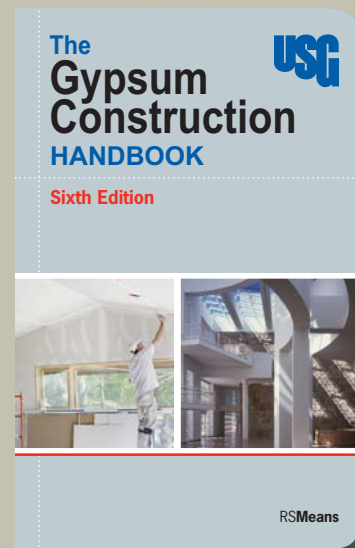


# The Gypsum Construction Handbook

NEW! Sixth Edition

ISBN-10: 087629-258-7  
ISBN-13: 978-087629-258-7  
Catalog No.: 67357A  
Softcover w/ rounded corners  
5-1/2" x 8-1/2"

Price: \$29.95  
576 pages, Illustrated  
Publication Date: January 30, 2009  
Editorial Contact: Andrea Sillah  
andrea.sillah@reedbusiness.com



## About the Book

### Market

Design professionals, contractors, building inspectors, code officials, students, and apprentices.

### Description

One of the construction industry's longest-running, most relied-on references, *The Gypsum Construction Handbook* was first published by U.S. Gypsum Company in 1904. For more than a century and through several editions, the book has become a trusted standard.

The *Handbook* covers both new construction and repair and remodeling and includes:

- framing
- drywall and veneer plaster
- joint treatment and plaster finishing
- interior cement board
- ceilings
- conventional plaster

**New in this edition are chapters on sustainable construction methods and products, building movement, fire resistance, heat transfer, sound transmission, and vapor/moisture control.**

System descriptions – together with full data on products, accessories, tools, equipment, and applications – help plan and estimate projects and ensure compliance with performance criteria. **Cost- and time-saving techniques keep the work on budget.**

RSMMeans



# Some features of the new *Gypsum Construction Handbook*

Photos of a wide range of projects

294

**Case**  
Process: Cast Plaster  
Product Pattern: Cadre  
Features/Benefits: Fiber-reinforced cast gypsum panels offer the look of classic, coffered architecture with concrete accessibility to above-ceiling utilities. Designs include Contemporary, Historical, Executive and Concepts.

**Case**  
Process: Roll Forming  
Product Pattern: GeolWarc  
Features/Benefits: Ceiling system uses curved metal to enable free-flowing, three-dimensional designs.

**Case**  
Process: Metal Stamping/Forming  
Product Pattern: C2 Painted Concrete  
Features/Benefits: Unique, multi-functional ceiling accents combine form and function. Easily integrate lighting and signage; can also be used as way-finding or curved sections of design need. Easy with cable or rod offices, education.

**Case**  
Process: Metal Stamping/Forming  
Product Pattern: C2 Painted Concrete  
Features/Benefits: Metal ceiling panels Snap into DuraFit also be wall-mount.

**Case**  
Process: Metal Stamping/Forming  
Product Pattern: C2 Painted Concrete  
Features/Benefits: Aluminum panels enhance and sound gypsum areas.

Detailed product information

428

**Pole Sander**  
Enables working large areas with longer strokes and reach.

**Vacuum Power Sander**  
Used for fast and easy sanding of large areas. Vacuum dramatically reduces the amount of airborne particles.

**Mechanical Taping Tools**  
This line of specialized equipment is designed to speed and facilitate high-volume taping and joint finishing operations.

**Hand Pump**  
Fills mechanical tools from 5-gal. pail.

**Automatic Taper**  
Applies a tapered amount of compound onto the tape, places the tape on the wall and cuts the tape to length.

Works for flat joints and corners. The original taper is sold under the Bazzoka® trade name.

Used to embed tape in corner and force excess compound from under tape prior to using the corner applicator head.

Tools and equipment for all types of gypsum construction

Building Sciences | 445

Building materials are affected by variations in temperature and humidity, identified as thermal and hygroscopic expansion characteristics and seen in the chart below.

Material	Thermal Expansion Characteristics	Hygroscopic Expansion Characteristics
Gypsum panels and bases	9.0 x 10 <sup>-6</sup> in./in./°F	7.2 x 10 <sup>-4</sup> inches/inch/% R.H.
Gypsum plaster (standard 100.2, 100.3)	7.0 x 10 <sup>-6</sup> in./in./°F	1.5 x 10 <sup>-4</sup> inches/inch/% R.H.
Gypsum wood fiber plaster (standard 100.1)	8.0 x 10 <sup>-6</sup> in./in./°F	2.8 x 10 <sup>-4</sup> inches/inch/% R.H.
Gypsum FiberPanels (AR)	7.0 x 10 <sup>-6</sup> in./in./°F	3.5 x 10 <sup>-4</sup> inches/inch/% R.H.

Control joints should be used to accommodate potential movement due to hygroscopic and thermal variations. Sudden changes in temperature may cause cracking from thermal shock. The use and location of control joints is the responsibility of the design professional. Conditions requiring placement of control joints or other voids isolation from movement:

- at, furring or column freeflooting (butting a structural element floor) or dissimilar wall or ceiling.
- at or soffit abutting a structural element, dissimilar wall or ceiling or other vertical penetration.
- at location changes within the plane of the partition or ceiling, or furring run exceeding 30'.
- at dimensions exceeding 50' in either direction with perimeter soffits and ceilings exceeding 30' in either direction.
- at wings of "L", "U", and "T"-shaped ceiling areas.

USG leads the building industry in the development of high-performance components designed to meet specifications and construction requirements, including sustainability, to enhance building performance and to streamline the building process. For detailed design and installation information, specifications and additional sustainability registrations, access the USG website at [usg.com](http://usg.com) and navigate to specific product web pages. Or, consult our online Design Studio at [spjdesignstudio.com](http://spjdesignstudio.com).

Sustainable building design must be supported with construction methods and technologies that comply with relevant building codes that adhere to the specific products' recommended installation procedures. Sealants, joint compounds, adhesives and paints, for example, should be applied according to the manufacturer's specifications. This will help to ensure the integrity of the project's sustainable design and will support its durability and value over time. Professionals may obtain detailed, up-to-date installation information by navigating to relevant USG product descriptions on our website.

Clear illustrations show installation methods and product and system details

82

**Wire Tying Hat Channel**  
Maximum allowable spacing for metal furring channels is 24" o.c. for 1/2" and 5/8" thick gypsum panels or plaster base. See frame spacing tables below for limiting spans.

For bar joist spacing up to 60", steel studs may be used as furring channels. Wire-tie studs to the supporting framing as shown in the following diagram. Position 1-5/8" studs with open side up; position larger studs with opening to side. See table below for stud spacing and limiting spans.

Limiting Span—Metal Furring Members <sup>(1)</sup>	Member spacing (in. o.c.)	Single layer panels (2.5 pcf max.)		Double layer panels (5.0 pcf max.)	
		1-span	2-span	1-span	2-span
DWC-25-ga.	16	5'0"	7'0"	4'7"	5'2"
DWC-30-ga.	16	6'11"	8'6"	5'5"	6'9"
1-5/8" stud, 25-ga.	16	6'0"	7'5"	4'9"	5'11"
1-5/8" stud, 25-ga.	16	7'2"	8'10"	5'6"	7'0"
24	16	6'3"	7'9"	5'8"	6'2"

(1) For beams, joists, purlins, sub-purlins and racking: 1/2" cold rolled channel support spaced 40" max. Check manufacturer's literature to verify that the selected furring member is appropriate for the indicated span. (2) Limiting spans for 1/2" and 5/8" thick gypsum max. LWD deflection and uniform load shown. Evaluate concentrated loads such as light fixtures and exhaust fan supports.

**Metal furring channel**

typical hanger spacing  
metal furring channel clip (non-fire rated only)  
max. spacing 24" o.c.  
1/2" or 5/8" furring channel gypsum base or Sheetrock brand gypsum panels regular or lockback max. spacing 16" or 24" o.c.

Handy charts with product data and installation requirements

## Best Practices

### Manufacturing Conservation

100% recycled face and back paper since the 1960s  
One of the nation's top users of waste paper helping avoid landfill  
Pioneered the use of synthetic gypsum from flue gas desulfurization of U.S. coal-fired power plants  
Excellent recovery rates of green and ceiling slats  
Regional wallboard recycling options available

Waste water reused in the manufacturing process  
Reduced product packaging to minimize construction waste  
New plants are among the most energy efficient in the world  
Wallboard manufacturing contributes less than 0.01% to the world's greenhouse gas emissions  
Nationwide ceiling recycling program

### Sustainability Assessment Tools

Numerous tools exist to help guide construction professionals in the evaluation of sustainability characteristics of manufacturers and their products. Generally, these tools can be categorized as codes, standards and guidelines. They provide accurate, useful decision-making support when determining preferred project materials; gathering application, installation and building life cycle information; or comparing an individual product's performance properties.

Of these guidelines, one of the most reliable and comprehensive assessment standards was created by the American Society for Testing and Materials (ASTM), Designated ASTM E2129, "Standard Practice for Data Collection for Sustainability Assessment of Building Products." The tool analyzes a manufacturer's commitment to sustainable product development across five relevant criteria, including:

1. Materials (product feedback)
2. Manufacturing
3. Operational performance of installed product
4. Indoor environmental quality
5. Corporate environmental policy

New Chapters on Sustainability and Building Sciences

## About USG

Since 1902, USG has been a leading producer of gypsum plaster and cement products, including SHEETROCK® Brand Drywall Systems and DUROCK® Brand Cement Board. USG is world-renowned for both its leading-edge products and for the extensive information and customer support the company provides.

## About RSMMeans

RSMMeans, the foremost source of construction cost information in North America, is owned by Reed Construction Data ([www.reedconstructiondata.com](http://www.reedconstructiondata.com)), a leading provider of quality construction information products and services and part of Reed Elsevier (NYSE: RUK and ENL) – a world-leading publisher and information provider.