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Technical Committee 105 CPC

CONCRETE POLYMER COMPOSITES

CLASSIFICATION CODE

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Classification Code of Concrete Polymer Composites (C-PC)

The classification system describes the C-PC from their characteristics in material structure. Due to the worldwide use of concretes containing polymers, three most important groups must be in the codification. These groups are:

- ***PC*** *as abbreviation of polymer concrete*
- ***PCC*** *as abbreviation of polymer cement*
- ***PIC*** *as abbreviation of polymer impregnated concrete.*

In the classification code those abbreviations are not longer the combination of the first letters of a technical term only; the letters are used as a code for the particular material structure. Thus,

- ***P*** is always the first letter. It describes the C-PC material-group generelly. You can compare this use of a general indication of a material group, e.g. with German Standarts using B for all structural concretes (Beton).

The second letter

- ***I*** indicates "Impregnated Concretes"
- ***C*** indicates "Concrete Mixes".

The combination of the letters ***P*** and ***C*** indicates all C-PC made by a mixing process, the combination ***PI*** indicates all C-PC made by an impregnation process.

A third letter is used for information on the type of binder action in hardened concrete.

- ***C*** indicates a "Combined Binder Action" of both, hardened cement paste and polymer.
- ***M*** indicates a "Modified Binder" with (portland-) cement as a primarily or only acting binder.
- ***P*** is used in case of "Polymer binders" (not combi- ned action).Usually it is not necessary to use the third letter ***P*** for the identification of polymer concrete.

Additional informations on material structure are given by indices:

ρ - pores

with bottom index determinating the kind of pores,viz.:

ρ_o- mainly open
ρ_c- mainly close

with upper index determinating the ammount of porosity

ρ^n- no porosity (< 2%)
ρ^l- low porosity (≤ 7%)
ρ^h- high porosity (> 7%).

By this way all concrete-polymer composites can be coded for classification easily. Enlarging the common abbreviation, very important information can be added by ρ^x_x.

Some examples:

PCCρ^l_o (Polymer Cement Concrete)

P = general indication for C-PC
C = concrete mix
C = combined binder action
ρ^l_o= mainly open, but low porosity

PICρ^n_c (Polymer Impregnate Concrete)

P = general indicator for C-PC
I = impregnate concrete
C = combined binder action
ρ^n_c= mainly closed and very small porosity

PC(P)ρ^h_o (Polymer Concrete)

P = general indicator for C-PC
C = concrete mix
(P)= polymer binder only (not necessary to use)
ρ^h_o= high mainly open porosity

If a ***PCP***ρ_o becomes impregnated with polymer (after hardening),the changed material structure demands a change in classification code. This polymer impregnated polymer concrete is classified as ***PIP***ρ.

All possibilities of classification characters are gives in Table 1.

Table 1: Classification codes of C-PC

PC C ***M*** ***P*** *ρ*n;l;h; o;c	***PI C*** ***M*** ***P*** *ρ*n;l;h; o;c

The code may be supplemented by an information on the type of the used polymer, e.g. ***PCPE****ρ*$^{1}_{o}$ using epoxy resin as binder.