



DRAFT TANZANIA STANDARD

**Standard Specification for Aggregate for Single or Multiple
Asphalt Surface Treatments.**

DRAFT STANDARD

TANZANIA BUREAU OF STANDARDS

0 National Foreword

The Tanzania Bureau of standards is the statutory national standards body for Tanzania, established under the act.No.3 of 1975, amended by act.No.2 of 2009.

This draft Tanzania Standard is being prepared by BCDC 5 Roads Technical Committee under the supervision of the Building and Construction Divisional Standards committee (BCDC).

In the preparation of this draft Tanzania Standard assistance was derived from ***ASTM D1139/D1139-22 Standard Specification for Aggregate for Single or Multiple Asphalt Surface Treatments. published by American Society for Testing and Materials (ASTM)***

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1 Scope

This specification covers the quality and sizes of crushed stone, crushed slag, crushed expanded shale, crushed expanded clay, crushed expanded slate, and crushed or un-crushed gravel suitable for use as aggregate in single or multiple asphalt surface treatments.

2 Normative references

The following referenced documents are indispensable for application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASTM Standards

C29/C29M Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate

C88/C88M Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

C123/C123M Test Method for Lightweight Particles in Aggregate

C125 Terminology Relating to Concrete and Concrete Aggregates

C131/C131M Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

C136/C136M Test Method for Sieve Analysis of Fine and Coarse Aggregates

C142/C142M Test Method for Clay Lumps and Friable Particles in Aggregates

D8 Terminology Relating to Materials for Roads and Pavements

D75/D75M Practice for Sampling Aggregates

D448 Classification for Sizes of Aggregate for Road and Bridge Construction

D3665 Practice for Random Sampling of Construction Materials

D4791 Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

D5821 Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieve

3 Terminology

3.1 Other terms used in this specification are defined in Terminologies C125 and D8.

3.2 Definitions of terms specific to this standard

3.2.1 crushed slag, n—the product resulting from the crushing of air-cooled iron blast-furnace slag.

3.2.2 expanded shale, n; expanded clay, n; expanded slate n—the product resulting from the expanding of selected materials (shale, clay, or slate) in a rotary kiln at temperatures over 1000 °C [1800 °F].

3.2.3 uncrushed gravel, n—the product resulting from screening and blending of material from the deposit, consisting of particles with a shape and texture largely dependent on the nature of the deposit. Some particles containing fractured faces, resulting from the crushing of oversized material, are not prohibited from this product.

4 Physical requirements

4.1 Degradation—The aggregate (with the exception of crushed blast-furnace slag) when subjected to testing in accordance with Test Method C131/C131M shall have a loss not greater than 40 % by mass.

4.2 Density:

4.2.1 Slag—Crushed slag shall have a minimum density of 1120 kg/m³ as determined in accordance with Test Method C29/C29M, rodding procedure.

4.2.2 Expanded Shale, Expanded Clay, and Expanded Slate—The coarse aggregate, when tested in size No. 57 or No.8, shall have a minimum density of 500 kg/m³ as determined in accordance with Test Method C29/C29M, shoveling procedure.

4.3 Fractured Particles in Coarse Aggregate—Not less than 60 % by mass of the aggregate particles retained on the 4.75 mm (No.4) sieve shall have at least two fractured faces.

4.4 Soundness—The aggregate, when subjected to five cycles of the soundness test, shall have a weighted loss not greater than 12 % when sodium sulfate is used or 18 % when magnesium sulfate is used. If the salt is not designated by the purchaser, the aggregate will not be prohibited if it meets the indicated limit for the salt used.

4.5 Deleterious Substances—The requirements prescribed in Table 1 apply to all aggregate types covered in the scope of this specification except as noted. The limits for clay lumps and friable particles, and for material floating on a liquid with a specific gravity of 2.0, shall be based on the portion of the sample retained on a 4.75 mm (No. 4) sieve.

TABLE 1 Requirements for Deleterious Substances

Deleterious Substances	Mass %, max
Clay lumps and friable particles	3.0
Material floating on a liquid with a specific gravity of 2.0 ^A	1.0
Flat and elongated pieces, ^B retained on the 9.5 mm [$\frac{3}{8}$ in.] sieve:	
Aggregate sizes No. 5, 6, 7	10.0
Aggregate sizes No. 8, 9	no requirement

^A This requirement does not apply to blast-furnace slag, expanded shale, expanded clay, nor expanded slate.

^B Pieces in which the ratio of the maximum to minimum dimensions of its circumscribing rectangular prism is greater than five.

5.

Aggregate Size

5.1 The aggregate shall conform to Classification D448 for the size indicated by the purchaser.

6. Sampling and Testing

6.1 Sample the aggregates and determine the properties enumerated in this specification in accordance with the following test methods:

6.1.1 Sampling—Practice D75/D75M.

6.1.2 Random Sampling—Practice D3665.

6.1.3 Degradation Resistance—Test Method C131/C131M.

6.1.4 Bulk Density of Aggregates—Test Method C29/C29M.

6.1.5 Sulfate Soundness—Test Method C88/C88M.

6.1.6 Sieve Analysis—Test Method C136/C136M.

6.1.7 Clay Lumps and Friable Particles—Test Method C142/C142M.

6.1.8 Lightweight Pieces—Test Method C123/C123M.

6.1.9 Flat and Elongated Pieces—Test Method D4791.

6.1.10 Fractured Particles—Test Method D5821

7. Keywords

Sample the aggregate; asphalt surface treatments; coarse aggregate; crushed slag; crushed stone; gravel; surface treatments

APPENDIX

(Nonmandatory Information)

X1. SELECTION OF AGGREGATE SIZES

X1.1 The size of the aggregate will vary with the thickness of the surface course desired and with the type of construction contemplated, as described in the following statements:

X1.1.1 Single Surface Treatment—A single surface treatment is a wearing surface of asphalt material and aggregate in which the aggregate is placed uniformly over the applied asphalt materials in a single layer, the thickness of which approximates the nominal maximum size of the aggregate used.

X1.1.2 Multiple Surface Treatments—A multiple surface treatment is a wearing surface composed of asphalt material and aggregate, in which the coarser aggregate is placed uniformly over an initial application of asphalt material and followed by subsequent applications of asphalt material and smaller aggregate. Generally, the designated maximum size of the smaller aggregate is one half that of the aggregate used in the preceding application. Each application of aggregate should be placed uniformly in a single layer, the thickness of which approximates the nominal maximum size of the aggregate.

X1.2 The standard sizes recommended for aggregates for several thicknesses and types of surface treatments are listed in Table X1.1. The grading requirements for these standard sizes are given in Classification D448.

TABLE X1.1 Aggregate Sizes for Different Thicknesses and Surface Treatments

Surface Treatment		Size No.	Sizes of Aggregates
Type	Application		Nominal size, Square Openings
Single	initial	5	25.0 to 12.5 mm [1 to ½ in.]
		6	19.0 to 9.5 mm [¾ to ¾ in.]
		7	12.5 to 4.75 mm [½ in. to No. 4]
		8	9.5 to 2.36 mm [¾ in. to No. 8]
		9	4.75 to 1.18 mm (No. 4 to No. 16)
Double	initial	5	25.0 to 12.5 mm [1 to ½ in.]
	second	7	12.5 to 4.75 mm [½ in. to No. 4]
Double	initial	6	19.0 to 9.5 mm [¾ to ¾ in.]
	second	8	9.5 to 2.36 mm [¾ in. to No. 8]
Triple	initial	5	25.0 to 12.5 mm [1 to ½ in.]
	second	7	12.5 to 4.75 mm [½ in. to No. 4]
	third	9	4.75 to 1.18 mm (No. 4 to No. 16)
Triple	initial	6	19.0 to 9.5 mm [¾ to ¾ in.]
	second	8	9.5 to 2.36 mm [¾ in. to No. 8]
	third	9	4.75 to 1.18 mm (No. 4 to No. 16)