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2do Congreso Iberoamericano de Pisos Industriales de Concreto

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Conceitos do PUC?

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Capacidade de algo se manter ao longo do tempo, envolvendo a capacidade de um sistema, processo ou organização em manter-se estável e em funcionamento, enquanto atende às necessidades do presente sem comprometer as necessidades das futuras gerações

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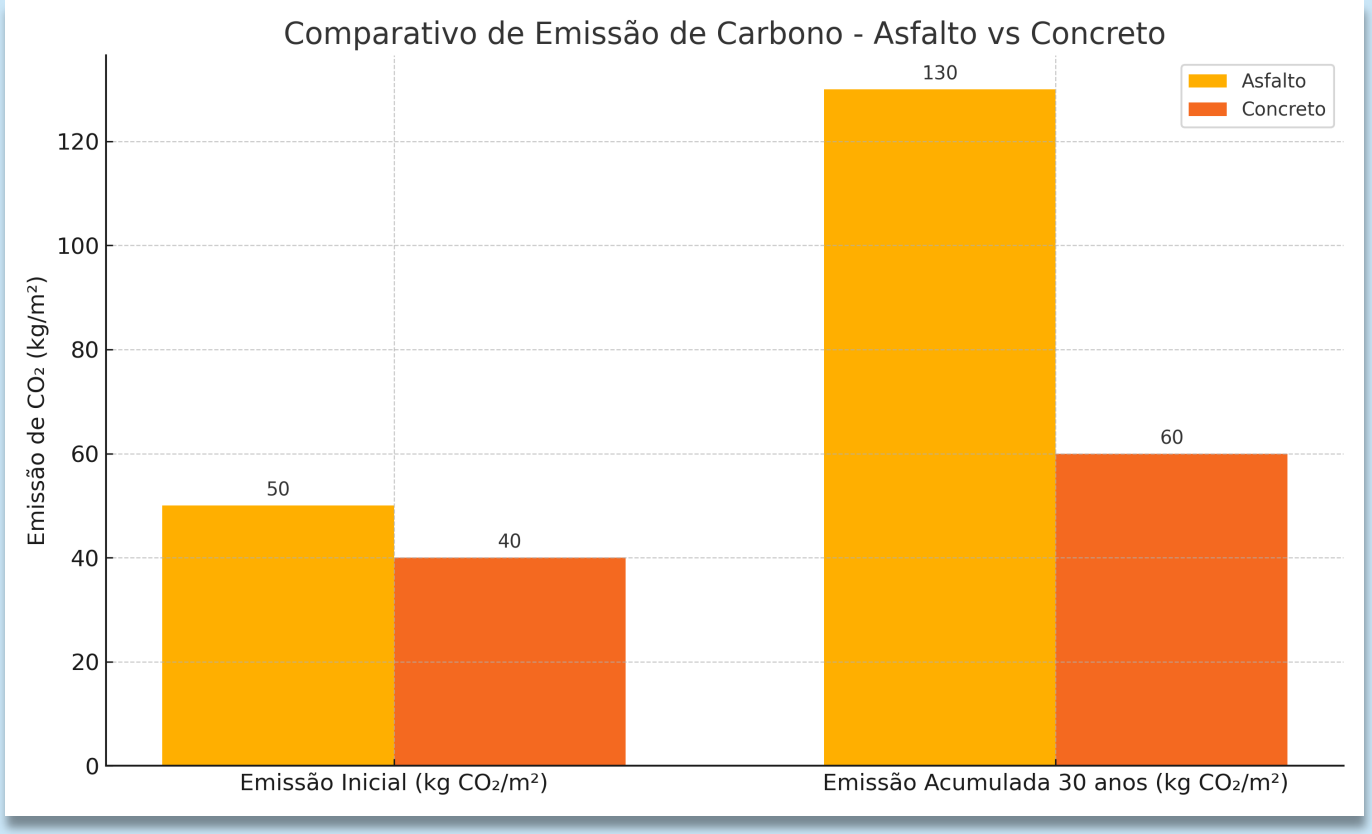
Comparativo

de Emissão de Carbono



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CUSTO INICIAL E FINAL?

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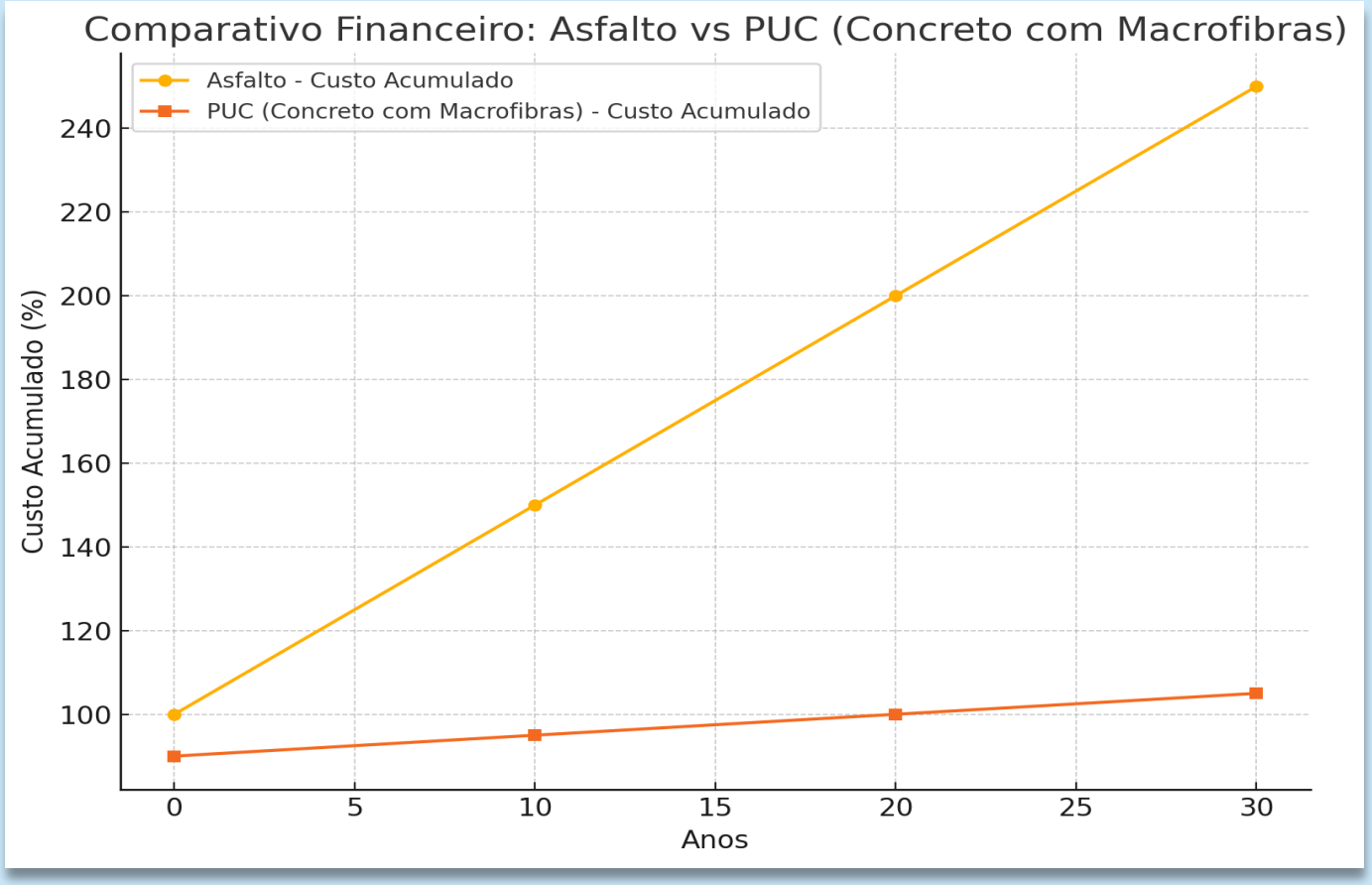
Comparativo Financeiro



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EXECUÇÃO e ACABAMENTO

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Execução e Acabamento

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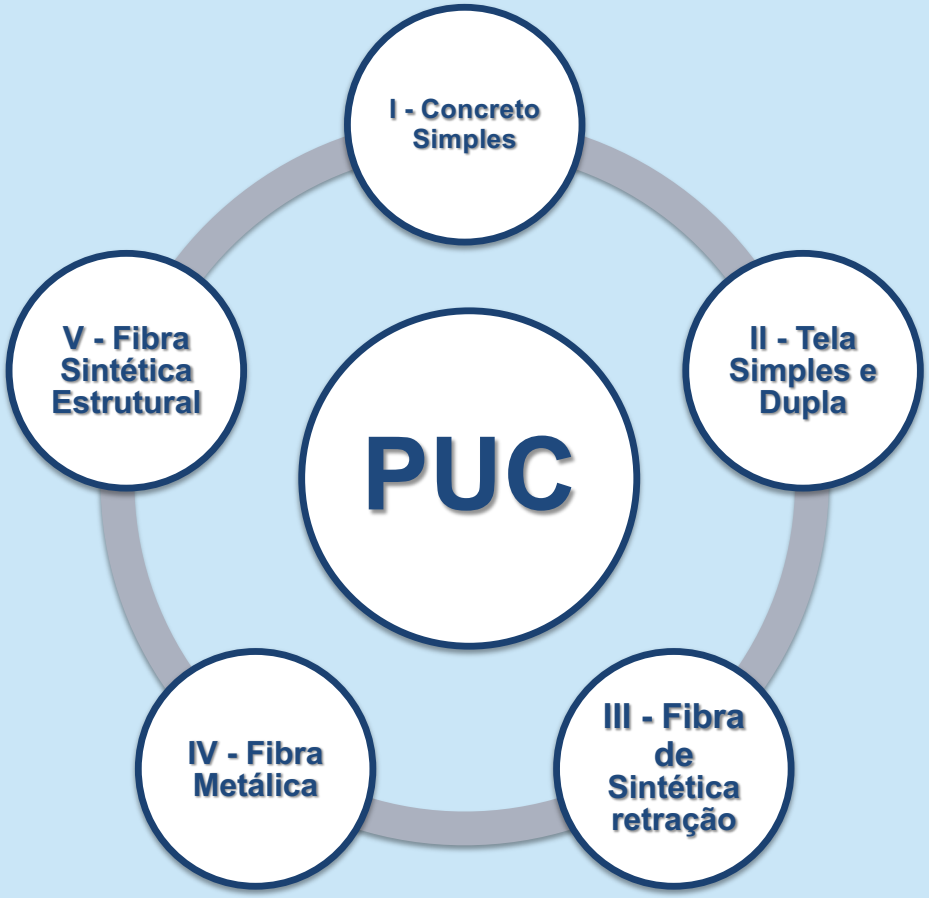
REFORÇO NO CONCRETO



NORMAS E RECOMENDAÇÕES INTERNACIONAIS

Histórico Pavimento de Concreto

Os pisos de concreto armado foram desenvolvidos de maneira independente por dois engenheiros suecos: A. Losberg e G.G. Meyerhof. O primeiro, engenheiro estrutural, desenvolveu seus estudos na Suécia, enquanto, da área de mecânica dos solos, desenvolveu seus estudos experimentais nos Estados Unidos.

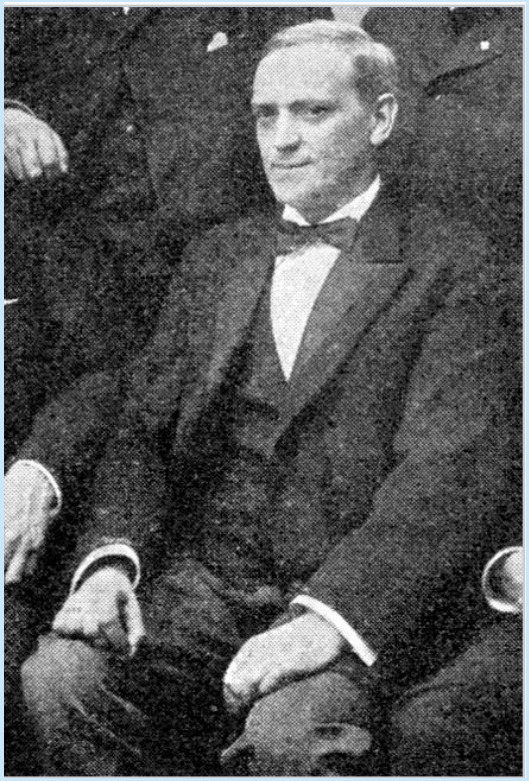
A. Losberg e G.G. Meyerhof

NORMAS E RECOMENDAÇÕES INTERNATIONAIS

Harold M. Westergaard

Harold Malcolm Westergaard (9 de outubro de 1888 em Copenhague, Dinamarca - 22 de junho de 1950 em Cambridge, Massachusetts, Estados Unidos) foi um engenheiro estrutural dinamarquês. Foi professor de mecânica teórica e aplicada na Universidade de Illinois em Urbana e de Engenharia Civil em Harvard.

Fonte: https://en.wikipedia.org/wiki/Harold_M._Westergaard



Teoria do Concreto Armado

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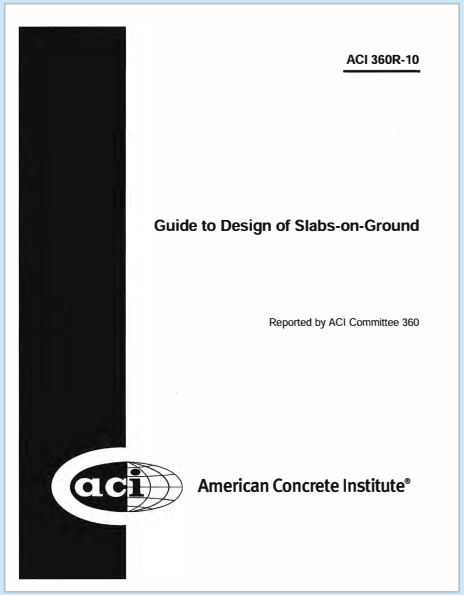
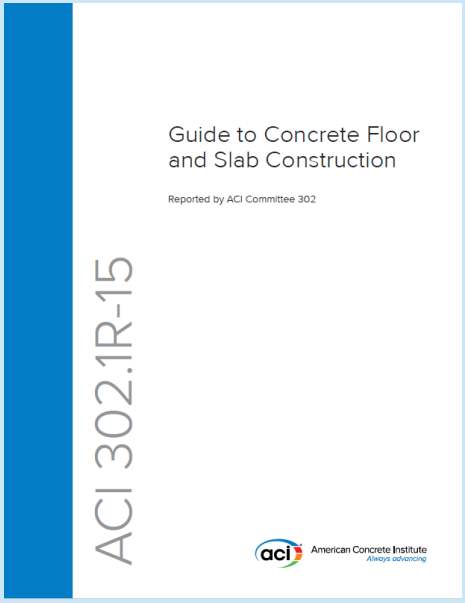
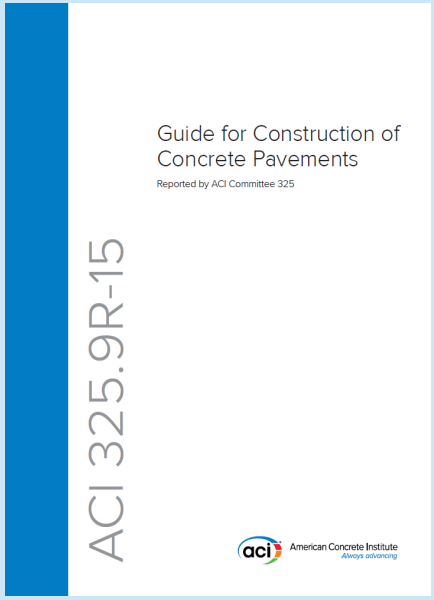
NORMAS E RECOMENDAÇÕES INTERNATIONAIS



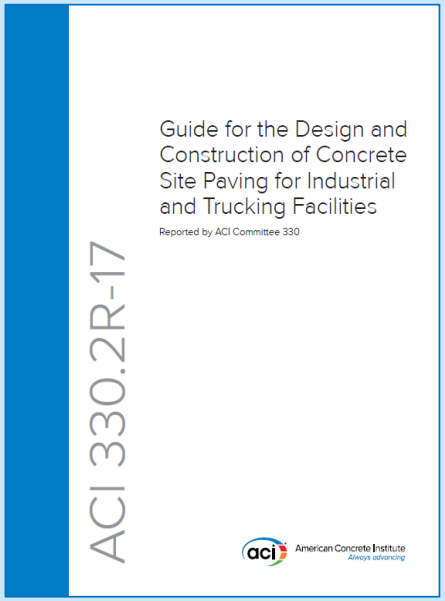
ACI 360 – Guide to Slab-on-Ground



ACI 302 - Guide to Concrete Floor and Slab Construction



ACI 325 – Concrete Pavements



ACI 330 – Concrete Pavements

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NORMAS E RECOMENDAÇÕES

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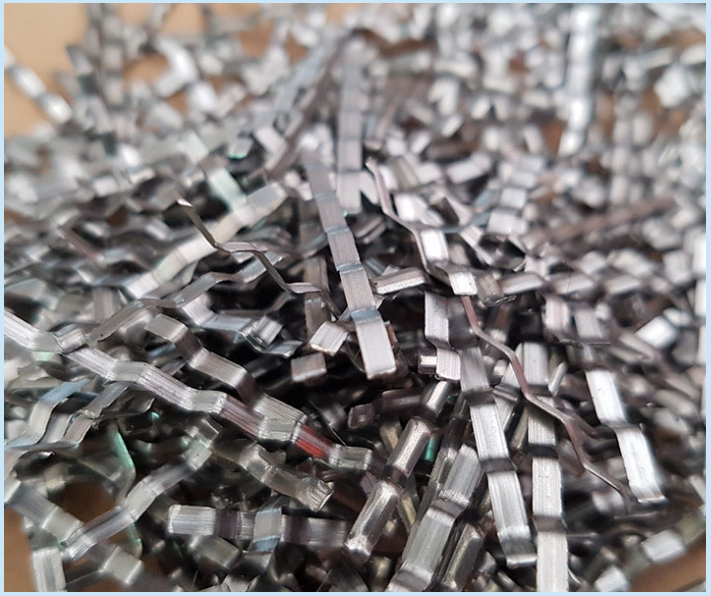
MACRO FIBRA PARA CONCRETO

MACRO FIBRA SINTÉTICA



MACRO FIBRA METÁLICA

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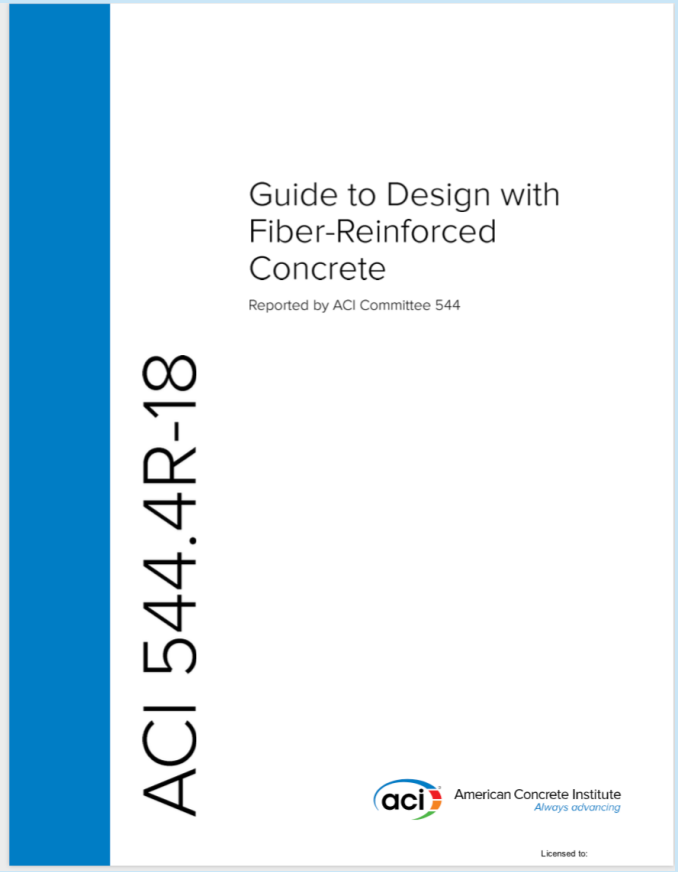
FIBRAS SINTÉTICAS

NORMA


ACI 544.4R-18

Guide to Design with Fiber-Reinforced Concrete

Reported by ACI Committee 544

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22 GUIDE TO DESIGN WITH FIBER-REINFORCED CONCRETE (ACI 544.4R-18)

Fig. 5.1a—Concrete slab-on-ground reinforced with 4.3 lb/yd³ (2.5 kg/m³) of synthetic macrofiber (Cleveland dic Mart and Convention Center, Cleveland, OH).

Fig. 5.1c—Concete canal reinforced with steel mesh (top) and 7.5 lb/yd³ (4.5 kg/m³) of synthetic macrofiber (bottom) (Pima-Maricopa Irrigation Project, Sacaton, AZ).

Fig. 5.1b—Concrete runway reinforced with 66 to 85 lb/yd³ (39 to 50 kg/m³) of steel fibers (O'Hare Airport runway, Chicago, IL).

combination of fiber stiffness and interface bond-slip characteristics that is used as a stress-crack width relationship. Parametric studies on both models showed that the average crack width was reduced by increasing fiber content, interfacial bond strength, and frictional force by the base. The simulated results were compared with the field measurements of three slabs in service with different bay sizes of 118 x 118 ft, 131 x 131 ft, and 164 x164 ft (36 x 36 m, 40 x 40 m, and 50 x 50 m), respectively. Both methods accurately predicted the crack opening measured from field trials (Destrée et al. 2016).

FRC has also been used in topping slab applications such as bridge decks and parking garages. The thickness for topping slabs is typically small, making it impractical to maintain concrete cover for steel reinforcement. Fibers may be used as a sole reinforcement for topping slabs as a means of crack control, to provide the required post-crack moment capacity, or both. FRC overlays have been used for concrete or asphalt pavements. The design of FRC thin overlays bonded to asphalt pavements is discussed in Harrington and Fick (2014).

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RETRAÇÃO

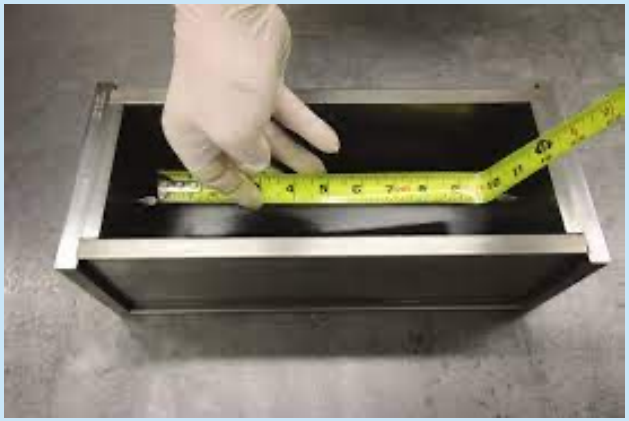
NORMA BRASILEIRA

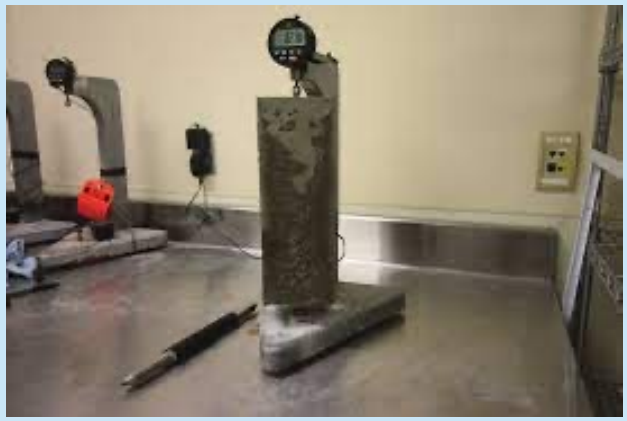
ABNT NBR 16834

Primeira edição
15.06.2020

Concreto — Determinação da variação dimensional (retração ou expansão linear)

Concrete — Determination of dimensional variation (shrinkage or linear expansion)





JUNTAS – TRANFERENCIA DE CARGA

Table 5.1—Dowel size and spacing for round, square, and rectangular dowels*

Slab depth, in. (mm)	Dowel dimensions,† in. (mm)			Dowel spacing center-to center, in. (mm)		
	Round	Square	Rectangular‡	Round	Square	Rectangular
5 to 6 (130 to 150)	3/4 x 14 (19 x 360)	3/4 x 14 (19 x 360)	3/8 x 2 x 12 (9 x 51 x 300)	12 (300)	14 (360)	19 (480)
7 to 8 (180 to 200)	1 x 16 (25 x 410)	1 x16 (25 x 410)	1/2 x 2-1/2 x 12 (13 x 64 x 300)	12 (300)	14 (360)	18 (460)
9 to 11 (230 to 280)	1-1/4 x 18 (32 x 460)	1-1/4 x 18 (30 x 450)	3/4 x 2-1/2 x 12 (19 x 64 x 300)	12 (300)	12 (300)	18 (460)

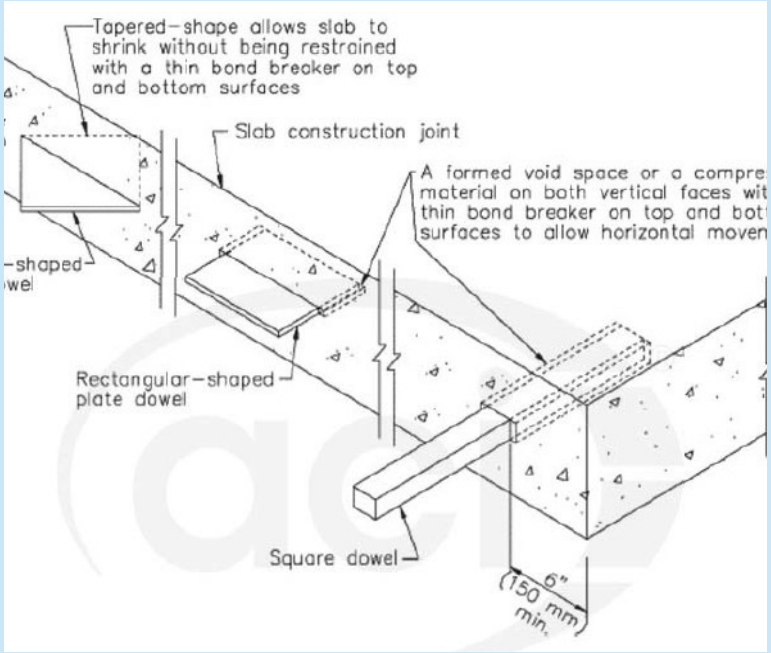
*ACI Committee 325 (1956); Walker and Holland (1998).

†Total dowel length includes allowance made for joint opening and minor errors in positioning dowels.

‡Rectangular plates are typically used in sawcut contraction joints.

Notes: Table values based on a maximum joint opening of 0.20 in. (5 mm). Dowels must be carefully aligned and supported during concrete operations. Misaligned dowels may lead to cracking.

*** Foto retirada do ACI 360-11 ***



JUNTAS – TRANFERÊNCIA DE CARGA

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CURA

Designation: C 309 – 06

Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete[1]

This standard is issued under the fixed designation C 309; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers liquid membrane-forming compounds suitable for application to concrete surfaces to reduce the loss of water during the early-hardening period. White-pigmented membrane-forming compounds serve the additional purpose of reducing the temperature rise in concrete exposed to radiation from the sun. The membrane-forming compounds covered by this specification are suitable for use as curing media for fresh concrete, and may also be used for further curing of concrete after removal of forms or after initial moist curing.

Note 1—This specification addresses only those properties listed in Sections 5 through 8. Membrane-forming compounds with special properties including better water retention, minimum solids content, resistance to ultraviolet radiation, acid and alkali resistance and non-interference with adhesives are described in Specification C 1315.

Note 2—Solutions of silicate salts are chemically reactive in concrete rather than membrane-forming; therefore, they do not meet the intent of this specification.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for informational purposes only.

1.3 The following precautionary caveat pertains only to the test methods portion, Section 10, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.4 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes shall not be considered as requirements of the standard.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

C 156 Test Method for Water Retention by Liquid Membrane-Forming Curing Compounds for Concrete

C 1315 Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete

D 56 Test Method for Flash Point by Tag Closed Cup Tester

D 869 Test Method for Evaluating Degree of Settling of Paint

D 883 Terminology Relating to Plastics

D 1309 Test Method for Settling Properties of Traffic Paints During Storage

D 2369 Test Method for Volatile Content of Coatings

D 3960 Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings

E 1347 Test Method for Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry

3. Classification

3.1 The following types of liquid membrane-forming compounds are included:

3.1.1 *Type 1*—Clear or translucent without dye.

3.1.2 *Type 1-D*—Clear or translucent with fugitive dye, and

3.1.3 *Type 2*—White pigmented.

3.2 The solids dissolved in the vehicle shall be one of the following classes:

3.2.1 *Class A*—No restrictions.

3.2.2 *Class B*—Must be a resin as defined in Terminology D 883.

Note 3—Permanent colors other than white, or other special attributes, are beyond the scope of this specification and are subject to negotiation between the purchaser and the supplier.

[1] This specification is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.22 on Curing Materials.

Current edition approved June 1, 2006. Published June 2006. Originally approved in 1953. Last previous edition approved in 2003 as C 309 – 03.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

*A Summary of Changes section appears at the end of this standard.


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