Guide to Portland Cement-Based Plaster

Reported by ACI Committee 524

ACI 524R-16

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First Printing
March 2016
ISBN: 978-1-942727-71-2

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This guide provides information on the plastering process, including prequalification of materials, plaster tool and equipment suggestions, mixture proportions, application procedures, finish types, and troubleshooting and repair. This guide is intended for architects, engineers, designers, specification writers, contractors, plasterers, laboratory personnel, and public authorities. Portland cement-based plastering processes and properties differ in many ways from those used in the concrete trade. The equipment used to mix plaster, the methods of curing, preparation of substrates, mixture design components, material application, finishing techniques, and methods of controlling cracking are only applicable to plaster and are not appropriate for concrete. Likewise, literature specific to concrete trade practice should not be assumed exchangeable or applicable to common plastering trade practice. Differences in plastering terminology are of key importance and, therefore, an extensive list of them is provided in this guide.

Keywords: base; bonding agents; brown coat; cracking; finish coat; fresh plaster; furring; hardened plaster; scratch coat; sheathing; stucco; texture.

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ACI 524R-16 supersedes ACI 524R-08 and was adopted and published February 2016.

CHAPTER 1—INTRODUCTION AND SCOPE

1.1—Introduction

Portland cement-based plaster is a versatile and weather-resistant surfacing material. Portland cement-based plaster can be applied to flat, curved, or rusticated bases made from concrete, clay masonry, concrete masonry, woven or welded-wire mesh, or expanded metal lath. It can be applied by hand or pumped directly from a mixer hopper and sprayed onto a vertical or horizontal surface. Portland cement-based plaster has a long history of satisfactory performance (Technical Services Information Bureau 2015). Proportions and workability of the plaster mixture allow for a variety of shapes, designs, and textures to be created. When plaster hardens, these features are preserved in a rigid, permanent form.

Plaster is categorized by the type of cement binder, number of coats, and total thickness. Traditional materials include portland cement and lime, blended cement and lime, masonry cement, or plastic cement mixed with sand and water. Additives to control setting time, reduce shrinkage cracking, increase workability, or increase durability can also be present.

Portland cement-based plaster is intended to perform as a coating and not as a load-bearing element of the structural system. The terms “stucco” and “portland cement-based plaster” are often used interchangeably in the trade. This guide, however, refers to stucco as plaster that is applied to an exterior surface, and Portland cement-based plaster as plaster that is applied to either an interior or exterior surface.

1.2—Scope

This guide provides information and recommends minimum expectations for satisfactory lathing and plastering. Architects, engineers, designers, specification writers, contractors, plasterers, and public authorities can use this guide to familiarize themselves with the plastering processes and also as an aid in specification writing. Stricter requirements based on long-term successful field service or controlled laboratory experimentation and documentation can be imposed when warranted. This guide also addresses the prequalification of plaster materials, tool and equipment requirements, mixture proportions, application procedures, types of finishes, and troubleshooting and repair.

Exterior insulation and finish systems are exterior wall-cladding systems that consist of an insulation board covered with an integrally reinforced base coat and a textured