

Lithium Ion Battery Cathodes: Market Shares, Strategies, and Forecasts, Worldwide, 2019 to 2024

<https://marketpublishers.com/r/LD6897DE588EN.html>

Date: January 2019

Pages: 250

Price: US\$ 4,400.00 (Single User License)

ID: LD6897DE588EN

Abstracts

LEXINGTON, Massachusetts (January 18, 2019) – WinterGreen Research announces that it has published a new study Lithium Ion Battery Cathode Markets: Market Shares, Strategy, and Forecasts, worldwide, 2019 to 2024. The 2019 study has 250 pages, 119 tables and figures. Worldwide markets are poised to achieve continuing growth as the advantages brought by using new materials are used to decrease the cost of producing lithium ion batteries. The customization achieved by reducing the quantity of cobalt proportionally inside the cathode is a significant market growth driver.

Lithium-ion Batteries at \$100/kWh Make EVs Cheaper Than Traditional Gas-Powered Vehicles. As the new cathode technologies are applied to lithium ion batteries, the cost of lithium ion batteries will continue to decrease. Lithium-ion batteries aim to cost \$100/kWh, – a cost that makes EVs cheaper than traditional gas-powered vehicles. Companies are targeting between \$80/kWh and \$100/kWh. Realistically companies will likely approach \$100/kWh.

NMC lithium battery cathode materials are used for electric vehicles. As the cathode markets develop toward NMC, it is clear the LFP favored by Chinese manufacturers, not suitable for electric vehicles will lose market share. Current NMC ternary lithium-ion batteries from South Korean and Japanese makers typically employ a ratio of 60% nickel to 20% manganese, and 20% cobalt (6:2:2), but as that ratio moves to 8:1:1 in 2018 and beyond, the cathode is a key element in achieve vast cost efficiencies.

On the basis of product, the market is primarily split into

Cobalt

Manganese

Nickel Cobalt Manganese (NMC)

Lithium Iron Phosphate (LFP)

Worldwide Lithium Ion Battery cathodes have many applications. On the basis on the end users/application, this report covers

Electric Vehicles

Drones, UAV, UUV

Power Tools

Smart Phone Equipment

Consumer Electronics Products

Other

Worldwide Lithium Ion Battery cathode market at \$7 billion market in 2018, is expected to reach \$58.8 billion by 2024.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Global Information Info Shop, Market Research.com, Research and Markets, electronics.ca, Research and Markets, and Report Linker.

WinterGreen Research is positioned to help customers facing challenges that define the modern enterprises. The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust wintergreen research to work alongside them to ensure the success of the participation in a particular market segment.

WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market research support solutions requiring trust and integrity.

Report Methodology

This is the 809th report in a series of market research reports that provide forecasts in communications, telecommunications, the internet, computer, software, and telephone equipment. The project leaders take direct responsibility for writing and preparing each report. They have significant experience preparing industry studies. Forecasts are based on primary research and proprietary databases. Forecasts reflect analysis of the market trends in the segment and related segments. Unit and dollar shipments are analyzed through consideration of dollar volume of each market participation in the segment. Market share analysis includes conversations with key customers of products, industry segment leaders, marketing directors, distributors, leading market participants, and companies seeking to develop measurable market share. Over 200 in-depth interviews are conducted for each report with a broad range of key participants and opinion leaders in the market segment.

Contents

LITHIUM ION BATTERY CATHODE EXECUTIVE SUMMARY

Lithium-ion Batteries at \$100/kWh Make EVs Cheaper Than Traditional Gas-Powered Vehicles

1. LITHIUM ION BATTERY CATHODE: MARKET DESCRIPTION AND MARKET DYNAMICS²⁰

1.1 Li-ion Battery Sub-Types

1.1.1 Nickel Manganese Cobalt

1.1.2 Nickel Cobalt Aluminum

1.2 Lithium-ion Battery Basics

1.2.1 Lithium Ion Battery Cathode Description

1.2.2 Cathode Chemistry and Metal Proportions

1.2.3 Intercalated Lithium Compound

1.3 Cathode Typically 31% of Cost of Small Lithium Ion Battery

2. LITHIUM ION BATTERY CATHODE MARKET SHARES AND FORECASTS

2.1 Lithium Ion Battery Cathode Market Driving Forces

2.2 Lithium Ion Battery Cathode Market Shares

2.2.1 Sumitomo Monthly Production Structure

2.2.2 Umicore

2.2.3 Umicore Dedicated to NMC and Cobalt

2.2.4 Samsung

2.2.5 Panasonic

2.2.6 Easpring Material Technology Chinese NCM 622 Capacity of 2,800 tons

2.3 Lithium Ion Battery Cathode Market Forecasts

2.3.1 Battery Materials Market

2.4 Lithium Ion Battery Cathode Segments

2.5 Battery Materials Market Worth \$11.3 Billion By 2018

2.6 Electric Vehicle Market

2.6.1 Automotive

2.6.2 Cobalt58

2.7 Lithium Ion Batteries

2.7.1 Lithium Markets

2.7.2 Cathode Active Materials

- 2.7.3 EV Makers and their Suppliers
- 2.8 Lithium Ion Battery Cathode and Cobalt Pricing
 - 2.8.1 Lithium Nickel Manganese Cobalt Oxide LiNiMnCoO_2 Powder for Lithium Ion Battery Cathode Materials-GN-NMC
 - 2.8.2 LiNiCoMnO_2 (NCM) Powder for High Capacity Li-ion Battery Cathode, (Ni: Co: Mn=1: 1: 1) , LiNiCoMnO_2
 - 2.8.3 LiFePO_4 Cathode Material CAS 15365-14-7
- 2.9 Lithium Ion Battery Cathode Regional Market Segments
 - 2.9.1 Europe
 - 2.9.2 China Cathode Market Participation

3. LITHIUM ION BATTERY CATHODE PRODUCT DESCRIPTION

- 3.1 Lithium Battery NMC Cathodes
- 3.2 Lithium Ion Battery Cathode Market Segment Analysis
 - 3.2.1 Cost Of Lithium-Ion Battery Cathodes Continues To Decrease
 - 3.2.2 Cathode Segments, NMC 532, NMC 622, NMC 811, Market Segments
 - 3.2.3 Cathode Market Growth, Tonnes
 - 3.2.4 Cathode Market Growth, Tonnes, Worldwide, 2013 – 2017
 - 3.2.5 NMC
 - 3.2.6 NMC and NCA
 - 3.2.7 LFP
 - 3.2.8 80 Percent Nickel, 10 Percent Cobalt And 10 Percent Manganese NMC 811
 - 3.2.9 Cathode Segments by NMC, NCM, NMA, LFP, Cobalt LCO, and Specialty Cathodes, Market Segments
 - 3.2.10 Cathode Unit Analysis in Tonnes
 - 3.2.11 Ternary Cathode Materials (NCA/NCM)
- 3.3 Category : LiNiMnCo (NMC) Batteries
- 3.4 NMC 811 Battery Production
- 3.5 Electric Vehicles
 - 3.5.1 Cars and Light Truck, Trucks and Busses Vehicle and Electric Vehicle Segment Market Forecasts,
 - 3.5.2 Cars and Light Truck Electric Vehicle Regional Segment Market Forecasts
 - 3.5.3 Cars and Light Truck Electric Vehicle Segment Market Forecasts, Small, Mid-Size, Luxury. And TaaS, Shipments
 - 3.5.4 Trucks and Busses Electric Vehicle Market Forecasts
 - 3.5.5 California Seeks to Ban Gas Burning Vehicles
 - 3.5.6 EV Battery Manufacturing
 - 3.5.7 Electric Vehicle Infrastructure Spending by Manufacturers

- 3.5.8 China
- 3.5.9 NIO in China
- 3.5.10 Transport as a Service (TaaS)
- 3.5.11 Charging Stations
- 3.5.12 Electric Trucks and Busses

4 LITHIUM ION BATTERY CATHODE RESEARCH AND TECHNOLOGY

- 4.5 Available Battery Choices:
- 4.6 Lithium Cobalt Oxide(LiCoO₂)
- 4.7 NMC
 - 4.7.3 Cathode Segments

5 LITHIUM ION BATTERY CATHODE COMPANY PROFILES

- 5.5 3M Sells NMC to Umicore
 - 5.5.3 3M Strategic Relationship with Amperex Technologies for NMC Li-Ion Cathode Materials
 - 5.5.4 3M Offered Three Cathode Products
 - 5.5.5 3M NMC Transfer to Umicore
- 5.6 Argonne National Labs
- 5.7 B&M
- 5.8 BASF
 - 5.8.3 BASF NCM Cathode Materials
 - 5.8.4 BASF One Of Two Licensed Suppliers of the U.S. Department of Energy's (DOE) Argonne National Laboratory-Patented NCM Cathode Materials
 - 5.8.5 BASF and Toda Kogyo
 - 5.8.6 BASF - ANL Collaboration on NCM Cathode Materials
 - 5.8.7 BASF and General Motors GM NMC
- 5.9 BYD
- 5.10 Easpring
 - 5.10.3 Easpring Revenue
 - 5.10.4 Easpring Production Capacity
- 5.11 FDK
- 5.12 Fujitsu
 - 5.12.3 Fujitsu Laboratories
 - 5.12.4 FDK Corporation and Fujitsu Laboratories
 - 5.12.5 Fujitsu Low-Cost, Cobalt-Free Lithium Rechargeable Batteries
 - 5.12.6 Fujitsu Cathode Terminology

- 5.12.7 Fujitsu
- 5.12.8 Fujitsu Laboratories
- 5.13 Hitachi Chemical
 - 5.13.3 Hitachi Lithium Ion Battery
- 5.14 JFE Techno-Research
 - 5.14.3 JFE Catalyst Evaluation and Development Support
- 5.15 Jinhe (website not available)
- 5.16 L&F
- 5.17 LG
 - 5.17.3 LG Chem Embraces NMC 811 Cathode
 - 5.17.4 LG Chem and 3M Nickel-Manganese-Cobalt-Oxide Cathode Patent License Agreement
 - 5.17.5 LG Chem Supplies NMC-based Li-ion Cells For Plug-In Vehicles, Including Chevy Volt
- 5.18 Long Power Systems
- 5.19 Mitsubishi
- 5.20 NEI Corporation
 - 5.20.3 NEI Cathode & Anode Powders
 - 5.20.4 NEI Lithium Manganese Oxide (LMO) Powders »
 - 5.20.5 NEI Lithium Nickel Cobalt Aluminum Oxide (NCA) Powders
 - 5.20.6 Lithium Manganese Nickel Oxide (LMNO / Spinel) Powders
 - 5.20.7 NEI Custom Lithium-ion Battery Powders
- 5.21 Nichia
- 5.22 Panasonic
 - 5.22.3 Panasonic offers Tesla Different Applications
 - 5.22.4 Tesla Gigafactory
 - 5.22.5 Panasonic Nickel Cobalt Aluminum and Nickel Manganese Cobalt
 - 5.22.6 Panasonic / Tesla Cathodes
- 5.23 Pulead
- 5.24 Reshine
- 5.25 Samsung
- 5.26 Shanshan
 - 5.26.3 Shanshan Anode Materials
- 5.27 SK innovation
- 5.28 SMM
 - 5.28.3 SMM Cathode Material of In-Vehicle Lithium Ion Batteries
 - 5.28.4 Nickel Powder For Multilayer Ceramic Capacitors
 - 5.28.5 Magnetic Powder for In-Car Motor
 - 5.28.6 Development of High-Functionality Silver-Coated Copper Powder With A

Controlled Shape

5.28.7 SMM Flake-like Silver-Coated Copper Powder Characteristics

5.28.8 SMM Cobalt:

5.28.9 SMM Produces Electrolytic Cobalt

5.28.10 SMM Increasing Production of NCA

5.28.11 SMM Monthly Production Structure

5.28.12 SMM Increasing Battery Material Production In Response To Growing Demand For Electric Vehicles206

5.28.13 SMM Materials Business

5.28.14 Sumitomo Metal Mining Revenue

5.28.15 Core Advantages of SMM's Materials Business

5.28.16 Sumitomo Metal Mining Co., Ltd. Sales Volume of Battery Materials

5.29 Targray

5.30 Toda Kogyo

5.30.3 Toda Kogyo Revenue

5.30.4 Toda America

5.30.5 BASF and Toda Strengthen Their Collaboration

5.30.6 BASF and Toda Combine Manufacturing Activities in the United States

5.31 Umicore

5.31.3 BASF, The World's Largest Chemical Company, Files a Law Suit Against Belgium's Umicore

5.31.4 3M NMC Powder

5.31.5 Umicore and One of Its Customers—Japan's Makita

5.31.6 Umicore Dedicated to NMC and Cobalt

5.31.7 Umicore Record Performance in 2017

5.31.8 Umicore Revenue

5.31.9 2017 FY Umicore Business Review Energy & Surface Technologies Including Cathodes

5.31.10 Umicore Acquires NMC Battery Material Patents from 3M

5.31.11 Umicore Boosts Capacity In Cathode Materials

5.32 Selected Lithium Ion Cathode Companies

WINTERGREEN RESEARCH,

WinterGreen Research Methodology

WinterGreen Research Process

Market Research Study

WinterGreen Research Global Market Intelligence Company

List Of Figures

LIST OF FIGURES

Abstract: Lithium Ion Battery Cathodes Undergo Rapid Change, Make Electric Vehicles Less Expensive Than Gas Powered Vehicles

Figure 1. Cathode Market Forecasts Dollars and Percent, Worldwide, 2018 - 2024

Figure 2. Lithium Ion Battery Cathode Description

Figure 3. Battery Has Graphite Anode, NMC Cathode, Lithium Electrolyte

Figure 4. Cathode Materials Ratio

Figure 5. Cathode Layered Structure

Figure 6. Cathode Chemistry and Metal Proportions

Figure 7. Cathode Typically 31% of Cost of Small Lithium Ion Battery

Figure 8. Cobalt

Figure 9. Cathodes Cost per kWh vs. \$ per Gallon of Gasoline

Figure 10. Cathode Market Shares, Dollars, Worldwide, 2017

Figure 11. Cathode Market Share Positioning Descriptions, Worldwide, 2017

Figure 12. Lithium Ion Battery Cathode Leading Market Participants

Figure 13. Lithium Ion Battery Cathode Recent Entrants

Figure 14. Umicore 2017 FY Energy & Surface Technologies Revenue: Including Cathodes

Figure 15. Cathode Market Forecasts Dollars and Percent, Worldwide, 2018 - 2024

Figure 16. Cathode Market Forecasts, Tonnes and Percent, Worldwide, 2018 - 2024

Figure 17. Lithium Ion Battery Cathode Market Factors

Figure 18. Cathode Segments, Electric Vehicle, Smart Phones, Stationary Storage / Grid, Power Tools, Laptops, Consumer Electronics, Drones / UAVs / UAVs, Market Segments, Dollars, Worldwide, 2018-2024

Figure 19. Cathode Segments, Electric Vehicle, Smart Phones, Stationary Storage / Grid, Power Tools, Laptops, Consumer Electronics, Drones / UAVs / UAVs, Market Segments, Percent, Worldwide, 2018-2024

Figure 20. Cathode Segments, Military, Transportation, Energy Storage, Consumer Electronics, Worldwide, 2017

Figure 21. Cathode Material 34.7% of Battery

Figure 22. Cobalt

Figure 23. Metric Tons of Cobalt Produced in 2016

Figure 24. Global Battery Mineral Supply And Demand

Figure 25. EV Makers and their Suppliers

Figure 26. Lithium Ion Battery Cell Manufacturing Cost \$/kWh

Figure 27. Lithium Ion Battery Cathode Regional Market Segments, Dollars, Worldwide,

201774

Figure 28. Chinese Dominate Cathode Market in 2015

Figure 29. Cathode Production Regional Segments, China Tonnes, 2017

Figure 30. Material Development of High Density Battery

Figure 31. Cathode Segments, NMC 532, NMC 622, NMC 811, Market Segments, Dollars, Worldwide, 2017

Figure 32. Cathode Market Growth, Dollars, Worldwide, 2018 - 2024

Figure 33. Cathode Market Growth, Percent, Worldwide, 2018 - 2024

Figure 34. Cathode Market Growth, Tonnes, Worldwide, 2018 - 2024

Figure 35. Cathode Market Growth, Tonnes, Percent, Worldwide, 2018 – 2024

Figure 36. Cathode Market Growth, Tonnes, Worldwide, 2013 – 2017

Figure 37. Cathode Market Growth, Tonnes, Percent, Worldwide, 2013 - 2017

Figure 38. Cathode Segments by NMC, NCM, NMA, LFP, Cobalt LCO, and Specialty Cathodes, Market Segments, Tons and Percent, Worldwide, 2018-2024

Figure 39. Output of Major Lithium Battery Cathode Material Manufacturers 2012-2013.

Figure 40. Lithium-Ion-Batteries

Figure 41. Electric Vehicle

Figure 42. NMC 811 Battery Production

Figure 43. Cars and Light Truck, Trucks and Busses Vehicle and Electric Vehicle Segment Market Forecasts, Shipments, Percent and Units, Worldwide, 2019 - 2025

Figure 44. Cars and Light Truck Electric Vehicle Regional Segment Market Forecasts, China, US, Europe, and Rest of World Shipments, Units, Worldwide, 2019 - 2025

Figure 45. Cars and Light Truck Electric Vehicle Regional Segment Market Forecasts, China, US, Europe, and Rest of World Shipments, Percent Units, Worldwide, 2019 - 2025

Figure 46. Cars and Light Truck Electric Vehicle Market Forecasts, Units and Percent, Worldwide, 2019 – 2025

Figure 47. Cars and Light Truck Electric Vehicle Segment Market Forecasts, Small, Mid Size, Luxury. And TaaS, Units, Worldwide, 2019 - 2025

Figure 48. Cars and Light Truck Electric Vehicle Segment Market Forecasts, Small, Mid-Size, Luxury. And TaaS, Shipments, Dollars and \$ per Unit, Worldwide, 2019 - 2025

Figure 49. Trucks and Busses Electric Vehicle Market Forecasts, Shipments, Units, Worldwide, 2019 - 2025

Figure 50. Trucks and Busses Electric Vehicle Segment Market Forecasts, Light Duty Trucks, Mid Size Trucks, Large Trucks, Busses, Shipments, Units, Worldwide, 2019 - 2025

Figure 51. Trucks and Busses Electric Vehicle Segment Market Forecasts, Light Duty Trucks, Mid Size Trucks, Large Trucks, Busses, Shipments, Dollars, Worldwide, 2019 - 2025

Figure 52. Market Shares for Electric Batteries

Figure 53. Electric Vehicle Segment Market Forecasts, Dollars, Worldwide, 2019 - 2025

Figure 54. Available Batteries choices:

Figure 55. Nano Technology for Electrochemical Utilization of Metal Oxide

Figure 56. Cathode Improved Electric Conductivity

Figure 57. 3-D Porous Structure for Easy Access to Electrolyte Ions

Figure 58. NMC Cathode Ratio Examples

Figure 59. Li-Ion Batteries Cathode, Anode, and Other Technologies

Figure 60. Lithium Cathode Functions

Figure 61. SMM Cathode Materials

Figure 62. Lithium Cobalt Oxide(LiCoO₂) Layered Structure

Figure 63. Cathode Segments, NMC 532, NMC 622, NMC 811, Market Segments, Dollars, Worldwide, 2017

Figure 64. Cathode Segments, Electric Vehicle, Smart Phones, Stationary Storage / Grid, Power Tools, Laptops, Consumer Electronics, Drones / UUVs / UAVs, Market Segments, Percent, Worldwide, 2018-2024

Figure 65. Cathode Segments, Electric Vehicle, Smart Phones, Stationary Storage / Grid, Power Tools, Laptops, Consumer Electronics, Drones / UAVs, Market Segments, Dollars, Worldwide, 2018-2024

Figure 66. Cathode Segments by NMC, NCM . NMA, LFP, Cobalt LCO, Manganese LMO, and Specialty Cathodes, Market Segments, Dollars and Percent, Worldwide, 2018-2024

Figure 67. Applications for Metals Typically Contained in Lithium Ion Battery Cathode

Figure 68. Lithium Cathode Metals Markets

Figure 69. Cathode Segments by NMC, NCM . NMA, LFP, Cobalt LCO, Manganese LMO, and Specialty Cathodes, Market Segments, Tons and Percent, Worldwide, 2018-2024

Figure 70. 3M NMC Cathode Materials

Figure 71. BASF Battery Materials Positioning

Figure 72. BASF Sales by Region

Figure 73. Sales by Direct Customer Industry

Figure 74. BASF Main Competitors

Figure 75. BASF Key Capabilities

Figure 76. BASF Advanced HED™ NCM Cathode Materials For Lithium-Ion Batteries Functions

Figure 77. BASF NCM Cathode Materials

Figure 78. BASF - ANL Collaboration on NCM: BASF's Comprehensive Battery Materials Portfolio

Figure 79. BASF NCM Production Elyria, Ohio

- Figure 80. Fujitsu Charge / Discharge Curves Of Cathode Material
- Figure 81. Comparison of the Energy Densities Of The New Cathode Material Versus Conventional Cathode Materials
- Figure 82. Fujitsu Crystal Structure Of The Of Low-Cost, Cobalt-Free Lithium Rechargeable Batteries¹⁶⁰
- Figure 83. Fujitsu Prototype Coin-Shaped Battery Crystal Structure Of The New Material
- Figure 84. Fujitsu Voltage and Discharge Depth (*2) Of The Prototype Coin Battery
- Figure 85. Hitachi Corporate Revenue in Trillions of Yen
- Figure 86. Hitachi Materials Benchmarking
- Figure 87. Hitachi Advanced Materials Revenue
- Figure 88. Hitachi Advanced Materials Revenue Change
- Figure 89. JFE Techno-Research Cathode Functions
- Figure 90. JFE Examples of Clients' Catalyst-Related Requests
- Figure 91. Structure of Rechargeable Battery
- Figure 92. LG Chem Cathode Materials
- Figure 93. Rechargeable Battery Components
- Figure 94. 3M Cathode Charge / Discharge Profiles
- Figure 95. NEI Cathode & Anode Powders
- Figure 96. Cathode & Anode Tapes
- Figure 97. NEI Cathode Materials
- Figure 98. Nichia LiCoO₂
- Figure 99. Nichia Analysis of Active Materials
- Figure 100. Tesla Lithium-Ion NCA Battery
- Figure 101. Panasonic / Tesla NMC Battery
- Figure 102. Construction of the Tesla Gigafactory Outside Reno, Nevada is shown February 18, 2015.¹⁸⁸
- Figure 103. Pulead Electric Car
- Figure 104. Ni-Co-Mn Material
- Figure 105. SMM Ni-Co-Al Material
- Figure 106. SMM High-Functionality Nickel Powder
- Figure 107. SMM Sm-Fe-N Magnetic Powder
- Figure 108. SMM Flake-Like Silver-Coated Copper Powder
- Figure 109. SMM Cathode Materials Center
- Figure 110. SMM Net Sales
- Figure 111. Number of Electric Vehicles Shipped
- Figure 112. SMM Core Divisions
- Figure 113. Targray Cathodes
- Figure 114. Umicore South Korean and Chinese Facilities

Figure 115. Umicore Volume Forecasts

Figure 116. Umicore 2017 FY Business Review: Catalysts

Figure 117. Umicore Leadership Position in NMC

Figure 118. Cut Cathode Producers

Figure 119. Cathode Makers

I would like to order

Product name: Lithium Ion Battery Cathodes: Market Shares, Strategies, and Forecasts, Worldwide, 2019 to 2024

Product link: <https://marketpublishers.com/r/LD6897DE588EN.html>

Price: US\$ 4,400.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/LD6897DE588EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970

