K.A.II. 99/82



MAPAPTHMA TPITON

ΤΗΣ ΕΠΙΣΗΜΟΥ ΕΦΗΜΕΡΙΔΟΣ ΤΗΣ ΔΗΜΟΚΡΑΤΙΑΣ ὑπ° Άρ. 1766 τῆς 30ῆς ΜΑΡΤΙΟΥ 1982 ΔΙΟΙΚΗΤΙΚΑΙ ΠΡΑΞΕΙΣ

MEPOE I

Κανονιστικά Διοικητικά Πράξεις

'Αριθμός 99

Οι περὶ Κυπριακῶν Προτύπων καὶ Ἐλέγχου Ποιότητος (Καθωρισμένα Πρότυπα — Πέμπτη Σειρὰ) Κανονισμοὶ τοῦ 1982, κατατεθέντες εἰς τὴν Βουλὴν τῶν Ἀντιπροσώπων καὶ ἐγκριθέντες ὑπ' αὐτῆς, δημοσιεύονται εἰς τὴν ἐπίσημον ἐφημερίδα τῆς Κυπριακῆς Δημοκρατίας δυνάμει τοῦ ἐδαφίου (5) τοῦ ἄρθρου 23 τοῦ περὶ Κυπριακῶν Προτύπων καὶ Ἐλέγχου Ποιότητος Νόμου τοῦ 1975 (ἘΑρ. 68 τοῦ 1975).

ΟΙ ΠΕΡΙ ΚΥΠΡΙΑΚΩΝ ΠΡΟΤΥΠΩΝ ΚΑΙ ΕΜΕΓΧΟΥ ΠΟΙΟΤΗΤΟΣ ΝΟΜΟΙ ΤΟΥ 1975 ΚΑΙ 1977 (68 ΤΟΥ 1975 ΚΑΙ 6 ΤΟΥ 1977)

Κανονισμοί δυνάμει τοῦ ἄρθρου 9

Ο Υπουργός Ἐμπορίου καὶ Βιομηχανίας, ἐνασκῶν τὰς ὑπὸ τοῦ ἄρθρου 9 τῶν περὶ Κυπριακῶν Προτύπων καὶ Ἐλέγχου Ποιότητος Νόμων τοῦ 1975 καὶ 1977 χορηγουμένας αὐτῷ ἐξουσίας, ἐκδίδει τοὺς ἀκολούθους Κανονισμούς:

1. Οι παρόντες Κανονισμοι θὰ ἀναφέρωνται ὡς οι περὶ Κυπριακῶν Προτύπων καὶ Ἐλέγχου Ποιότητος (Καθωρισμένα Πρότυπα – Πέμπτη Σειρὰ) Κανονισμοι τοῦ 1982.

2. Διὰ λόγους δημοσίου συμφέροντος τὰ κάτωθι Κυπριακὰ Πρότυπα καθορίζονται ὡς Πρότυπα τὰ ὁποῖα θὰ ἐφαρμόζωνται ἄνευ ἐξαιρέσεως καθ' ἅπασαν τὴν Δημοκρατίαν καὶ οὐδεἰς θὰ δύναται, ἐκτὸς ἐἀν τὸ ἐμπόρευμα ἢ τὸ ὑλικὸν συμμορφοῦται πρὸς τοὺς ὅρους τῶν Προτύπων, νὰ κατασκευάζῃ, πωλῃ ἢ ἄλλως πως ἐμπορεύηται ἐμπόρευμα ἢ ὑλικὸν καλυπτόμενον ὑπὸ τῶν κάτωθι καθωρισμένων Κυπριακῶν Προτύπων:

CYS 64:1978

- 'Αδρανή Σκυροδεμάτων.

CYS 14:Μέρος 1:1981	— "Αμμοι πρός Χρησιν Μεθ' Υδρασβέστου (ή
•	προσμίκτου) και Τσιμέντου, είς Ἐπιχρίσματα,
	Έξωτερικά και Έσωτερικά, και είς Τσιμεντο-
	κονιάματα Πατωμάτων.

CYS 14: Μέρος 2:1981 – "Αμμοι διὰ Τσιμεντοκονιάματα Απλῶν καὶ ⁽Ωπλισμένων 'Οπτοπλινθοδομῶν καὶ Τσιμεντοπλινθοδομῶν.

3. Οἱ παρόντες Κανονισμοὶ θὰ τεθοῦν ἐν ἰσχύι εἰς ἡμερομηνίαν ὁρισθησομένην ὑπὸ τοῦ Ὑπουργοῦ Ἐμπορίου καὶ Βιομηχανίας διὰ Γνωστοποιήσεως δημοσιευομένης εἰς τὴν ἐπίσημον ἐφημερίδα τῆς Δημοκρατίας, ἡ ὁποία ὅμως δὲν δύναται νὰ ὁρισθῇ πρὸ τῆς 30ῆς Σεπτεμβρίου, 1982.

CYS64:1978

CYPRUS STANDARD SPECIFICATION FOR AGGREGATES FROM NATURAL SOURCES FOR CONCRETE

1. SCOPE

This specification relates to naturally occuring materials, crushed or uncrushed, used in the production of concrete for normal civil and structural engineering purposes. It does not apply to artificial materials or those employed for special purposes.

2. DEFINITIONS

For the purposes of this Cyprus Standard the following definitions apply:

2.1 Coarse aggregate

Aggregate mainly retained on a 5.00 mm CYS \dots^{1} test sieve and containing only so much finer material as is permitted for the various sizes in this specification.

Coarse aggregate may be described as uncrushed gravel, defined in 2.1.1, crushed rock or crushed gravel, defined in 2.1.2 or partially crushed gravel when it is the product of the blending of uncrushed and crushed gravels.

2.1.1 Uncrushed gravel. Coarse aggregate resulting from the natural disintegration of rock.

2.1.2 Crushed gravel. Coarse aggregate produced by crushing hard rock or gravel and which does not contain more than 30% or round particles when tested in accordance with the appropriate section of GYS ...²⁾

2.2 Fine aggregate

Aggregate mainly passing a 5.00° mm CYS ...¹⁾ test sieve and containing only so much coarse material as is permitted for the various grading zones in this specification.

Fine aggregate may be described as natural sand, defined in 2.2.1, crushed rock and/or crushed gravel sand, defined in 2.2.2 or mixed sand when it is the product of the blending of natural sand and crushed rock sand or crushed gravel sand.

1) CYS ... - Test sieves-currently under preparation

2) CYS ... - Sampling and Testing of mineral aggregates - currently under preparation

2.2.1 Natural sand. Fine aggregate resulting from the natural disintegration of rock.

2.2.2 Crushed rock sand and crushed gravel sand. Fine aggregate produced by crushing hard rock and gravel respectively.

2.3 All-in aggregate

Material composed of a mixture of coarse aggregate and fine aggregate.

3. SAMPLING AND TESTING

Sampling and testing of aggregates shall be carried out in accordance with the requirements of the appropriate sections of CYS \dots^{1} . The grading of aggregates shall be determined by the methods for sieve analysis using the following nominal aperture size test sieves complying with the full tolerances of GYS \dots^{2} : 75.0, 63.0, 37.5, 20.0, 14.0, 10.0, 5.0 mm made with square hole perforated plate for coarse aggregate and 5.0, 2.36, 1.18 mm, 600, 300, 150 µm made with woven wire for fine aggregate.

4. QUALITY OF AGGREGATES

4.1 Coarse aggregate

4.1.1 General requirements. Coarse aggregate as defined in section 2.1 of this standard shall have hard, strong, durable and clean pieces, free from adherent coatings and conforming to the requirements of this specification.

4.1.2 Deleterious substances. The amount of deleterious substances in coarse aggregate shall not exceed the maximum limits specified in table 1, when determined in accordance with the requirements of the appropriate sections of CTS ...¹.

 CYS ... - Sampling and testing of mineral aggregatescurrently under preparation
 CYS ... - Test sieves - currently under preparation

Table 1: Deleterious substances for coarse aggregate

	Maximum permissible liwit
	weight percent
1. Clay lumps and friable particles	5.0*
2. Soft particles	. 5.0 [*]
3. Material passing the 75 µm sieve	110**
4. Sulphur in sulphide and/or sulphate minerals expressed as SO3	0.5
5. Chert and other local deleterious substances	As agreed between the purchaser and supplier

* The sum of these two items should not exceed 5%.

** In the case of crushed aggregates, if the material finer than the 75 µm sieve consists of the dust of fracture, essentially free from clay or shale, this percentage may be increased to 1.5.

4.1.3 Specific gravity and water absorption. The specific gravity when tested in accordance with the requirements of the relevant section of CYS $\dots^{(1)}$ shall be more/less than \dots (as specified by the purchaser). The water absorption when tested in accordance with the requirements of the relevant section of CYS $\dots^{(1)}$ shall be more/less than \dots (as specified by the purchaser).

4.1.4 Soundness. When the coarse aggregate is subjected to five alterations of the sodium or magnesium sulphate soundness test as described in the appropriate section of CYS ...¹⁾ the weighted loss shall not exceed 12 or 18 percent respectively.

4.1.5 "10% fines" value. When tested in accordance with the requirements of the appropriate section of CYS ...¹⁾, the "10% fines" value shall be not less than 50KN. Where the purchaser has specified aggregate for concrete wearing surfaces, the "10% fines" value shall be not less than 100KN.

4.1.6 Aggregate impact value. As an alternative to the "10% fines" test, the aggregate impact test may be carried out according to the requirements of the appropriate section of CYS \dots^{1} . The aggregate impact value shall

1) CYS ... - Sampling and testing of mineral aggregates currently under preparation

2) CYS ... - Test sieves - currently under preparation

not exceed 30%. Where the purchaser has specified aggregate for concrete wearing surfaces, the aggregate impact value shall not exceed 25%. 4.1.7 Percentage of wear (use of the Los Angeles Machine). The percentage of wear shall not be more than 25 when tested in accordance with the requirements of the appropriate section of CYS ...¹). 4.1.8 Flakiness and Elongation indices. When tested in accordance with the requirements of the appropriate sections of CYS ...¹), the flakiness and elongation indices should not exceed 30%. 4.1.9 Grading of coarse aggregate. The grading of coarse aggregate, when tested in accordance with the requirements of clause 3 of this

standard, shall be within the limits given in table 2.

		-						
	Percentage by weight passing CYS sieves							
CYS test sieve	Nomin grade	al sizo d aggre	of gate	Nomir	nal size a	of sin ggregat	gle - si e	zed
mm	40mm to 5mm	20mm to 5mm	1 Limm to 5mm	63mm	40mm	20mm	1 Limm	10mm
75.0	100	-	· -	100	-	-	-	-
63.0	-			85-100	100	- .'	_ `	-
37.5	95 -1 0r	100	-	0-30	85 -1 00	100	-	-
20.0	35 - 70	5-100	100	0-5	0-25	85 -1 00	100	-
14.0	-	- 1	97-100	-		- ·	85 -1 00	100
10.0	10-40	30-60	50-85	-	0-5	0-25	0-50	85 -1 00
5.00	0-5	0-10	0-10	-	-	0-5	0-10	0-25
2.36	-	-	-	-	<u> </u>	-	-	0-5

Table 2: Coarse Aggregate

4.2 Fine aggrogate

4.2.1 General requirements. Fine aggregate as defined in section 2.2 of this standard shall have hard, strong, durable particles and shall conform to the requirements of this specification.

4.2.2 Deleterious substances

The amount of deleterious substances in fine aggregate shall not exceed

1) CYS ... - Sampling and testing of mineral aggregates-currently under proparation

2) CYS ... - Test sieves - currently under preparation

the maximum limits specified in table 3 when tested in accordance with the requirements of the appropriate sections of $CYS_{\dots}^{1,\dots,1}$

	Maximum Permissible Limit
	weight percent
1. Chay lumps and friable particles	3.0
2. Material passing the 75 µm sieve	3.0
3. Sulphur in sulphide and/or sulphate minerals expressed as SO	0.5
4. Chert and other local, deleterious substances	as agreed between the purchaser and the supplier

Table 3: Deleterious substances for fine aggregate

4.2.3 Specific gravity and water absorption. The specific gravity when tested in accordance with the relevant section of CYS ... 1), shall be more/less than ... (as specified by the purchaser). The water absorption when tested in accordance with the relevant section of CYS ... 1), shall be more/less than ... (as specified by the purchaser). 4.2.4 Soundness. When the fine aggregate is subjected to five alterations of the sodium or magnesium sulphate soundness test as described in the appropriate section of CYS ... 1), the weighted loss shall not exceed 10 or 15 percent respectively.

4.2.5 Organic impurities. All fine aggregate shall be free from injurous amount of organic impurities. Aggregate subjected to the colorimetric test for organic impurities as described in the appropriate section of CYS ... 1) and producing a colour darker than the standard, shall be rejected unless the relative strength of mortar at 7 days as described in the appropriate section of CYS ... 1) is not less than 95 percent.

4.2.6 Grading of fine aggregate. The grading of fine aggregate, when determined by a test according to the requirements of clause 3 of this standard, shall be within the limits of one of the grading zones given in table 4, except that a total tolerance of up to 5% may be applied to the percentages given underlined. This tolerance may be split up; for

1) CYS ... Sampling and testing of mineral aggregates-currently under preparation

example, it could be 1% on each of three sieves and 2% on another, or 4% on one sieve and 1% on another ctc.

The fine aggregate shall be described as fine aggregate of the grading zone into which it falls, eg. CYS ... Grading Zone 1.

NOTE: It is intended that individual zones should not be specified in contract documents relating to concrete; the concrete mixes should be modified to make the best use of the materials readily available.

1)	Percentage by weight passing CYS sieves			5 sieves
test sieve	Grading Zone 1	Grading Zone 2	Grading Zone 3	Grading Zone 4
min				
10.0	100	100	100	100
5.00	90-100	90-100	90-100	<u>95</u> -100
2,36	60- <u>95</u>	<u>75</u> -100	<u>85</u> -100	<u>95</u> -100
1.18	30- <u>70</u>	<u>55-90</u>	<u>75</u> -100	90-100
n mrt			-	•
600	15- 34	35-59	60-19	80-100
300	5-20	<u>8-30</u>	12-40	<u>15</u> -50
150	0- <u>10</u>	0 -<u>10</u>	0 -<u>10</u>	0- <u>15</u>

Table 4: Fine aggregate

NOTE: The commonly used proportions of one part of fine aggregate to two parts of coarse aggregate, i.e. a fine aggregate percentage of about 33% by volume of the total aggregate, are not always the most suitable for making concrete of high strength and good durability.

To make concrete of the best quality with the range of aggregates allowed, the mix should be suitably designed and the proportion of fine aggregate in the mix should be reduced as the fine aggregate grading becomes finer.

For example, in an investigation using an irregular shaped gravel of 20 mm maximum size and a natural sand, concrete mixes of 1:6 proportion

1) CYS ... - Test sieves - currently under preparation

by weight were found to require the same water/cement ratio and to have the same workability and strength, when the sand was graded to lie in the middle of Grading Zones 1,2,3 and 4 if the sand contents were approximately 45, 35, 30 and 25% by weight respectively.

The most suitable proportion of fine aggregate to be used for a particular cement/aggregate ratio will, however depend on the actual grading, the particle shape and the surface texture of both the fine and the coarse aggregates. In particular, the correct design of the mix becomes increasingly important as the grading of the fine aggregate approaches the coarser limit of Grading Zone 1 or the finer limit of Grading Zone 4. The suitability of a given fine aggregate for use with the available coarse aggregate should always be ascertained by mix design, this being especially important in respect of reinforced concrete structures.

4.3 All-in-aggregate

4.3.7 General requirements

All-in-aggregate, as defined in section 2.3 of this standard, shall have hard, strong, durable particles and shall conform to the requirements of this specification.

The coarse and fine aggregates constituting the all-in aggregate shall conform to all the requirements of clauses 4.1 and 4.2 of this standard respectively, except those referring to the grading of the aggregate which should be within the limits specified in section 4.3.2 of this standard.

4.3.2 Grading of all-in aggregate

The grading of all-in aggregate when determined by a test according to the requirements of clause 3 of this standard, shall be within the limits given in table 5.

CYS ¹⁾	Percentage by weight passing CYS sieves		
test sieve	ЦО mm nominal size	20 mm nominal size	
mm			
75.0	. 100	-	
37.5	95 -1 00	100	
20.0	45-80	95-100	
5.0	25-50	35-55	
հա			
600	8-30	10-35	
150	0-6	". 06	

Table 5: Grading of all-in aggregate

1) CYS ... - Test sieves-currently under preparation

The following organizations collaborated in the preparation of this Standard Specification.

Cyprus Association of Civil Engineers and Architects Cyprus Association of Building Contractors

Cyprus Association of Professional Engineers

Association of Crushing Plants

Mines Services

Department of Town Planning and Housing

Geological Survey Department

Public Works Department

Water Development Department

Cyprus Organization for Standards and Control of Quality

NOTE: For the purposes of this Standard and for all cases where a Cyprus Standard is currently under preparation, reference may be made to the relevant Standards as follows:

BS 410	Test Sieves.
BS 812	Methods for Sampling and Testing of Mineral
	Aggregates, Sands and Fillers.
ASTM-C88	Soundness of Aggregates by Use of Sodium
	Sulfate or Magnesium Sulfate.
ASTM-131	Resistance to Abrasion of Small Size Coarse
	Accrecate by Use of The Los Anceles Machine.

CYS 14 Part 1:1981

SANDS FOR EXTERNAL RENDERINGS, FLOOR SCREEDS AND INTERNAL PLASTER-ING WITH LIME (DR ADDITIVE) AND PORTLAND CEMENT

1 SCOPE

This Cyprus Standard relates to naturally occurring sands, crushed stone sands and crushed gravel sands used for external renderings, internal plastering using mixes of lime (or additive) and sand (with or without the addition of cement or gypsum plaster), cement and sand (with or without the addition of lime) and for floor screeds of cement and sand.

2 DEFINITIONS

For the purpose of this Cyprus Standard, the following definitions apply.

2.1 Sand. A material mainly passing \Rightarrow 5.00 nm CYS test sieve which may be either a natural sand or one obtained by crushing hard rocks or gravels.

2.2 Natural Sand. A sand produced by the natural disintegration of rock.

2.3 Crushed Stone Sand and Crushed Gravel Sand. Sands produced by crushing a hard stone or rock and a gravel respectively.

3 SAMPLING AND TESTING

3.1 Sampling and testing of sands shall be carried out in accordance with the requirements of the appropriate sections of CYS \dots

3.2 The grading of sands shall be determined by the method for sieve analysis but using the following nominal operture size test sieves, complying with the requirements of CYS ...²

5.00 mm, 2.36 mm, 1.18 mm, 600 μm, 300⁺ μm, 150⁺ μm woven wire.

CYS ... - Sampling and testing of mineral aggregates - under preparation
 CYS ... - Test sieves - under preparation
 + Full tolerances

Unless otherwise stated in the enquiry, duplicate tests shall in all cases be made and the results of both tests reported.

4 QUALITY OF SANDS

4.1 Sands shall consist of natural sand, crushed stone sand or crushed gravel send, or a combination of any of these. They shall be hard, durable, clean and free from adherent coatings, such as cley, and from any appreciable amount of clay in pellet form.

Sands shall not contain hermful materials such as iron pyrites, salts, or other organic impurities, mica, shale or similar laminated materials, or fleky or elongated perticles in such a form or in sufficient quantity to affect adversely the hardening, the strength, the durability or the appearance of the final product or any materials in contact with it and shall conform to the requirements of the relevant section of CYS 64:1978.

The various sizes of particles of which a send is composed shall be uniformly distributed throughout the mass.

4.2 The quantity of clay, silt and dust shall not exceed the following.
4.2.1 Sand or crushed gravel sand; 5% by mass when determined by the decentation method given in CYS ...1

4.2.2 Crushed stone sund; 10% by mass, when determined by the sudimentation method given in CYS \dots^{1}

A guide to the uniformity of supplies in respect of the silt and clay content of natural sand and rrushed gravel sand ducing deliveries may be obtained using the field settling test given in CYS ...¹ and comparing the results with that of a test taken on the accepted sample.

5 GRADING

5.1 The send shall be graded within the limits set out for its appropriate application.

5.1.1 The grading of sands for external renderings, internal cement plastering. undercoats, for internal lime plastering and for floor screeds when determined according to clause 3 shall be within the limits given in table 1.

1) CYS ... - Sampling and testing of mineral aggregates - under preparation

CYS sieve	Percentage by mass passing CYS sieves		
ារា	%		
5.00	100		
2.36	90–100		
1.18	70–100		
μ m			
600	40–60		
300	5–40		
150	0–10⁴		

nal lime undercoats and floor screeds

internal cement plastering, inter-

In the case of crushed stone, higher proportions of meterial passing a 150 µm BS sieve may be satisfactory and the amount permitted may be increased to 15%.

5.1.2 The grading of sands for internal lime plastering finishing coats when determined according to clause 3 shall be within the limits given in table 2.

	ine prostering		
CYS sieves	Percentage by mass pag- sing CYS sieves		
նար 2.36	% 10C		
1.18	90–100		
μπ			
600	55-100		
300	5–50		
150	0-10+		

1

Table 2. Sands for finishing coats, internal lime plastering

⁺In the particular case of some crushed stone, higher proportions of material passing a 150 µm CYS sieve may be satisfactory and the amount permitted may be the subject of special agreement between the supplier and the purchaser or his representative.

Table 1. Sands for external renderings,

5.2 A sand whose grading falls outside the above limits on sieves other than the 5.00 mm sieve in table 1 and the 2.36 mm sieve in table 2, by a total amount not exceeding 5% shall be regarded as being within those limits. This 5% can be split up, for example, as 1% on each of three sieves and 2% on another, or 4% on one sieve and 1% on another.

NOTE1. Sands which just full outside the above limits due to a small excess of coarse particles can often be made to comply with this Cyprus Standard by screening through a suitably sized sieve. Finishing cost sands as specified in table 2 can often be obtained by screening undercost sands in a similar manner.

The required grading for either underconts or finishing coats can often be attained by blending together sends which are by themselves unsuitable.

NUTE 2. The most suitable grading of sand for an external rendering will depend, to some extent, upon the finishing treatment. The sand grading specified will, in general, be suitable for the undercosts and for some finishing costs such as the smooth (floated) finishing costs, the screptd finishes and for pebble-dash or dry-dash. For some textured finishes, such as those produced by treatment of the freshly applied final cost with a tool, it may be desirable to remove the coarser particles (e.g. by screening through a 2 mm sieve), while for others such as 'torn texture', some proportion of material coarser than 5 nm may be needed. For roughnast (wetdashing or harling) the grading and maximum size will vary according to the texture required and the type of aggregate; the proportion of coarse material (over 5 mm) to fine should be about 1:2.

6 SUPPLIER'S CERTIFICATE AND COST OF TESTS

The supplier shall satisfy himself that the output at the source of production complies consistently with the requirements of this Cyprus Standard and shall give a certificate to this effect to the purchaser or his representative.

If the purchaser or his representative requires independent tests or the certification of individual consignments, the samples shall be taken before or immediately after delivery at the option of the purchaser or his representative, and these tests shall be carried out in accordance with the appropriate requirements of this Cyprus Standard on the written instructions of the purchaser or his representative.

Unless otherwise specified with the enquiry and order, the supplier shall supply free of charge the material required for testing and the cost of the tests shall be borne:

- (a) by the supplier, in the event of results showing that the material does not comply with the standard;
- (b) by the purchaser, in the event of results showing that the material does so comply.

7 ADDITIONAL INFORMATION TO BE FURNISHED BY THE SUPPLIER

When requested by the purchaser or his representative, the supplier shall provide any of the following additional particulars.

7.1 Source of Supply

7.1.1 District.

7.1.2 Area.

7.1.3 Name of quarry or pit.

7.1.4 For material dredged from seas, estuaries or rivers, the precise locality from which the material was obtained shall be stated.

7.2 Group Classification (determined according to the group classification of aggregates given in CYS \dots^{1}),

7.3 External Characteristics

7.3.1 Shape) (described scronding to the classification of 7.3.2 Surface) particle shape and of surface texture given in Texture) CYS ...)

7.4 Physical Properties

7.4.1 Relative density and water absorption

(determined according to those methods for the determination of relative density and water absorption given in CYS ...¹ appropriate to sand). 7.4.2 Bulk density in kilograms per cubic metre (determined according to the method for determination of bulk density of aggregate given in CYS ...¹).

7.5 Grading. A typical sieve analysis determined according to the requirements of clause 3.

1) CYS ... - Sampling and testing of mineral aggregates - under prepation

- duger hrehg

The following organization collaborated in the preparation of this Standard Specification.

Cyprus Association of Civil Engineers and Architects Cyprus Association of Building Contractors Cyprus Association of Professional Engineers Association of Crushing Plants Mines Services Department of Town Planning and Housing Geological Survey Department Public Works Department Water Development Department

Cyprus Organization for Standards and Control of Quality

NOTE: For the purposes of this Standard and for all cases where a Cyprus Standard is currently under preparation, reference may be made to the relevant Standards as follows:

BS 410	Test Sieves.
BS 812	Methods for Sampling and Testing of Mineral
	Aggregates, Sands and Fillers.
AS1M-C88	Soundness of Aggregates by Use of Sodium
	Sulface or Magnesium Sulface.
ASTM-131	Resistance to Abrasion of Small Size Coarse
,	Aggregate by Use of the Loss Angeles Machine.

CYS 14 Part 2:1981

SANDS FOR MORTAR FOR PLAIN AND REINFORCED BRICKWORK, BLOCKWALLING AND MASONRY

1 SCOPE

This Cyprus Standard relates to naturally occurring sends, crushed stone sands and crushed gravel sends used for morrars for brickwork (plain and reinforced) for building with clay or concrete blocks and for mesonry.

2 DEFINITIONS

For the purposes of this Cyprus Standard, the following definitons apply.

2.1 Sand. A material mainly passing a 5.00 mm CYS test sieve, which may be either a natural sand or one obtained by crushing hard rocks or gravels.

2.2 Natural Sand. A send produced by the natural disintegration of rock.

2.3 Crushed Stone Sand and Crushed Gravel Sand. Sands produced by crushing a hard stone or rock and a gravel respectively.

3 SAMPLING AND TESTING

3.1 Sampling and testing of sands shall be carried out in accordance with the requirements of the appropriate sections of CYS \dots

3.2 The grading of sands shall be determined by the method for sieve analysis but using the following nominal aperture size test sieves, complying with the requirements of CYS \dots^2

5.00 mm, 2.36 mm, 1.18 mm, 600 μ m, 300⁺ μ m, 150⁺ μ m woven wire. Unless otherwise stated in the enquiry, duplicate tests shall in all cases be made and the results of both tests reported.

1) CYS ... Sampling and testing of mineral aggregates - under preparation 2) CYS ... Test sieves - under preparation

4 QUALITY OF SANDS

4.1 Sends shall consist of natural send, crushed stone send or crushed gravel sand, or a combination of any of these. They shall be hard, durable, clean and free from adherent coatings, such as clay and from any appreciable amount of clay is pellet form.

Sands shall not contain harmful datarials such as iron pyrites, solts, or other organic imperities, mice, shale or similar laminated materials, or flaky or elongated particles in such a form or in sufficient quantity to affect adversely the hordening, strength or durability of the morter nor, in addition to the above, for reinforced brickwork, any materials which might attack the reinforcement, and shall conform to the requirements of the relevant section of CYS 64:1978.

The various sizes of particles of which a send is composed shall be uniformly distributed throughout the mass.

4.2 The quantity of clay, silt and dust shall not exceed the following. 4.2.1 Sand or crushed gravel sand; 5% by mass when determined by the decentation method given in CYS \dots ¹

4.2.2 Crushed stone sand; 10% by mess, when determined by the sedimentation method given in CYS \dots

A guide to the uniformity of supplies in respect of the silt and clay content of natural sand and crushed gravel sand during deliveries may by obtained using the field settling test given in CYS ...¹ and comparing the results with that of a test taken on the accepted sample.

5 GRADING

5.1 The sand shall be graded within the limits set out for its appropriate application.

5.1.1 The grading of sands for use in mortars for purposes other than reinforced brickwork, when determined according to clause 3, shall be within the limits given in table 1.

1) CYS ... Sampling and testing of mineral aggregates - under preparation

446

CYS Bieve	Percentage by moss passing CYS sieves
ាហិ	Ро
5.00	100
2.36	90-100
1.18	70–100
μጠ	
600	40-100
300	5-70
150	0–15

Table 1. Sands for General Purpose Mortars

NOTE. Sands which fall outside the above limits due to a small excess of coarse particles, can often be made to comply with the requirements of this Cyprus Standard by screening through a suitably sized sieve. The required grading can often be attained by blending together sands which are by themselves unsuitable.

5.1.2 The grading of sands for use in mortars for reinforced brickwork, when determined according to clause 3, shall be within the limits given in table 2.

CYS sieve	Percentage by mass passing CYS sieves
אין איז	<i>ور</i> رد
5.00	100
2.36	90-100
1.18	70-100
μm	
600	40-80
300	5-40
150	0–10

Table 2. Sands for Reinforced Brickwork Mortars

NOTE: Sands which fall outside the above limits due to a small excess of coarse particles can often be made to comply with the requirements of this Cyprus Standard by screening through a suitably sized sieve. The required grading can often be attained by blending together sands which are by themselves unsuitable. ંસ

5.2 A send whose grading falls outside the above limits on sieves other than the 5.00 mm sieve by a total emount not exceeding 5% shall be regarded as being within those limits. This 5% can be split up, for example, as 1% on each of three sieves and 2% on enother or 4% on one sieve and 1% on another.

6 SUPPLIER'S CERTIFICATE AND COST OF TESTS

The supplier shall satisfy himself that the output at the source of production consistently complies with the requirements of this Cyprus Standard and, shall give a certificate to this effect to the purchaser or his representative.

If the purchaser or his representative requires independent tests or the certification of individual consignments, the samples shall be taken before or immediately after delivery, at the option of the purchaser or his representative, and these tests shall be carried out in accordance with the appropriate requirements of this Cyprus Standard on the written instructions of the purchaser or his representative.

Unless otherwise specified with the enquiry and order, the supplier shall supply free of charge the material required for testing and the cost of the tests shall be borne:

- (a) by the supplier in the event of results showing that the material does not comply with the standard;
- (b) by the purchaser, in the event of results showing that the material does so comply.

7 ADDITIONAL INFORMATION TO BE FURNISHED BY THE SUPPLIER

When requested by the purchaser or his representative, the supplier shall provide any of the following additional particulars.

7,1 Source of Supply

7.1.1 District.

7.1.2 Ares.

7.1.3 Name of quarry or pit,

7.1.4 for material dredged from seas, estuaries or rivers, the precise locality from which the material was obtained shall be stated. 7.2 Group Classification (determined according to the group classification of aggregates given in CYS \dots^{1})

7.4 Physical Properties 7.4.1 Kelative density and water absorption (determined according to those methods for the determination of relative density end water absorption given in CYS ...¹ appropriate to sand). 7.4.2 Bulk density in kilograms per cubic metere (determined according

to the method for determination of bulk density of aggregate given in [CYS ...].

7.5 Grading. A typical sieve enalysis determined according to the requirements of clause 3.

1) CYS \dots ¹ - Sampling and testing of mineral aggregates - under preparation.

The following organization collaborated in the preparation of this Standard Specification.

Cyprus Association of Civil Engineers and Architects

Cyprus Association of Building Contractors

Cyprus Association of Professional Engineers

Association of Crushing Plants

Mines Services

Department of Town Planning and Housing

Geological Survey Department.

Public Works Department

Water Development Department

Cyprus Organization for Standards and Control of Quality

NOTE: For the purposes of this Standard and for all cases where a Cyprus Standard is currently under preparation, reference may be made to the relevant Standards as follows:

BS 410	Test Sieves.
BS 812	Methods for Sampling and Testing of Mineral
	Aggragates, Sends and Fillers.
ASTM-C88	Soundness of Aggregates by Use of Sodium
	Sulfate or Magnesium Sulfate.
ASTM-131	Resistance to Abrasion of Small Size Coarse
	Aggregate by Use of the Los Angeles Machine.

450