

North American Nonwovens Industry Outlook, 2019-2024 Medical/Surgical Chapter

A Review and Forecast of the North American Nonwovens
Supply and Demand for 2014, 2019 and 2024



**Association of the
Nonwoven Fabrics Industry**

ADVANCING ENGINEERED MATERIAL SOLUTIONS

P.O. Box 1288, Cary, North Carolina 27512-1288, U.S.A.

1100 Crescent Green, Suite 115, Cary, North Carolina 27518, U.S.A.

Tel: (919) 459-3700

Web: www.inda.org

Copyright© 2020 INDA, Association of the Nonwoven Fabrics Industry.

All rights reserved. This material may not be reproduced, in whole or in part, in any medium whatsoever, without the express written permission of INDA, Association of the Nonwoven Fabrics Industry.

INDA is a registered trademark of INDA, Association of the Nonwoven Fabrics Industry.

Foreword

This is INDA's eleventh report analyzing the nonwovens industry of North America. This report presents detailed supply and demand data for the North American nonwovens industry for 2014 and 2019, and a forecast for 2024. Specifically, the goals of the report were to:

- Provide baseline economic and demographic trends, as they are significant drivers of demand within the North American nonwovens industry;
- Develop industry consumption figures by sales, units, square meters, and tonnage for nonwoven materials in 11 end use markets and their numerous subcategories (262) for 2014 and 2019, and provide a forecast for 2024;
- Explain industry trends within the end-use markets;
- Provide an overall picture of the North American supply side by analyzing the key metrics of capacity (1990–2019), production including operating rates (2009–2019), and trade flow data (2009–2019); and
- Define and clarify end use market segmentation and production processes to provide greater precision in categorizing the industry.

INDA has undertaken this study to fulfill the element of its mission to **provide credible statistics to its members and the overall industry**. This information is intended to assist those in the nonwovens industry in making better business decisions. While no study is perfect, INDA has devoted considerable time, knowledge, reach, and resources to make this the most accurate and **most comprehensive analysis** of the total North American nonwovens industry.

It is INDA's intention to continue to improve the quality of data and industry information with each report. Your comments are welcome on information you would like included in future reports of the nonwoven industry in North America. Please feel free to contact either of us regarding any aspect of this report.



Dave Rousse, President
INDA, Association of the Nonwoven Fabrics Industry
drousse@inda.org
919.459.3730



Brad Kalil, Director of Market Research and Statistics
INDA, Association of the Nonwoven Fabrics Industry
bkalil@inda.org
919.459.3734

TABLE OF CONTENTS

I. Executive Summary	I
II. Economic and Population Drivers	7
A. North American Economic Growth.....	8
1. United States.....	9
2. Canada.....	11
3. Mexico.....	12
4. Country Comparison.....	13
B. North American Population.....	16
1. Age Cohorts	18
Babies and Toddlers (Age 0 – 4 Years).....	18
Females Age 13 – 51	21
The Elderly (65+).....	22
Population Pyramids	24
III. North American Nonwoven Demand	26
A. Disposable Applications Demand.....	34
4. Medical/Surgical	43
Surgical Packs and Gowns	54
Other Apparel	57
Sterile Packaging/Sterilization Wrap.....	59
Wound Care.....	61
IV. North American Nonwovens Supply	64
A. Capacity.....	64
1. Historical Perspective.....	65
2. Previous Years' Comparisons	67
B. Production	74

1. Historical Perspective.....	74
2. Previous Years' Comparisons	78
3. Production by End-Use Market	82
4. Production by Raw Material Usage.....	83
Spunlaid Resins	84
Staple Fiber Based	86
C. Trade Flows.....	88
1. United States Trade	90
2. North American Intra-Region Trade.....	93
Mexico	93
Canada	96
3. North America Inter-Region Trade.....	100
Exports	100
Imports	105
D. Overall North American Trade Flows.....	111
1. Intra-Region Trade.....	111
2. Inter-Region Trade	112
V. Final Thoughts and Outlook Summary	113
VI. Appendix.....	114
A. Methodology.....	114
1. Demand Model.....	114
2. Supply Model.....	117
B. Nonwoven Material Definitions	118
1. Nonwoven Definition	118
2. Forming Processes	118
Drylaid.....	118
Spunlaid	120

Wetlaid 121

Airlaid Short Fiber..... 121

C. Nonwoven End Use Classifications and Definitions 122

 1. Disposables 122

 2. Durables..... 125

LIST OF FIGURES

II. Economic and Population Drivers

II-1	Relative Sizes of North American Economies, 2019	8
II-2	Annual Growth of Real GDP in the United States, 2015–2024.....	9
II-3	Annual Growth of Real GDP in Canada, 2015–2024.....	11
II-4	Annual Growth of Real GDP in Mexico, 2015–2024.....	13
II-5	North American Real GDP Annual Growth by Country, 2015–2024.....	14
II-6	Relative Sizes of North American Populations, 2019.....	16
II-7	North American Population by Country, Historical and Forecast.....	17
II-8	Total Number of U.S. and Canada Births, Actual 1950-2019	19
II-9	Total Number of Babies and Toddlers (0–4 Years) by Country, Historical and Forecast.....	21
II-10	Total Number Females (13–51 Years) by Country, Historical and Forecast	22
II-11	Total Population and Elderly (65+ Years) by Country, Historical and Forecast....	23
II-12	U.S./Canada Population Pyramid, 2014	24
II-13	Mexico Population Pyramid, 2014.....	24
II-14	U.S./Canada Population Pyramid, 2019	25
II-15	Mexico Population Pyramid, 2019.....	25
II-16	U.S./Canada Population Pyramid, 2024f.....	25
II-17	Mexico Population Pyramid, 2024f.....	25

III. North American Nonwoven Demand

III-1	North American Nonwovens Market, Dollar Sales, 2019.....	27
III-2	North American Nonwovens Market, Square Meters, 2019	28
III-3	North American Nonwovens Market, Tonnage, 2019	28
III-4	North American Nonwoven Material Consumption, 2019	29
III-5	North American Nonwoven Material Consumption, Historical and Forecast.....	30
III-6	North American Nonwovens Square Meters Usage Market Sizes and Growth.....	32

III-7	North American Nonwovens Tonnage Usage Market Sizes and Growth	33
-------	--	----

IIIA. Disposable Applications Demand

IIIA-1	North American Disposable Nonwovens Market, End-Use Dollar Sales, Historical and Forecast.....	34
IIIA-2	North American Disposable Nonwovens Market, End-Use Unit Sales, Historical and Forecast.....	37
IIIA-3	Disposable Nonwoven Material Consumption by End-Use, 2019	38
IIIA-4	Disposable Nonwoven Material Consumption, Historical and Forecast	40
IIIA-5	North American Disposable Nonwovens Square Meter Usage Market Sizes and Growth by End-Use.....	41
IIIA-6	North American Disposable Nonwovens Tonnage Usage Market Sizes and Growth by End-Use.....	42
IIIA-7	North American Disposable Medical/Surgical Market, Category Dollar Sales, 2019.....	45
IIIA-8	National and State Healthcare-Associated Infections Progress Report, 2016.....	50
IIIA-9	Medical/Surgical Nonwoven Material Consumption by Category, 2019	51
IIIA-10	North American Medical/Surgical Market, Category Dollar Sales, Historical and Forecast.....	52
IIIA-11	Medical/Surgical Nonwoven Material Consumption, Historical and Forecast.....	54
IIIA-12	Surgical Packs and Gowns Nonwoven Material Consumption, Historical and Forecast.....	56
IIIA-13	Medical and Surgical Other Apparel Nonwoven Material Consumption, Historical and Forecast.....	58
IIIA-14	Medical and Surgical Sterile Packaging and Sterilization Wrap Nonwoven Material Consumption, Historical and Forecast.....	60
IIIA-72	Medical and Surgical Wound Care Nonwoven Material Consumption, Historical and Forecast.....	63

IV. North American Nonwoven Supply

IV-1	Capacity by Process, Tonnes, 2019	64
IV-2	Capacity by Region, Tonnes, 2019	64
IV-3	North American Capacity by Process, Tonnes, 1990–2019, 5-Year Periods	66

IV-4	North American Capacity by Process, Tonnes, 2010–2019, Yearly	68
IV-5	Capacity by Detailed Process, Tonnes, 2019	69
IV-6	North American Capacity by Detailed Process, Tonnes, 2010–2019	71
IV-7	North American Capacity, Production and Operating Rate, Tonnes 2005, 2010, 2015, 2019	75
IV-8	North American Capacity, Production and Operating Rate by Process, Tonnes, 2005, 2010, 2015, 2019	77
IV-9	North American Capacity, Production and Operating Rate, Tonnes, 2013–2019	79
IV-10	North American Capacity, Production and Operating Rate by Process, Tonnes, 2017–2019	81
IV-11	North American Production by End-Use Market 2019, Tonnes	82
IV-12	Share of Resin and Staple Fiber Used in North America Production, 2019, Tonnes	83
IV-13	Types of Synthetic Polymers Used in North America Production, 2019, Tonnes ..	84
IV-14	North America Spunlaid Resin Consumption, 2019, Tonnes	85
IV-15	North America Staple Fiber Consumption, 2019, Tonnes	86
IV-16	U.S. Nonwoven Material Imports and Exports, 1989–2019, Tonnes	91
IV-17	U.S. Nonwoven Material Imports and Exports 1996 to 2019, Dollars	92
IV-18	United States – Mexico Nonwoven Material Trade, 2009–2019, Tonnes	94
IV-19	United States – Mexico Nonwoven Material Trade 2009 to 2019, Dollars	95
IV-20	U.S. Nonwoven Roll Material to Mexico by Weight, Tonnes, 2009–2019	96
IV-21	U.S. Nonwoven Material Imports from Mexico by Weight, Tonnes, 2009–2019	96
IV-22	United States – Canada Nonwoven Material Trade, 2009–2019, Tonnes	97
IV-23	United States – Canada Nonwoven Material Trade, 2009–2019, Dollars	98
IV-24	U.S. Nonwoven Material Exports to Canada by Weight, 2009–2019, Tonnes	99
IV-25	U.S. Nonwoven Material Imports from Canada by Weight, 2009–2019, Tonnes	99
IV-26	North American Nonwoven Material Exports by Region Destination, Tonnes, 2009–2019	101
IV-27	North American Nonwoven Material Exports by Detailed Region Destination, Tonnes, 2009-2019	102

IV-28	Top 10 Export Countries for North American Nonwoven Material, Tonnes, 2009–2019	104
IV-29	North American Nonwoven Material Imports by Region of Origin, Tonnes, 2009–2019	106
IV-30	North American Nonwoven Material Imports by Detailed Region of Origin, Tonnes, 2009–2019	107
IV-31	Top 10 Import Countries to North America for Nonwoven Material, Tonnes, 2009–2019	109
IV-32	North American Nonwoven Material Imports from China by Weight Category, Tonnes, 2009–2019.....	110
IV-33	2019 North American Nonwoven Material Intra-Region Trade Flow Map.....	111
IV-24	2019 North American Nonwoven Material Trade Flow by Region Map.....	112

LIST OF TABLES

II. Economic and Population Drivers

II-1	Annual Growth of Real GDP in North America by Country, Historical and Forecast.....	14
II-2	Annual Growth of Real GDP Comparison from Previous Report Forecast to Actual GDP	15

III. North American Nonwoven Demand

III-1	North American Nonwoven Market Nonwoven Material Consumption by Disposable and Durable, Historical and Forecast	28
-------	--	----

IIIA. Disposable Applications Demand

IIIA-1	North American Disposable Nonwoven Markets Sales and Units by End-Use, Historical and Forecast.....	35
IIIA-2	North American Disposable Nonwoven Markets Nonwoven Material Consumption by End-Use, Historical and Forecast	39
IIIA-3	North American Healthcare Facility Usage by Process, Historical and Forecast.....	48
IIIA-4	North American Disposable Medical/Surgical Market Sales and Units by Category, Historical and Forecast.....	52
IIIA-5	North American Disposable Medical/Surgical Market Nonwoven Material Consumption by Category, Historical and Forecast.....	53
IIIA-6	North American Surgical Packs and Gowns Market Sales and Units, Historical and Forecast.....	55
IIIA-7	North American Surgical Packs and Gowns Market Nonwoven Material Consumption, Historical and Forecast	57
IIIA-8	North American Medical and Surgical Other Apparel Market Sales and Units, Historical and Forecast.....	57
IIIA-9	North American Medical and Surgical Other Apparel Market Nonwoven Material Consumption, Historical and Forecast	58
IIIA-10	North American Medical/Surgical Sterile Packaging and Sterilization Wrap Market Sales and Units, Historical and Forecast.....	59
IIIA-11	North American Medical/Surgical Sterile Packaging and Sterilization Wrap Market Nonwoven Material Consumption, Historical and Forecast	60

IIIA-12	North American Medical and Surgical Wound Care Market Sales and Units, Historical and Forecast.....	62
IIIA-13	North American Medical and Surgical Wound Care Market Nonwoven Material Consumption, Historical and Forecast.....	63
IV. North American Nonwoven Supply		
IV-1	North American Capacity Annual Growth Rates by Process, 1990–2019, 5-Year Periods	67
IV-2	North American Capacity Annual Growth Rates by Process, 2011–2019.....	70
IV-3	North American Drylaid Capacity Annual Growth Rates, 2011–2019.....	72
IV-4	North American Spunlaid Capacity Annual Growth Rates, 2011–2019.....	72
IV-5	North American Annual Net Capacity Additions by Line Type, 2015–2019.....	73
IV-6	North American Capacity, Production, and U.S. GDP Growth Rates, Five-Year Periods, 2005–2019.....	74
IV-7	North American Production Annual Growth Rates by Process, Five-Year Periods, 2005–2019.....	76
IV-8	North American Capacity, Production, and U.S. GDP Growth Rates, 2013–2019	78
IV-9	North American Capacity and Production Growth Rates by Process, 2019	80
IV-10	Top 10 Countries for North American Exports Yearly Comparison, 2009, 2018, 2019	103
IV-11	Top 10 Countries Importing to North America Yearly Comparison, 2009, 2018, 2019	108