

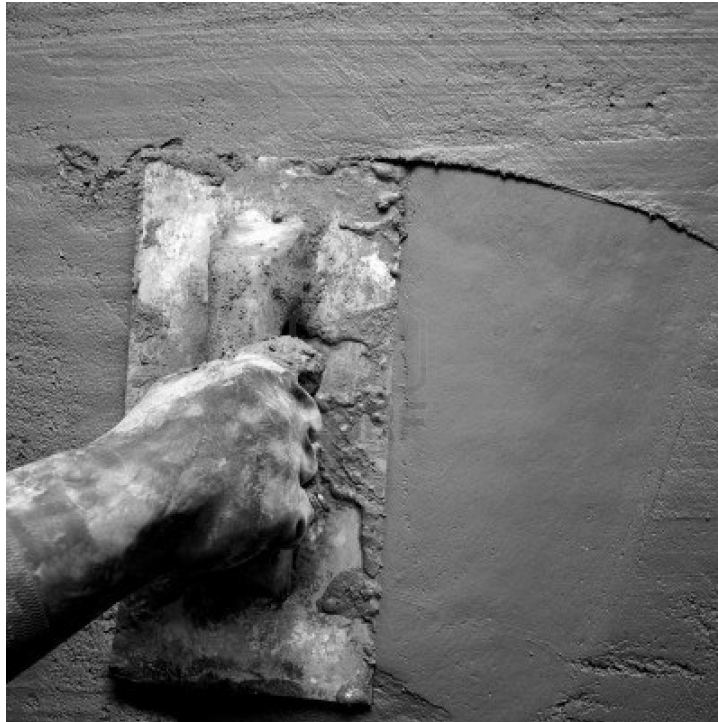
# Desirable Properties of Plaster

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## Desirable Properties of Plaster 1-Introduction

Portland cement plaster must have certain properties in both the fresh and hardened state to allow proper application and long-term service. A properly mixed plaster can be either hand or machine applied. Freshly mixed plaster should have good adhesion and cohesion characteristics and should remain workable long enough to obtain the desired surface. Hardened plaster should be weather resistant, durable, and should provide the specified appearance criteria (color and texture).

### 2-Fresh plaster

Fresh plaster should have the following properties:

#### 2.1 Adhesion

The capability to adhere or stick to a substrate is developed in the plaster by the combination of materials and application technique. Adhesion is influenced by aggregate, water-cement ratio, and the absorptive characteristics of the base.

#### 2.2 Cohesion

The ability of plaster to cohere or stick to itself is affected by the portland cement paste; particle size, shape and gradation; and quantity of aggregate and water. A cohesive plaster will remain in place without sagging, sloughing, or delaminating.

### 2.3 Workability

Workability is the ease with which the plaster is placed, shaped, floated, and tooled. Workability involves adhesion, cohesion, weight, and spreadability. To give the best workability, all materials should be proportioned properly and combined during mixing. Plaster with poor workability requires greater effort to apply, increases costs, and may result in an appreciable impairment in the desired hardened properties of hardened material.

### 3-Hardened plaster

Finished, hardened plaster should have the following characteristics:

#### 3.1 Weather resistance

The ability of plaster to withstand weathering includes resistance to wind and rain penetration, resistance to freezing and thawing, and resistance to thermal and moisture changes. Resistance to aggressive chemicals in the atmosphere, such as acid rain, is also of concern.

#### 3.2 Freezing and thawing resistance

The use of air-entrained plaster is beneficial especially where snow or deicing chemicals may come into contact with a plastered surface.

#### 3.3 Sulfate resistance

In aggressive sulfate environments, additional resistance to sulfate may be obtained with the use of Type II or Type V portland cement, or masonry cement. A suitable mineral admixture, as defined in ACI 201, "Guide to Durable Concrete," may also be used in combination with Type I or Type II portland cement. Additional precautions may include application of a water-resistant surface coating or penetrating sealer applied to plaster below grade, or plaster should be terminated 6 in. above grade.

#### 3.4 Bond

Bond is the adhesion between similar or dissimilar materials. Bonding between one plaster coat and another is the result of chemical bonding, mechanical keying, or a combination.

#### 3.5 Tensile strength

High tensile strength increases the ability of plaster to resist cracking. Proper curing of a well-proportioned and consolidated plaster is critical to obtaining optimum crack resistance.

