Plaster and Gypsum boards

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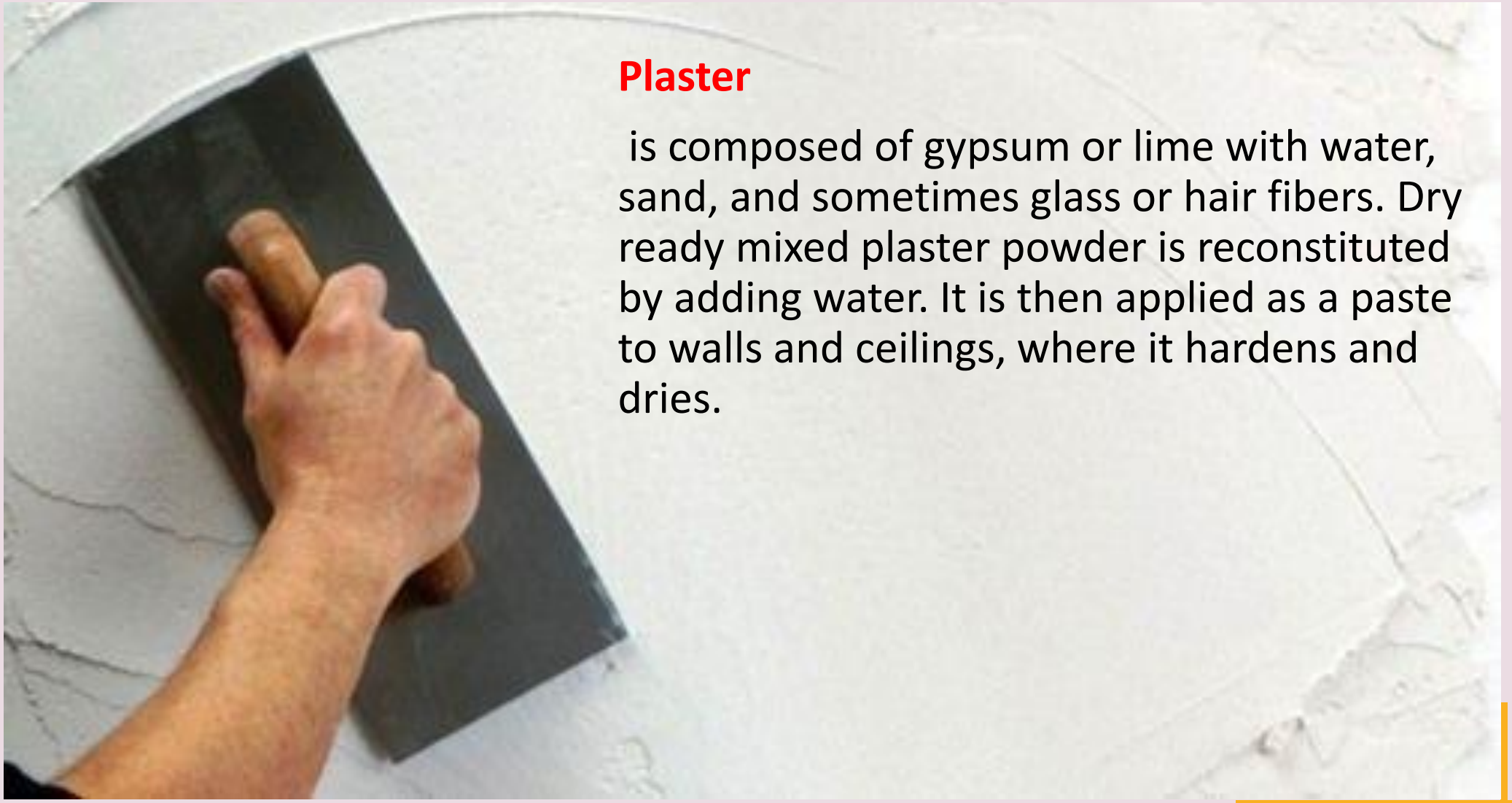
Outline:

- Plaster
- Gypsum Board
- Glass Fiber Reinforced Gypsum (GFRG)

Plaster



Plaster

is composed of gypsum or lime with water, sand, and sometimes glass or hair fibers. Dry ready mixed plaster powder is reconstituted by adding water. It is then applied as a paste to walls and ceilings, where it hardens and dries.

Properties

Plaster is fairly soft and can be worked with metal tools and sandpaper. It can also be molded into intricate shapes.

When exposed to flame, a plaster finish releases water vapor that slows the fire ’s spread. Its insulating properties also help slow the flow of heat from a fire.

Types of Plaster

There are many types of plaster suited to various applications.

Gypsum plaster is the most commonly used for interior finishes. **Veneer plaster** is often used for a high-quality finish over gypsum board. **Acoustical plaster** may be limited in its ability to increase sound absorption.

Manufacturing Plaster

Gypsum is hydrated calcium sulfate, a widespread, common, white or gray, soft mineral .

Gypsum plaster is made of calcined gypsum plus sand, water, and additives to control setting. Gypsum ore is quarried or mined underground, then crushed and screened. To make **stucco** , it is calcined to remove 75 percent of its water content. To produce plaster, stucco is ground again and then mixed with retarders and stabilizers.

Type	Description
Gypsum plaster	Durable, relatively lightweight, fire-resistant; used on walls and ceilings not subject to moisture
Lime plaster	Traditional building material; used for historic repair and renovation work
Veneer (thin-coat) plaster	Ready-mixed plaster applied as a very thin, one or two coat finish over veneer base gypsum board
Molding plaster	Has a very fine grain that preserves sharp detail in cast ornamental plasterwork
Acoustical plaster	Textured, spray-applied, low-density plaster with porous material to increase sound absorption
Plaster of Paris	Dry, crumbly gypsum heated to drive off majority of its water; used for making ornamental castings
Stucco	Coarse plaster containing cement; forms hard surface; used on masonry walls and in moist areas
Specialized plasters	For renovations, x-ray installations, temperature-stabilizing phase-change plaster, and others

Environmental Impacts of Plaster

Plaster has a level of embodied energy about half that of cement.

Although gypsum is a readily available mineral.

Plaster in existing buildings that may contain asbestos fibers should be tested and removed by trained workers using proper procedures

Interior Applications for Plaster

Plaster walls are specified for their superior appearance and durability.

Plaster installation is more labor-intensive than taped gypsum board assemblies, requires greater skill, and takes more time to cure.

Plaster is applied to walls in several layers to produce a smooth surface that takes finishes very well.

Veneer plaster is applied as a thin coating to gypsum wallboard or to existing surfaces to improve the finish. Plaster ceilings are found in many older buildings, and are sometimes specified in newer ones to accommodate curved surfaces.

Ornamental Plaster

Ornamental plasterwork was traditionally either made at the site or cast in molds in a workshop.

Molded pieces were often made in several pieces that were assembled and installed at the site

GYPSUM BOARD

Gypsum board is the generic name for sheet materials with a noncombustible gypsum core that is covered with a paper surface.

Gypsum wallboard is a type of gypsum board used for walls, ceilings or partitions; it is often used to provide a surface for decorative finishes.

Properties

Gypsum is a natural insulator that feels relatively warm to the touch; its very low level of thermal conductivity makes it a good insulating filler in gypsum board.

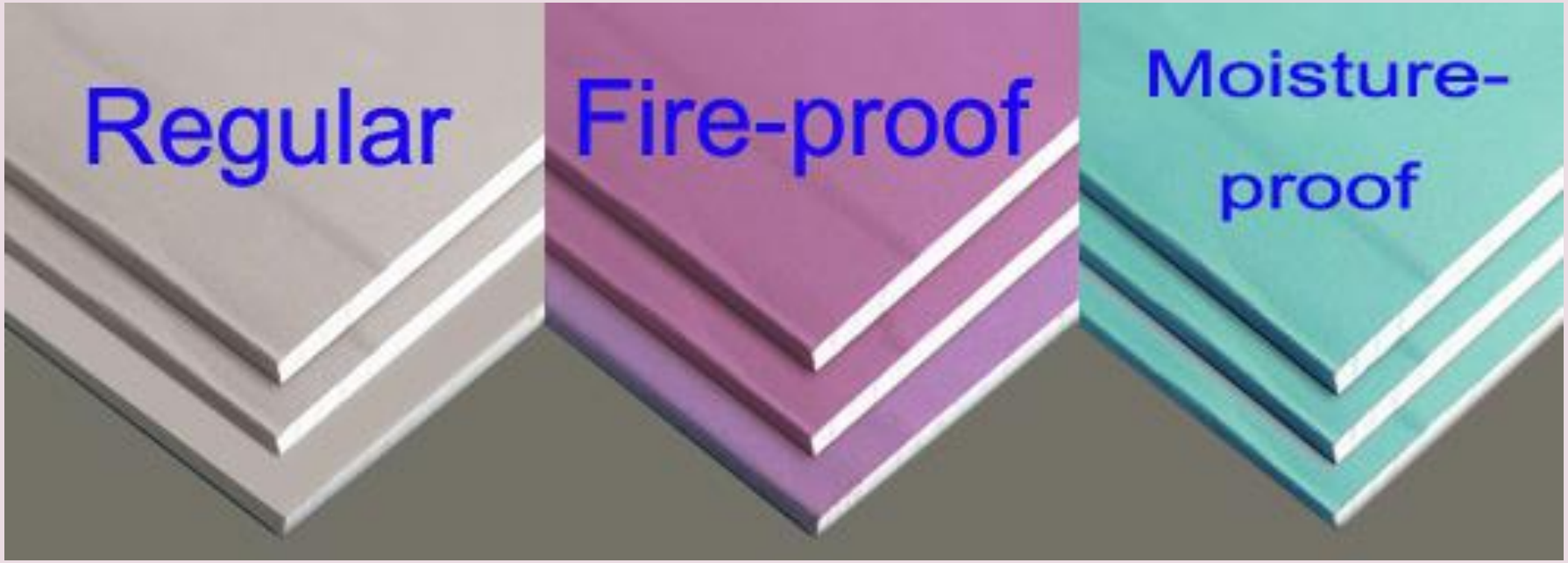
Gypsum board has a high level of fire resistance, with low flame spread and low smoke development.

Because the mineral gypsum is strongest in compression, gypsum board gains strength as it becomes thicker. The gypsum core alone is not very strong in tension, but the face paper improves its tensile strength.

Sound-rated gypsum board wall and ceiling systems reduce sound transmission.

Types of Gypsum Board

Standard gypsum wallboard is used for interior walls and ceilings. Other types of gypsum board have been developed for specific uses . Moisture-resistant gypsum board is used in bathrooms, but not where it will be regularly exposed to water



Interior Applications for Gypsum Board

Gypsum board is widely used for interior wall systems. It is often applied to metal or wood studs with acoustical insulation in the voids. It can be attached to masonry with spots of adhesive, or using metal or wood furring.

Installing Gypsum Board

Gypsum board is typically applied over wood or steel framing. It can also be applied directly to masonry or concrete surfaces.

Gypsum board panels and the support systems to which they are attached are referred to as gypsum board assemblies. Typical assemblies include loadbearing and nonloadbearing interior partitions, tile backer partitions, and shaft walls.

GLASS FIBER REINFORCED GYPSUM (GFRG)

Glass fiber reinforced gypsum (GFRG) is a product for interior use made of gypsum, glass fibers, and various polymers. The finished face of GFRG *is smooth and resembles a plaster surface. The back side is bumpy and irregular, with glass fibers and structural elements often visible.*

Glass fiber reinforced gypsum is a lightweight and nontoxic material that was introduced in 1977.

GFRG can be produced in thin, high-strength shapes that are inherently flame-resistant. It can be molded into strong, flowing, organic shapes.

Interior Applications for GFRG

Glass fiber reinforced gypsum products include column covers, decorative domes, coffered ceilings, and other architectural elements previously made in plaster.