demand surge exposed significant capacity constraints in cold chain infrastructure worldwide, catalyzing emergency investments in refrigerated vehicle fleets, cold storage facilities, and temperature monitoring technologies by both public health agencies and private logistics operators. Post-pandemic, the accelerated adoption of online grocery, meal kits, and direct-to-consumer pharmaceutical delivery has created structurally elevated demand for cold chain transportation that substantially exceeds pre-pandemic market volumes, establishing a permanently higher baseline for infrastructure investment across the sector.

The Road Transportation segment is expected to be the largest during the forecast period

The Road Transportation segment is expected to account for the largest market share during the forecast period, reflecting its indispensable role in last-mile cold chain delivery to retail distribution centers, supermarkets, hospitals, pharmacies, and residential consumers. Refrigerated trucks and vans constitute the dominant mode for domestic temperature-controlled freight across all major markets, offering flexible routing and door-to-door service capabilities that rail, air, and sea modes cannot replicate for last-mile applications.

The Air Transportation segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the Air Transportation segment is predicted to witness the

highest growth rate, driven by the expansion of time-sensitive cold chain freight categories including fresh seafood, exotic produce, cut flowers, and pharmaceutical biologics that require speed of transit to preserve quality and efficacy. The pharmaceutical sector's growing reliance on air freight for cross-border distribution of biologics, clinical trial materials, and specialty medicines is generating premium cold chain air cargo revenues. Temperature-controlled ULD containers and specialized aircraft belly and freighter configurations are improving pharmaceutical cold chain performance.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, supported by a highly developed refrigerated logistics infrastructure, extensive domestic food distribution networks, and a large pharmaceutical distribution sector with stringent temperature compliance requirements. The United States hosts a dense network of third-party refrigerated logistics operators providing national temperature-controlled distribution for food manufacturers, grocery retailers, and pharmaceutical companies.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, propelled by rapid expansion of organized food retail, growing pharmaceutical distribution networks, and government infrastructure investment programs in China, India, and Southeast Asia. China's cold chain development has accelerated dramatically through both private enterprise investment and government policy support for agricultural supply chain modernization, reducing food waste and improving rural-to-urban distribution efficiency.

Key players in the market

Some of the key players in Cold Chain Transportation Market include Lineage Logistics, Americold Logistics, DHL Supply Chain, UPS Healthcare Logistics, A.P. Moller - Maersk, DB Schenker, CEVA Logistics, C.H. Robinson Worldwide, DSV, Kuehne+Nagel, NewCold, Nichirei Logistics Group, U.S. Cold Storage, VersaCold Logistics Services, and Congebec Logistics.

Key Developments:

In March 2026, Lineage Logistics announced the commissioning of its largest automated cold storage facility to date in Rotterdam, Netherlands, featuring AI-driven inventory management, robotic pallet retrieval systems, and an integrated cold chain transportation management platform. The facility serves as a multimodal hub connecting sea container, rail, and road temperature-controlled freight across Northern European distribution networks.

In February 2026, DHL Supply Chain announced the launch of its next-generation LifeConEx pharmaceutical cold chain service, incorporating AI-powered temperature risk prediction and proactive intervention protocols for high-value biologic shipments. The service combines IoT temperature data loggers, machine learning anomaly detection, and a 24/7 global command center to monitor pharmaceutical consignments in real-time throughout their transportation journey.

Transportation Modes Covered:

Road Transportation

Rail Transportation

Air Transportation

Sea Transportation

Temperature Ranges Covered:

Chilled (0°C to 8°C)

Frozen (-18°C and Below)

Deep Frozen (-30°C and Below)

Ambient Controlled (15°C to 25°C)

Vehicle Types Covered:

Light Commercial Vehicles (LCVs)

Medium Commercial Vehicles (MCVs)

Heavy Commercial Vehicles (HCVs)

Refrigerated Containers

Specialized Cold Chain Vehicles

Technologies Covered:

Vapor Compression Refrigeration

Cryogenic Cooling Systems

Eutectic Devices

Electric Refrigeration Systems

Telematics and Fleet Monitoring

IoT-Based Temperature Monitoring

GPS Tracking Systems

Service Types Covered:

Dedicated Cold Chain Transportation

Multi-Client Transportation

Express Cold Chain Delivery

Last-Mile Refrigerated Delivery

Value-Added Logistics Services

End Users Covered:

Food Manufacturers

Retail & E-commerce Companies

Pharmaceutical Companies

Hospitals & Healthcare Providers

Third-Party Logistics Providers (3PLs)

Chemical Manufacturers

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
 - 2.4.1 Data Collection (Primary and Secondary)
 - 2.4.2 Data Modeling and Estimation Techniques
 - 2.4.3 Data Validation and Triangulation
 - 2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

- 4.1 Porter's Five Forces Analysis
 - 4.1.1 Supplier Bargaining Power
 - 4.1.2 Buyer Bargaining Power
 - 4.1.3 Threat of Substitutes
 - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

5 GLOBAL COLD CHAIN TRANSPORTATION MARKET, BY TRANSPORTATION MODE

- 5.1 Road Transportation
- 5.2 Rail Transportation
- 5.3 Air Transportation
- 5.4 Sea Transportation

6 GLOBAL COLD CHAIN TRANSPORTATION MARKET, BY TEMPERATURE RANGE

- 6.1 Chilled (0°C to 8°C)
- 6.2 Frozen (-18°C and Below)
- 6.3 Deep Frozen (-30°C and Below)
- 6.4 Ambient Controlled (15°C to 25°C)

7 GLOBAL COLD CHAIN TRANSPORTATION MARKET, BY VEHICLE TYPE

- 7.1 Light Commercial Vehicles (LCVs)
- 7.2 Medium Commercial Vehicles (MCVs)
- 7.3 Heavy Commercial Vehicles (HCVs)
- 7.4 Refrigerated Containers
- 7.5 Specialized Cold Chain Vehicles

8 GLOBAL COLD CHAIN TRANSPORTATION MARKET, BY TECHNOLOGY

- 8.1 Vapor Compression Refrigeration
- 8.2 Cryogenic Cooling Systems
- 8.3 Eutectic Devices
- 8.4 Electric Refrigeration Systems
- 8.5 Telematics and Fleet Monitoring
- 8.6 IoT-Based Temperature Monitoring
- 8.7 GPS Tracking Systems

9 GLOBAL COLD CHAIN TRANSPORTATION MARKET, BY SERVICE TYPE

- 9.1 Dedicated Cold Chain Transportation
- 9.2 Multi-Client Transportation
- 9.3 Express Cold Chain Delivery
- 9.4 Last-Mile Refrigerated Delivery
- 9.5 Value-Added Logistics Services

10 GLOBAL COLD CHAIN TRANSPORTATION MARKET, BY END USER

- 10.1 Food Manufacturers
- 10.2 Retail & E-commerce Companies
- 10.3 Pharmaceutical Companies
- 10.4 Hospitals & Healthcare Providers
- 10.5 Third-Party Logistics Providers (3PLs)
- 10.6 Chemical Manufacturers

11 GLOBAL COLD CHAIN TRANSPORTATION MARKET, BY GEOGRAPHY

- 11.1 North America
 - 11.1.1 United States
 - 11.1.2 Canada
 - 11.1.3 Mexico
- 11.2 Europe
 - 11.2.1 United Kingdom
 - 11.2.2 Germany
 - 11.2.3 France
 - 11.2.4 Italy
 - 11.2.5 Spain
 - 11.2.6 Netherlands
 - 11.2.7 Belgium
 - 11.2.8 Sweden
 - 11.2.9 Switzerland
 - 11.2.10 Poland
 - 11.2.11 Rest of Europe
- 11.3 Asia Pacific
 - 11.3.1 China
 - 11.3.2 Japan
 - 11.3.3 India
 - 11.3.4 South Korea

- 11.3.5 Australia
- 11.3.6 Indonesia
- 11.3.7 Thailand
- 11.3.8 Malaysia
- 11.3.9 Singapore
- 11.3.10 Vietnam
- 11.3.11 Rest of Asia Pacific
- 11.4 South America
 - 11.4.1 Brazil
 - 11.4.2 Argentina
 - 11.4.3 Colombia
 - 11.4.4 Chile
 - 11.4.5 Peru
 - 11.4.6 Rest of South America
- 11.5 Rest of the World (RoW)
 - 11.5.1 Middle East
 - 11.5.1.1 Saudi Arabia
 - 11.5.1.2 United Arab Emirates
 - 11.5.1.3 Qatar
 - 11.5.1.4 Israel
 - 11.5.1.5 Rest of Middle East
 - 11.5.2 Africa
 - 11.5.2.1 South Africa
 - 11.5.2.2 Egypt
 - 11.5.2.3 Morocco
 - 11.5.2.4 Rest of Africa

12 STRATEGIC MARKET INTELLIGENCE

- 12.1 Industry Value Network and Supply Chain Assessment
- 12.2 White-Space and Opportunity Mapping
- 12.3 Product Evolution and Market Life Cycle Analysis
- 12.4 Channel, Distributor, and Go-to-Market Assessment

13 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

- 13.1 Mergers and Acquisitions
- 13.2 Partnerships, Alliances, and Joint Ventures
- 13.3 New Product Launches and Certifications

13.4 Capacity Expansion and Investments

13.5 Other Strategic Initiatives

14 COMPANY PROFILES

14.1 Lineage Logistics

14.2 Americold Logistics

14.3 DHL Supply Chain

14.4 UPS Healthcare Logistics

14.5 A.P. Moller - Maersk

14.6 DB Schenker

14.7 CEVA Logistics

14.8 C.H. Robinson Worldwide

14.9 DSV

14.10 Kuehne+Nagel

14.11 NewCold

14.12 Nichirei Logistics Group

14.13 U.S. Cold Storage

14.14 VersaCold Logistics Services

14.15 Congebec Logistics

List Of Tables

LIST OF TABLES

Table 1 Global Cold Chain Transportation Market Outlook, By Region (2023-2034) (\$MN)

Table 2 Global Cold Chain Transportation Market Outlook, By Transportation Mode (2023-2034) (\$MN)

Table 3 Global Cold Chain Transportation Market Outlook, By Road Transportation (2023-2034) (\$MN)

Table 4 Global Cold Chain Transportation Market Outlook, By Rail Transportation (2023-2034) (\$MN)

Table 5 Global Cold Chain Transportation Market Outlook, By Air Transportation (2023-2034) (\$MN)

Table 6 Global Cold Chain Transportation Market Outlook, By Sea Transportation (2023-2034) (\$MN)

Table 7 Global Cold Chain Transportation Market Outlook, By Temperature Range (2023-2034) (\$MN)

Table 8 Global Cold Chain Transportation Market Outlook, By Chilled (0°C to 8°C) (2023-2034) (\$MN)

Table 9 Global Cold Chain Transportation Market Outlook, By Frozen (-18°C and Below) (2023-2034) (\$MN)

Table 10 Global Cold Chain Transportation Market Outlook, By Deep Frozen (-30°C and Below) (2023-2034) (\$MN)

Table 11 Global Cold Chain Transportation Market Outlook, By Ambient Controlled (15°C to 25°C) (2023-2034) (\$MN)

Table 12 Global Cold Chain Transportation Market Outlook, By Vehicle Type (2023-2034) (\$MN)

Table 13 Global Cold Chain Transportation Market Outlook, By Light Commercial Vehicles (LCVs) (2023-2034) (\$MN)

Table 14 Global Cold Chain Transportation Market Outlook, By Medium Commercial Vehicles (MCVs) (2023-2034) (\$MN)

Table 15 Global Cold Chain Transportation Market Outlook, By Heavy Commercial Vehicles (HCVs) (2023-2034) (\$MN)

Table 16 Global Cold Chain Transportation Market Outlook, By Refrigerated Containers (2023-2034) (\$MN)

Table 17 Global Cold Chain Transportation Market Outlook, By Specialized Cold Chain Vehicles (2023-2034) (\$MN)

Table 18 Global Cold Chain Transportation Market Outlook, By Technology (2023-2034)

(\$MN)

Table 19 Global Cold Chain Transportation Market Outlook, By Vapor Compression Refrigeration (2023-2034) (\$MN)

Table 20 Global Cold Chain Transportation Market Outlook, By Cryogenic Cooling Systems (2023-2034) (\$MN)

Table 21 Global Cold Chain Transportation Market Outlook, By Eutectic Devices (2023-2034) (\$MN)

Table 22 Global Cold Chain Transportation Market Outlook, By Electric Refrigeration Systems (2023-2034) (\$MN)

Table 23 Global Cold Chain Transportation Market Outlook, By Telematics and Fleet Monitoring (2023-2034) (\$MN)

Table 24 Global Cold Chain Transportation Market Outlook, By IoT-Based Temperature Monitoring (2023-2034) (\$MN)

Table 25 Global Cold Chain Transportation Market Outlook, By GPS Tracking Systems (2023-2034) (\$MN)

Table 26 Global Cold Chain Transportation Market Outlook, By Service Type (2023-2034) (\$MN)

Table 27 Global Cold Chain Transportation Market Outlook, By Dedicated Cold Chain Transportation (2023-2034) (\$MN)

Table 28 Global Cold Chain Transportation Market Outlook, By Multi-Client Transportation (2023-2034) (\$MN)

Table 29 Global Cold Chain Transportation Market Outlook, By Express Cold Chain Delivery (2023-2034) (\$MN)

Table 30 Global Cold Chain Transportation Market Outlook, By Last-Mile Refrigerated Delivery (2023-2034) (\$MN)

Table 31 Global Cold Chain Transportation Market Outlook, By Value-Added Logistics Services (2023-2034) (\$MN)

Table 32 Global Cold Chain Transportation Market Outlook, By End User (2023-2034) (\$MN)

Table 33 Global Cold Chain Transportation Market Outlook, By Food Manufacturers (2023-2034) (\$MN)

Table 34 Global Cold Chain Transportation Market Outlook, By Retail & E-commerce Companies (2023-2034) (\$MN)

Table 35 Global Cold Chain Transportation Market Outlook, By Pharmaceutical Companies (2023-2034) (\$MN)

Table 36 Global Cold Chain Transportation Market Outlook, By Hospitals & Healthcare Providers (2023-2034) (\$MN)

Table 37 Global Cold Chain Transportation Market Outlook, By Third-Party Logistics Providers (3PLs) (2023-2034) (\$MN)

Table 38 Global Cold Chain Transportation Market Outlook, By Chemical Manufacturers (2023-2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

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