

# The Drywall Manufacturing Process

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# Agenda

- Background
- Inputs
- Process Overview
- Manufacturing and Installation Standards
- Product Mix

# Background

- 1894: Invention of “Sackett Board”
- 1916: U. S. Gypsum Introduces “Sheetrock” Brand Wallboard
- 1955: Wallboard Used in 50% of New Homes - Replacing Gypsum Plaster
- Growth Driven by Ease of Installation and Finishing, Lighter Weight, Speed

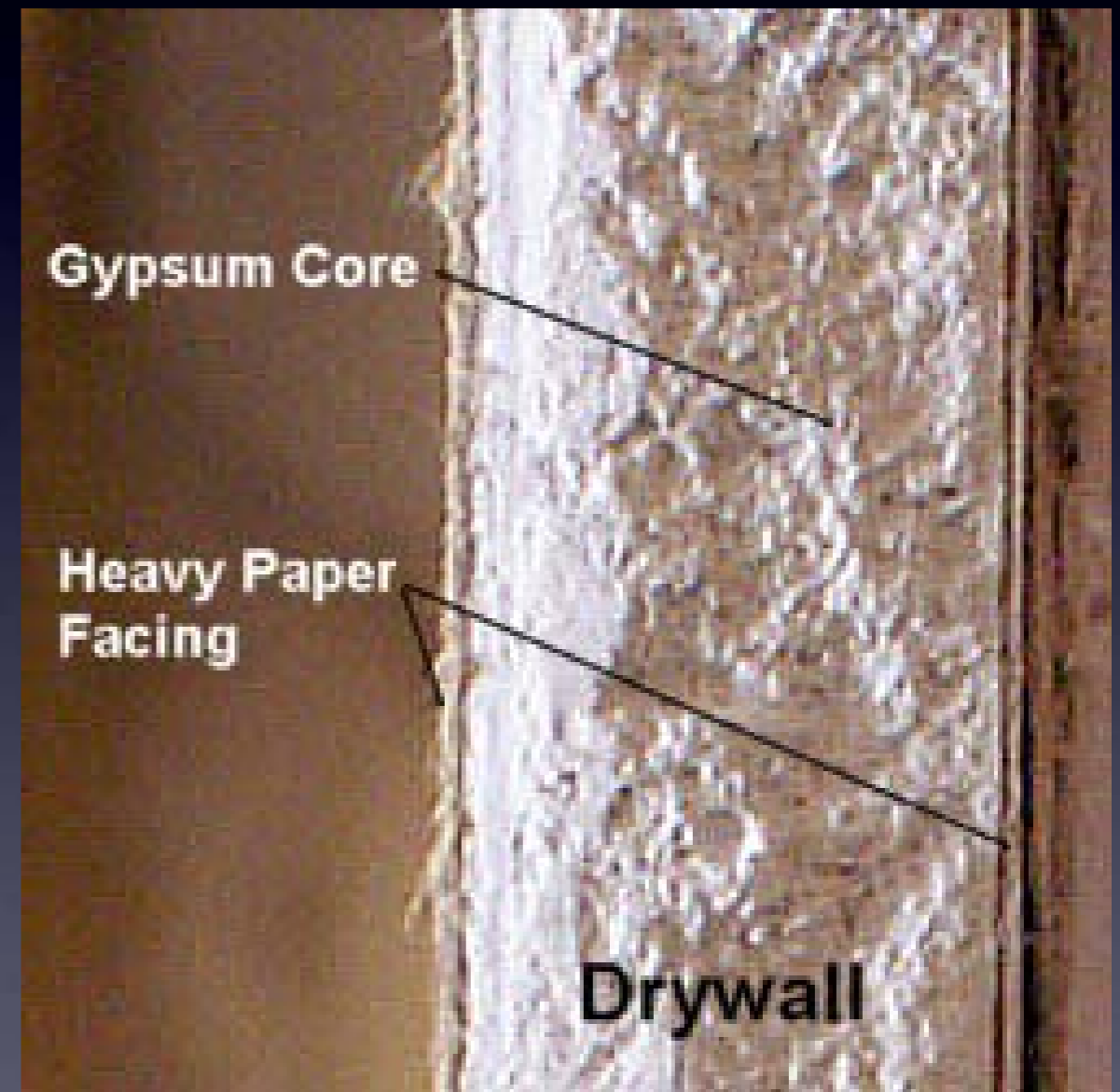


Photo courtesy of [www.http://homerepair.about.com/](http://homerepair.about.com/)

# Inputs

- Gypsum - Natural and Synthetic
- Paper - Nearly 100% Recycled (35 years)
- Additives
  - Paper Bonding
  - Set Time Management
  - Density
  - Finished Goods Performance (Fire, Moisture)
- Energy - Drying Process and Transportation
- Labor

# Inputs

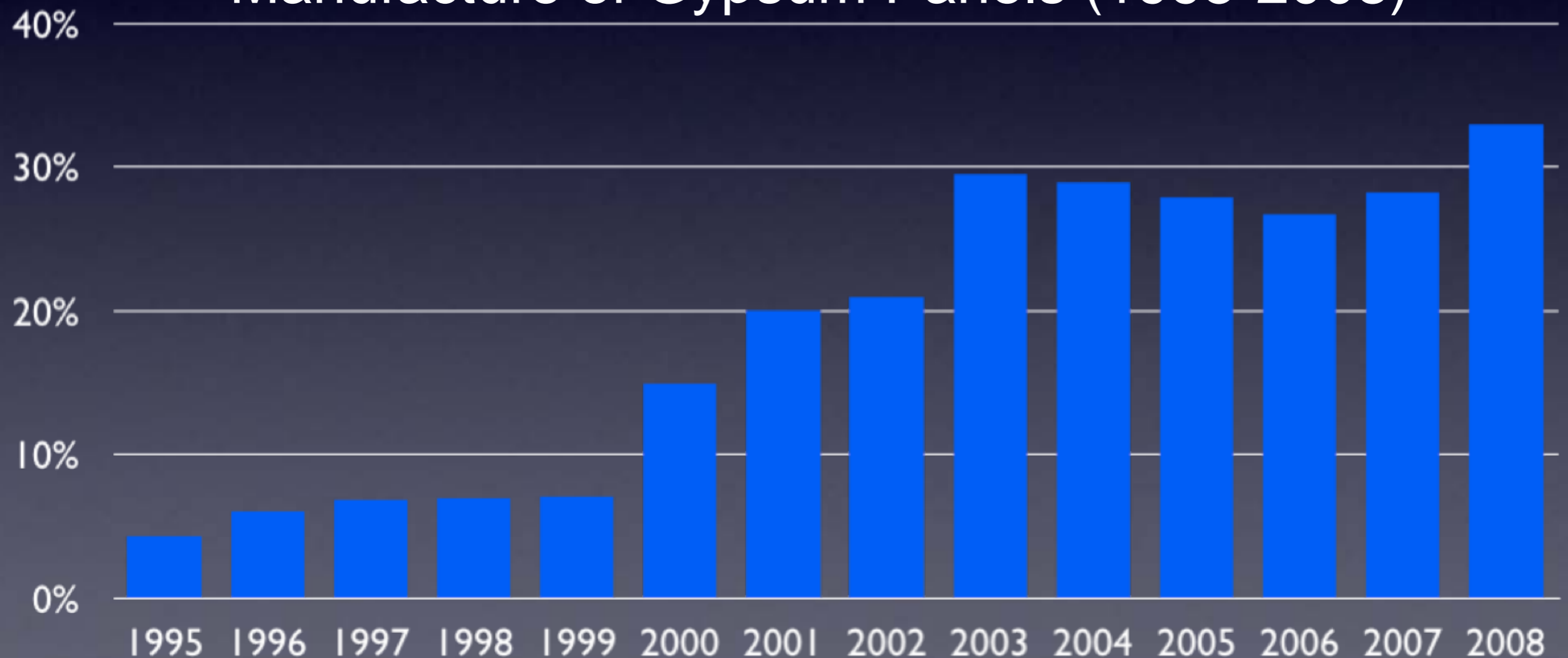
## Gypsum - Standards

- ASTM C 22 (Standard Specification for Gypsum)
- ASTM C 471 (Standard Test Method for Chemical Analysis of Gypsum and Gypsum Products)
- ASTM C 472 (Standard Test Method for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete)
- No Differentiation Between Natural and Synthetic Material

# Inputs

## Gypsum - Sources

Synthetic Ore as a Percentage of Total Ore Utilized in  
the  
Manufacture of Gypsum Panels (1995-2008)

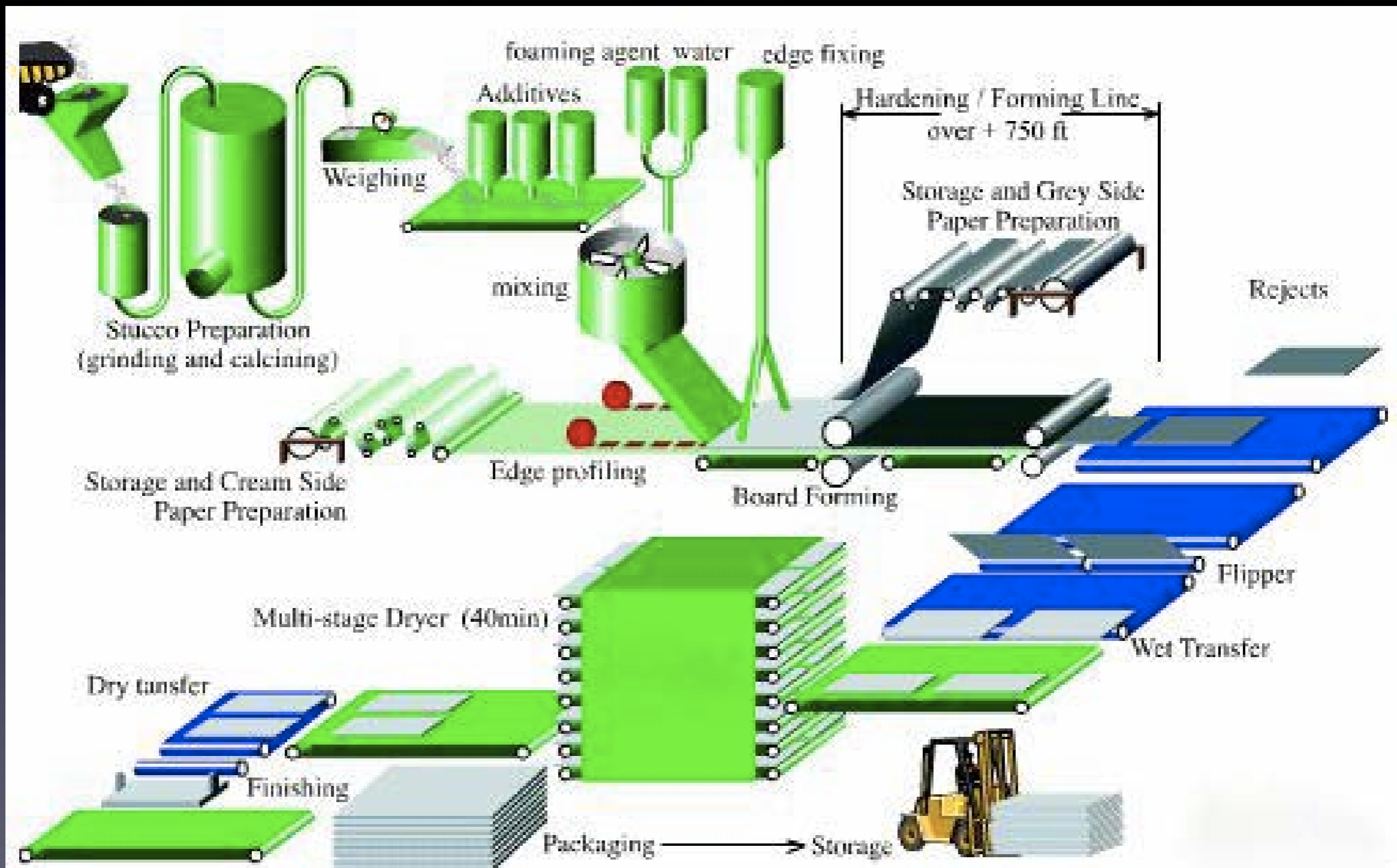


Source: Gypsum Association

# Process Overview

- Stucco Preparation
- Mixing
- Forming
- Drying
- Finishing

# Process Overview





# Process Overview

Typical Modern Plant



# Process Overview

## Stucco Preparation - Calcination



- Process for Removing Chemically Bound Water Using Heat (350 F) at Atmospheric Pressure
- Water is Released as Steam During the Process
- The Resulting Powder (Plaster or Stucco) is Ready to Mix with Water to Form Slurry

# Process Overview

“Video Clip”

# Manufacturing Standards

## Gypsum Board

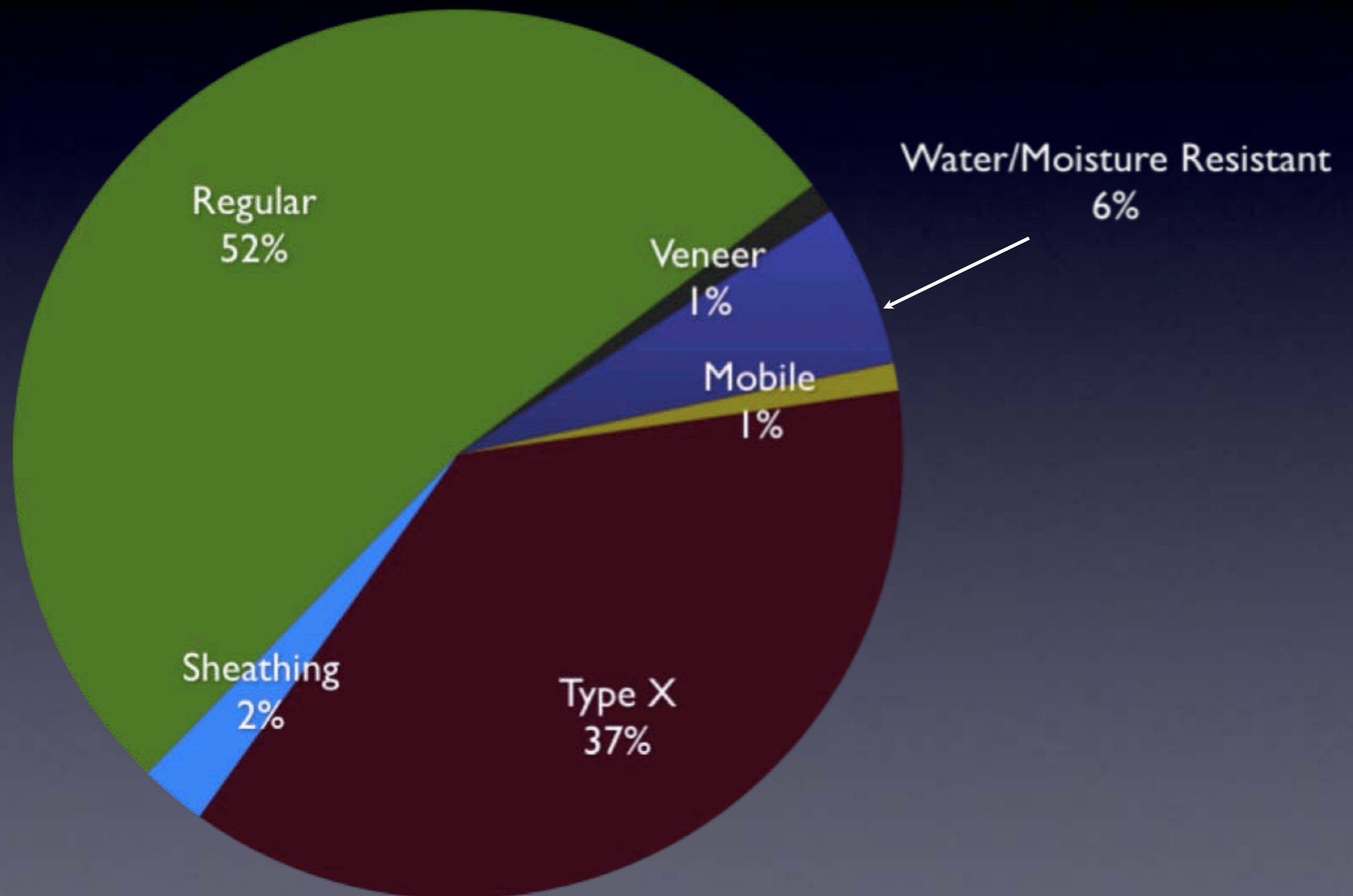
- ASTM C 1396 (Standard Specification for Gypsum Board)
- ASTM C 473 (Standard Test Methods for Physical Testing of Gypsum Panel Products)
- UL Approval (Fire-Rated Boards)
- No Differentiation Between Products Made From Natural or Synthetic Materials

# Installation Standards

- Architect's Specification
- Gypsum Association Standards
  - Application of Gypsum Panels (GA 216)
  - Levels of Gypsum Finish (GA 214)
- Manufacturer Recommendations
- ASTM Standards (C 841, C 844, etc..)

# Product Mix

## USA Shipments - 2008



# Product Mix

## Manufacturing Variables

Option	Examples
Core Formulation	Fire, Mold/Moisture, Abuse, Rigidity
Paper (Surface)	Mold/Moisture, Plaster Base, Abuse, Abrasion
Thickness	1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 1"
Width	24", 48", 50", 54"
Length	4', 8', 9, 10', 12', 14', 16'

# Conclusion

- Mature Product Category in the U.S. Market (110 Years)
- Manufacturing Process Based on the Gypsum-Plaster Reversible Reaction
- Established Standards for Raw Materials, Manufactured Products, Site Installation and Inspection