2022 RCAT/MRCA Roofing Conference & Expo
September 27-29, 2022
Fort Worth, TX

Low slope: Update on roofing industry technical issues

presented by

Mark S. Graham
Vice President, Technical Services
National Roofing Contractors Association (NRCA)

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Topics

- Roofing industry market conditions
- CERTA program updates
- Ignition temperature research
- Code developments
- Contractor-reported problems
- Questions

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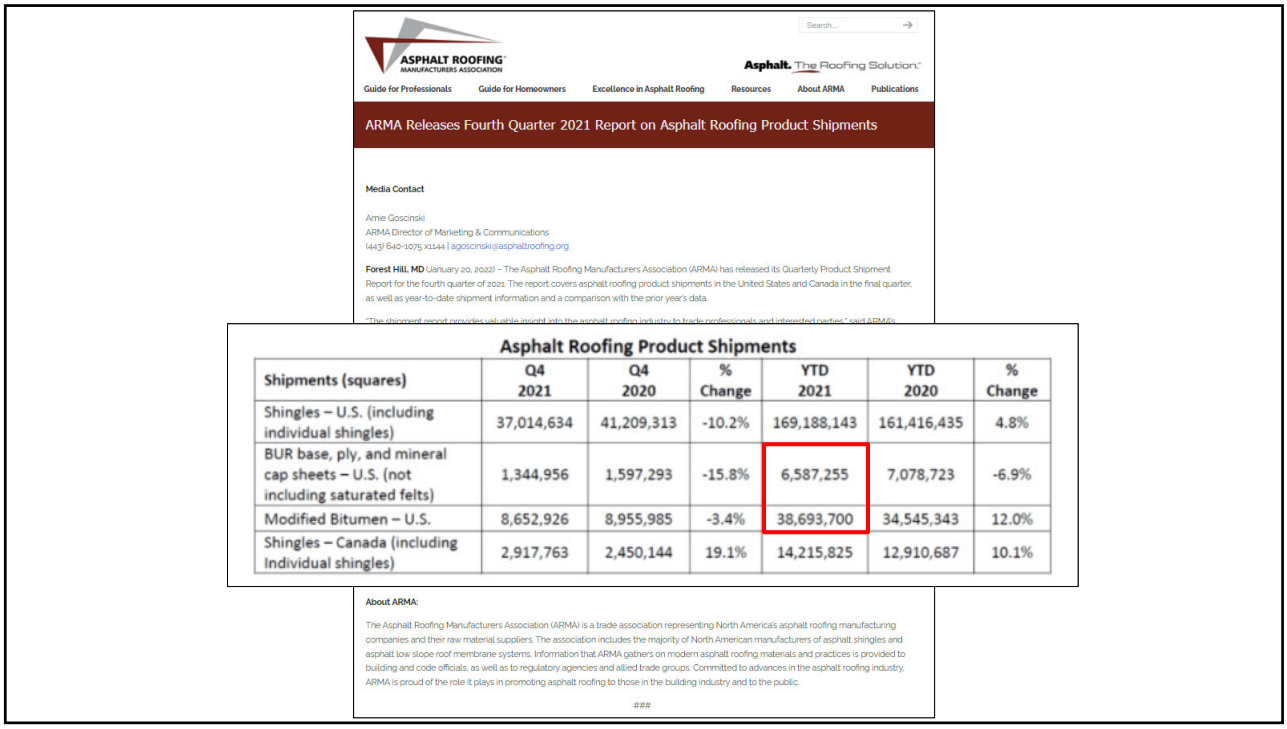

ASPHALT ROOFING MANUFACTURERS ASSOCIATION

Asphalt. The Roofing Solution.

Guide for Professionals | Guide for Homeowners | Excellence in Asphalt Roofing | Resources | About ARMA | Publications

ARMA Releases Fourth Quarter 2021 Report on Asphalt Roofing Product Shipments

Media Contact

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Forest Hill, MD (January 20, 2022) – The Asphalt Roofing Manufacturers Association (ARMA) has released its Quarterly Product Shipment Report for the fourth quarter of 2021. The report covers asphalt roofing product shipments in the United States and Canada in the final quarter, as well as year-to-date shipment information and a comparison with the prior year's data.

"The shipment report provides valuable insight into the asphalt roofing industry to trade professionals and interested parties," said ARMA's

Asphalt Roofing Product Shipments

Shipments (squares)	Q4 2021	Q4 2020	% Change	YTD 2021	YTD 2020	% Change
Shingles – U.S. (including individual shingles)	37,014,634	41,209,313	-10.2%	169,188,143	161,416,435	4.8%
BUR base, ply, and mineral cap sheets – U.S. (not including saturated felts)	1,344,956	1,597,293	-15.8%	6,587,255	7,078,723	-6.9%
Modified Bitumen – U.S.	8,652,926	8,955,985	-3.4%	38,693,700	34,545,343	12.0%
Shingles – Canada (including Individual shingles)	2,917,763	2,450,144	19.1%	14,215,825	12,910,687	10.1%

About ARMA:

The Asphalt Roofing Manufacturers Association (ARMA) is a trade association representing North America's asphalt roofing manufacturing companies and their raw material suppliers. The association includes the majority of North American manufacturers of asphalt shingles and asphalt low slope roof membrane systems. Information that ARMA gathers on modern asphalt roofing materials and practices is provided to building and code officials, as well as to regulatory agencies and allied trade groups. Committed to advances in the asphalt roofing industry, ARMA is proud of the role it plays in promoting asphalt roofing to those in the building industry and to the public.

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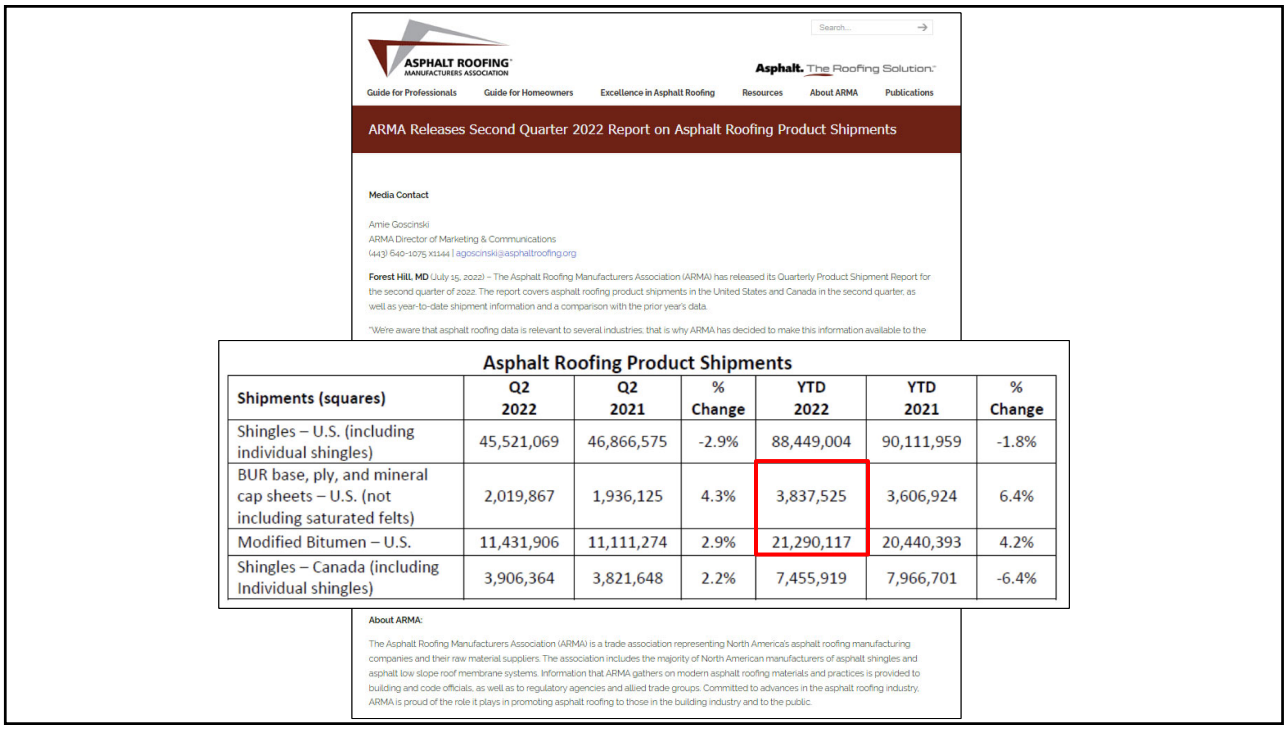

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ARMA Releases Second Quarter 2022 Report on Asphalt Roofing Product Shipments

Media Contact

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Forest Hill, MD (July 15, 2022) – The Asphalt Roofing Manufacturers Association (ARMA) has released its Quarterly Product Shipment Report for the second quarter of 2022. The report covers asphalt roofing product shipments in the United States and Canada in the second quarter, as well as year-to-date shipment information and a comparison with the prior year's data.

"We're aware that asphalt roofing data is relevant to several industries, that is why ARMA has decided to make this information available to the

Asphalt Roofing Product Shipments

Shipments (squares)	Q2 2022	Q2 2021	% Change	YTD 2022	YTD 2021	% Change
Shingles – U.S. (including individual shingles)	45,521,069	46,866,575	-2.9%	88,449,004	90,111,959	-1.8%
BUR base, ply, and mineral cap sheets – U.S. (not including saturated felts)	2,019,867	1,936,125	4.3%	3,837,525	3,606,924	6.4%
Modified Bitumen – U.S.	11,431,906	11,111,274	2.9%	21,290,117	20,440,393	4.2%
Shingles – Canada (including Individual shingles)	3,906,364	3,821,648	2.2%	7,455,919	7,966,701	-6.4%

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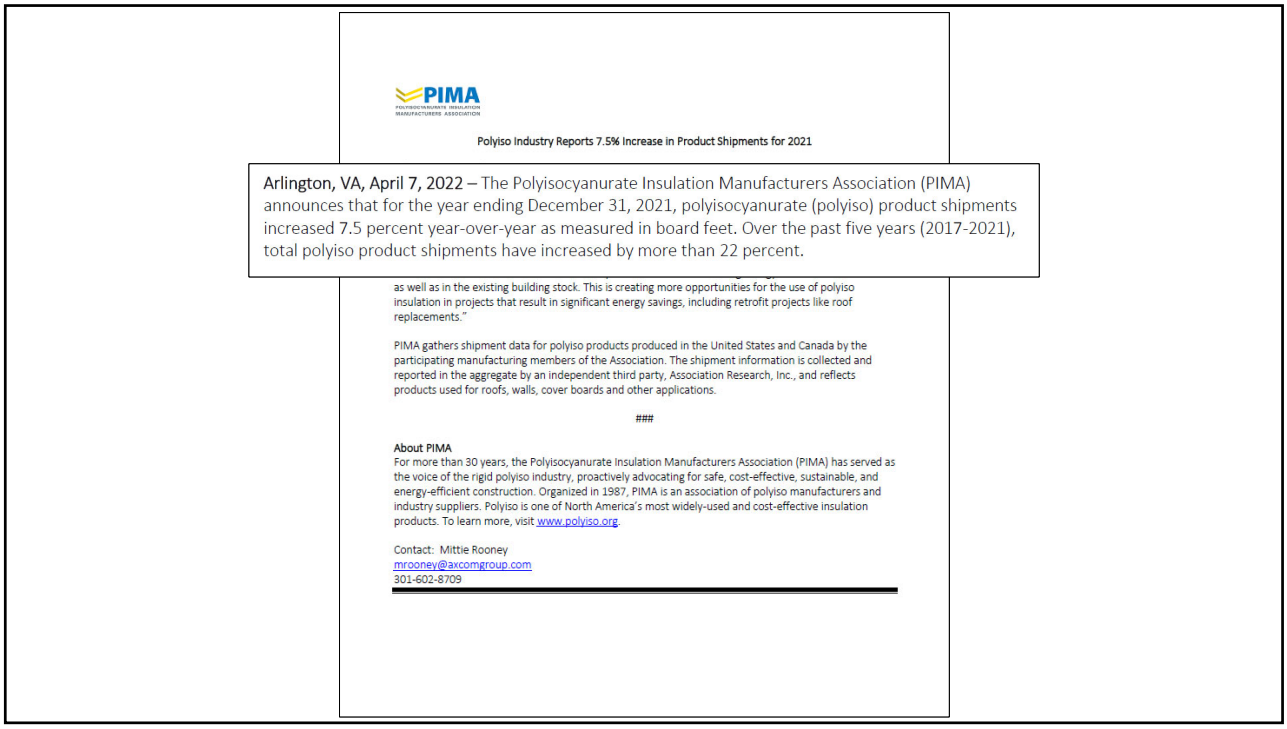

PIMA

Polyiso Industry Reports 7.5% Increase in Product Shipments for 2021

Arlington, VA, April 7, 2022 – The Polyisocyanurate Insulation Manufacturers Association (PIMA) announces that for the year ending December 31, 2021, polyisocyanurate (polyiso) product shipments increased 7.5 percent year-over-year as measured in board feet. Over the past five years (2017-2021), total polyiso product shipments have increased by more than 22 percent.

as well as in the existing building stock. This is creating more opportunities for the use of polyiso insulation in projects that result in significant energy savings, including retrofit projects like roof replacements."

PIMA gathers shipment data for polyiso products produced in the United States and Canada by the participating manufacturing members of the Association. The shipment information is collected and reported in the aggregate by an independent third party, Association Research, Inc., and reflects products used for roofs, walls, cover boards and other applications.

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About PIMA
For more than 30 years, the Polyisocyanurate Insulation Manufacturers Association (PIMA) has served as the voice of the rigid polyiso industry, proactively advocating for safe, cost-effective, sustainable, and energy-efficient construction. Organized in 1987, PIMA is an association of polyiso manufacturers and industry suppliers. Polyiso is one of North America's most widely-used and cost-effective insulation products. To learn more, visit www.polyiso.org.

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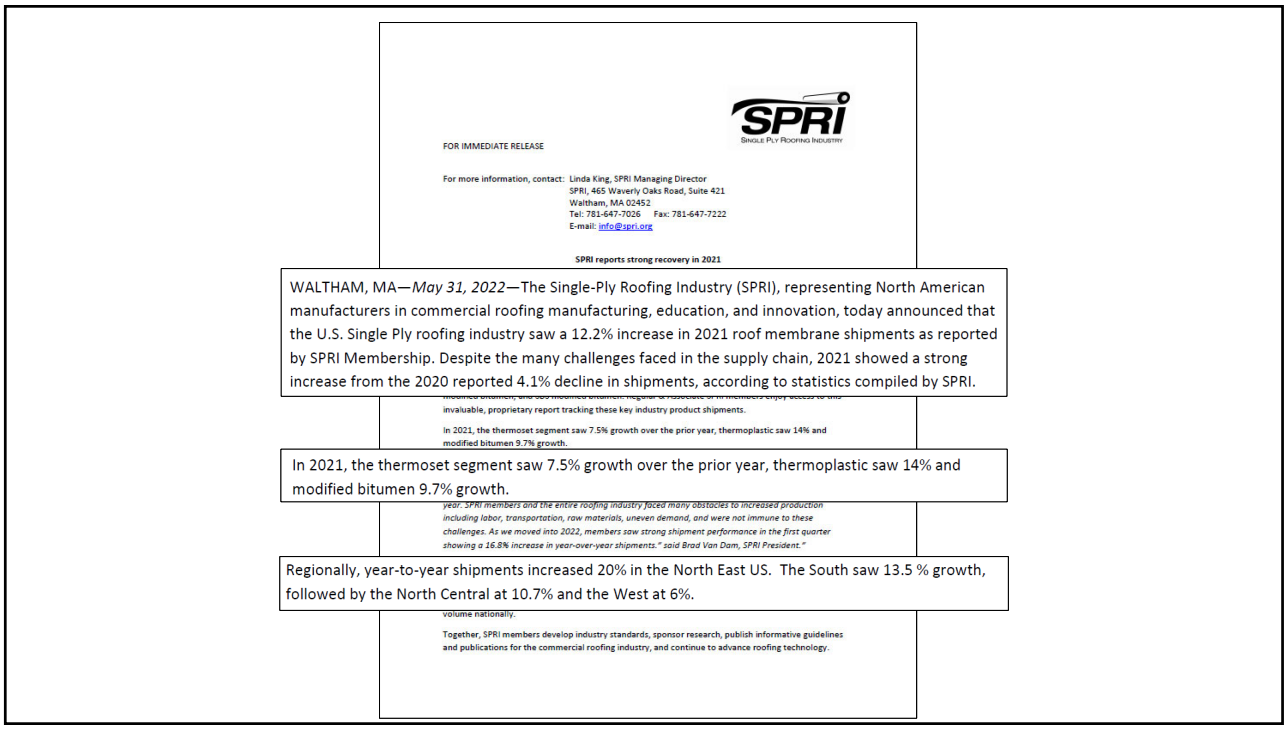

SPRI
Single Ply Roofing Industry

FOR IMMEDIATE RELEASE

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SPRI reports strong recovery in 2021

WALTHAM, MA—*May 31, 2022*—The Single-Ply Roofing Industry (SPRI), representing North American manufacturers in commercial roofing manufacturing, education, and innovation, today announced that the U.S. Single Ply roofing industry saw a 12.2% increase in 2021 roof membrane shipments as reported by SPRI Membership. Despite the many challenges faced in the supply chain, 2021 showed a strong increase from the 2020 reported 4.1% decline in shipments, according to statistics compiled by SPRI.

invaluable, proprietary report tracking these key industry product shipments.

In 2021, the thermoset segment saw 7.5% growth over the prior year, thermoplastic saw 14% and modified bitumen 9.7% growth.

In 2021, the thermoset segment saw 7.5% growth over the prior year, thermoplastic saw 14% and modified bitumen 9.7% growth.

year. SPRI members and the entire roofing industry faced many obstacles to increased production including labor, transportation, raw materials, uneven demand, and were not immune to these challenges. As we moved into 2022, members saw strong shipment performance in the first quarter showing a 16.8% increase in year-over-year shipments." said Brad Van Dam, SPRI President."

Regionally, year-to-year shipments increased 20% in the North East US. The South saw 13.5 % growth, followed by the North Central at 10.7% and the West at 6%.

volume nationally.

Together, SPRI members develop industry standards, sponsor research, publish informative guidelines and publications for the commercial roofing industry, and continue to advance roofing technology.

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INDUSTRY ISSUE UPDATE

NRCA Member Benefit

Roofing material shortages and price volatility

September 2021

The U.S. roofing industry is experiencing unprecedented shortages of roofing materials and products and significant price volatility. NRCA is providing this Industry Issue Update to help its members with building owners, facility managers, general contractors and construction managers involved in roof purchasing decisions.

Although this information is intended to apply specifically to the U.S. roofing market, based on NRCA's communications with its affiliates and partners in Canada, Mexico and elsewhere worldwide, shortages of roofing materials and products and price volatility appear to be global issues.

BACKGROUND

Compared with other industries, the U.S. roofing industry is domestic in nature. With few exceptions, a vast majority of roofing products and materials used are manufactured in the U.S. from U.S.-sourced raw materials, delivered by U.S. suppliers and distributors, and installed by U.S. roofing contractor companies. Although the global economy has some effect on many purchasing decisions, the U.S. roofing industry is largely driven by the U.S. economy, interest rates and consumer sentiment.

During the past decade, the U.S. roofing industry has experienced a period of consistent, moderate growth. The roofing materials and products supply chain has expanded in capacity and roofing contractors have added field personnel and capability to fill this growing need. In many regions of the U.S., additional roofing industry growth has been limited by a lack of adequately trained field personnel.

At the same time, energy code requirements and sustainability incentive programs have resulted in a demand for more energy-efficient roof systems. For example, when reroofing a building, it is not unusual to replace an existing, aged roof system having an R-10 insulation value with a new roof system with an energy code mandated minimum R-20, R-25, R-30 or R-35 insulation value. Such increases in insulation value necessitate using greater amounts of and thicker insulation, usually in multiple layers, longer fasteners, more layers of insulation adhesive and additional material handling and installation labor.

The level of roofing material and product in inventory shrunk considerably

THE CURRENT SITUATION

The U.S. roofing industry responded and adapted to the onset of the COVID-19 pandemic remarkably well. The U.S. roofing industry quickly was considered "essential," and at the start of the pandemic, the roofing materials and products supply chain functioned with only minimal interruptions. Roofing contractors adapted to additional safe work practices necessary to perform work on occupied buildings during the pandemic.

By many measures, 2020 was a productive year for the U.S. roofing industry. For example, 2020 was a near historic record level year for asphalt shingle installations. Homeowners invested in reroofing and maintaining their homes during the pandemic, spurred in part by low interest rates and the availability of stimulus funding, and the roofing industry responded to several weather events involving high winds and hail. The institutional and industrial segments of the U.S. roofing industry also experienced similar levels of activity.

However, one noticeable change in the level of roofing material and product in inventory shrunk considerably. Roofing material suppliers and distributors reduced their material and product inventories. Since the start of the pandemic, far more roofing materials and products are being shipped on a job-specific basis. This especially is the case with roof insulation and roof covering products and certain specialty products, such as fasteners and adhesives. A few years ago, many roofing jobs often could be carried out with roofing materials and products held in inventory, but manufacturers now are shipping roofing materials and products on a job-specific basis with fewer roofing materials and products being stocked in inventory.

NRCA Industry Issue Update: Roofing Material Shortages and Price Volatility

Link

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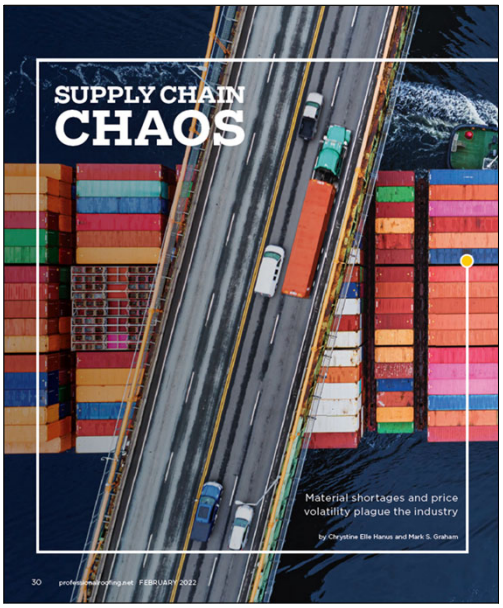

Professional Roofing

February 2022

Link

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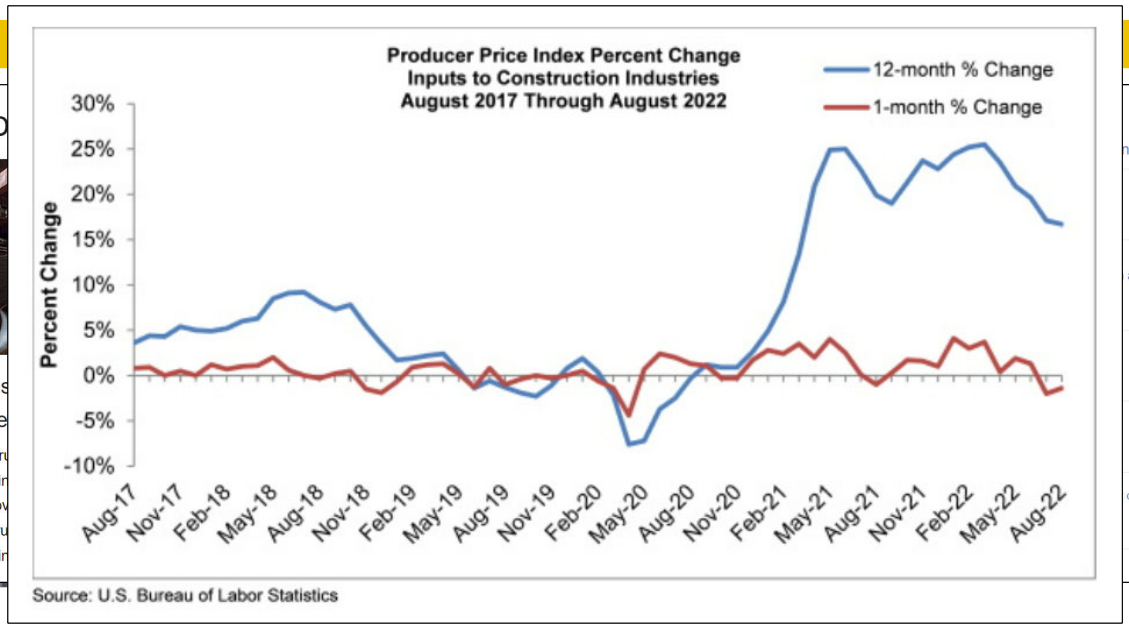

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CERTA program updates

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CERTA

2,650 Trainers

41,500 Applicators

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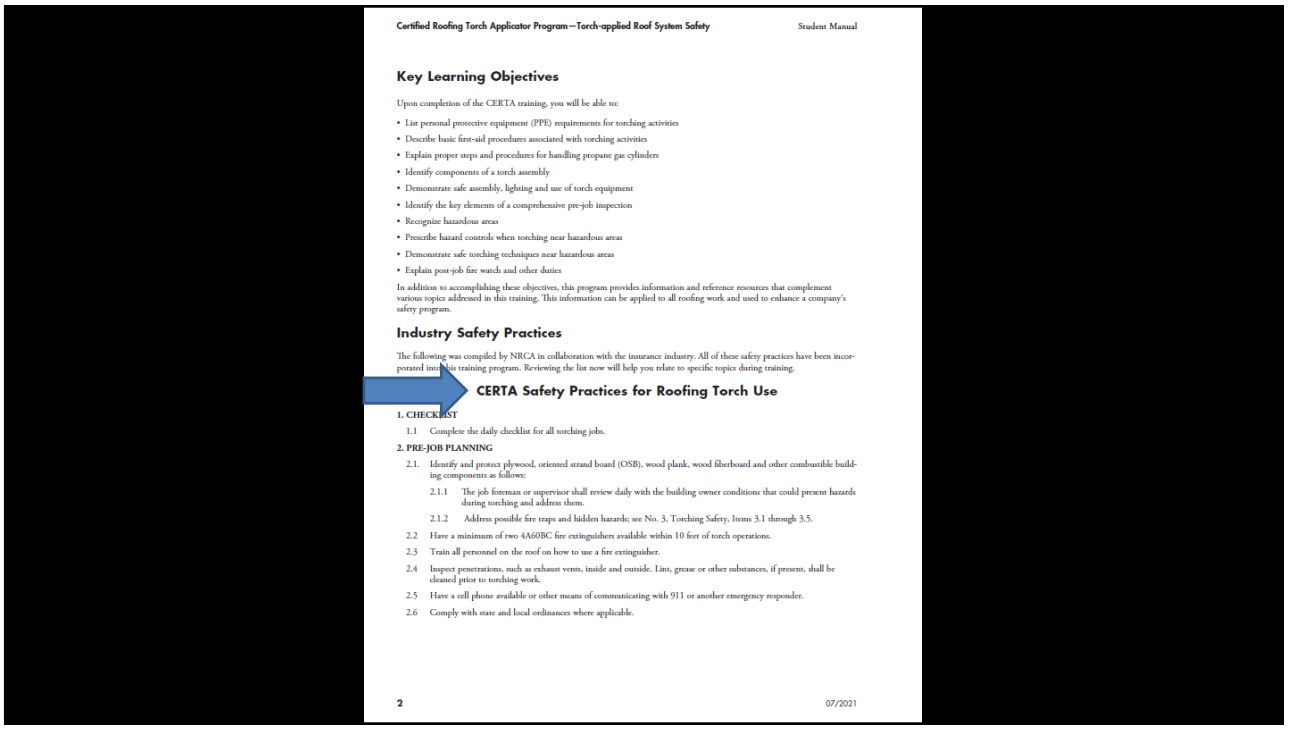

Certified Roofing Torch Applicator Program—Torch-applied Roof System Safety Student Manual

Key Learning Objectives

Upon completion of the CERTA training, you will be able to:

- List personal protective equipment (PPE) requirements for torching activities
- Describe basic first-aid procedures associated with torching activities
- Explain proper steps and procedures for handling propane gas cylinders
- Identify components of a torch assembly
- Demonstrate safe assembly, lighting and use of torch equipment
- Identify the key elements of a comprehensive pre-job inspection
- Recognize hazardous areas
- Prescribe hazard controls when torching near hazardous areas
- Demonstrate safe torching techniques near hazardous areas
- Explain post-job fire watch and other duties

In addition to accomplishing these objectives, this program provides information and reference resources that complement various topics addressed in this training. This information can be applied to all roofing work and used to enhance a company's safety program.

Industry Safety Practices

The following was compiled by NRCA in collaboration with the insurance industry. All of these safety practices have been incorporated into this training program. Reviewing the list now will help you relate to specific topics during training.

CERTA Safety Practices for Roofing Torch Use

1. CHECKLIST

1.1 Complete the daily checklist for all torching jobs.

2. PRE-JOB PLANNING

2.1. Identify and protect plywood, oriented strand board (OSB), wood plank, wood fiberboard and other combustible building components as follows:

2.1.1 The job foreman or supervisor shall review daily with the building owner conditions that could present hazards during torching and address them.

2.1.2 Address possible fire traps and hidden hazards; see No. 3, Torching Safety, Items 3.1 through 3.5.

2.2 Have a minimum of two 4A60BC fire extinguishers available within 10 feet of torch operations.

2.3 Train all personnel on the roof on how to use a fire extinguisher.

2.4 Inspect penetrations, such as exhaust vents, inside and outside. Lint, grease or other substances, if present, shall be cleaned prior to torching work.

2.5 Have a cell phone available or other means of communicating with 911 or another emergency responder.

2.6 Comply with state and local ordinances where applicable.

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Revisions to the CERTA practices

- Implementation of a job hazard analysis specific to torching operations
- Update to the current edition of The NRCA Roofing Manual
  - Torching over wood roof decks is no longer recommended
  - Guidance for torching over wood decks is provided for when necessary
- Clarification to incidental torching guidance

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The revisions will be provided to all CERTA Trainers
and will be implemented via CERTA's re-authorization process

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MRCA/NRCA ignition temperature research

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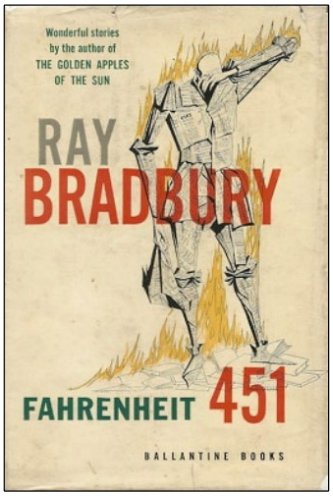

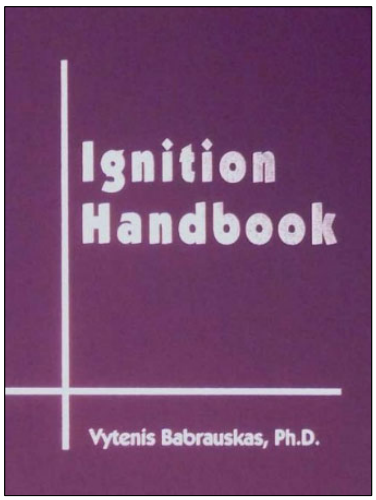

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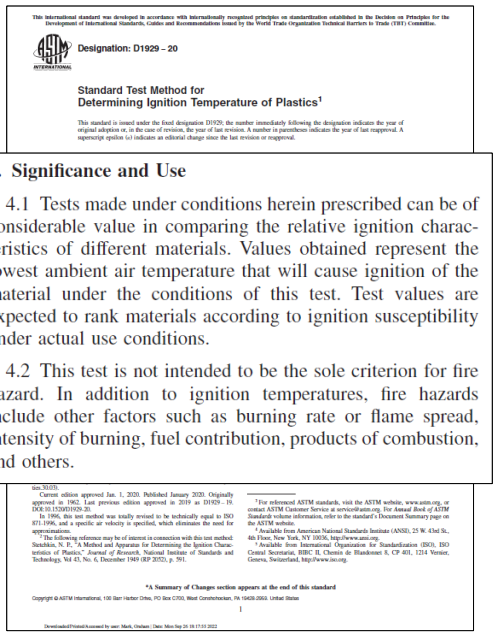

Designation: D1929 – 20

Standard Test Method for
Determining Ignition Temperature of Plastics[1]

4. Significance and Use

4.1 Tests made under conditions herein prescribed can be of considerable value in comparing the relative ignition characteristics of different materials. Values obtained represent the lowest ambient air temperature that will cause ignition of the material under the conditions of this test. Test values are expected to rank materials according to ignition susceptibility under actual use conditions.

4.2 This test is not intended to be the sole criterion for fire hazard. In addition to ignition temperatures, fire hazards include other factors such as burning rate or flame spread, intensity of burning, fuel contribution, products of combustion, and others.

ASTM D1929, "Standard Test Method for Determining Ignition Temperature of Plastics"

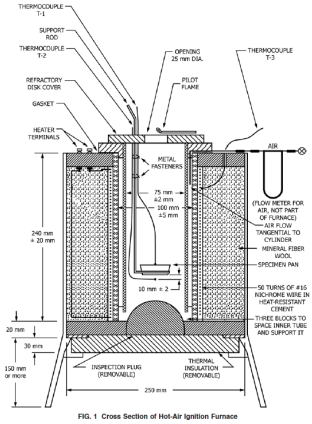

FIG. 1 Cross Section of Hot-Air Ignition Furnace

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ASTM D1929 results

Sample	Test result
Extruded polystyrene	865 F
HD polyiso with glass facer	865 F
Wood fiberboard	875 F
Polyiso with coated glass facer	895 F
Perlite board	905 F
Expanded polystyrene	910 F
Polyiso with cellulose/glass facer	920 F
Cellular glass with facer	965 F
Mineral fiber board	1,040 F
Gypsum-fiber board	Greater than 1,740 F
Gypsum board with coated fiberglass facer	Greater than 1,740 F
Cellular glass (no facer)	Greater than 1,740 F

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Some known roof application temperatures

Mopping bitumen:

- EVT: 375 F to 455 F (typ.)
- Flash point: 525 F (min.)

Hot-air welding:

- Equipment settings up to 600 C (1,112 F)

Torch application:

- Blue flame: 3,596 F
- Yellow/orange flame: 1,800 F

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"Preliminary" recommendations

- When hot-air welding or torching roofing products, realize the relative differences in ignition temperatures of various insulation substrates
- Share this information/concept with field workers

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Code developments

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2021 I-codes

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Contractor-reported problems

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Questions… and other topics

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