



# Standard Practice for Specifying Rock to Fill Gabions, Revet Mattresses, and Gabion Mattresses<sup>1</sup>

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## 1. Scope

1.1 This practice covers the sizes and quality of rock to fill gabions and mattresses. The term mattress as used in this standard shall include the terminology of gabion mattresses and revet mattresses used in Specifications [A974](#) and [A975](#).

1.2 This practice does not cover the sizes and quality of rock for other erosion control uses such as riprap or drainage.

1.3 This practice does not cover the material properties or construction of gabions or mattresses.

1.4 The values in this practice are in English units and are to be regarded as the standard. SI units are given.

1.5 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

1.6 *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.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

[A974 Specification for Welded Wire Fabric Gabions and Gabion Mattresses \(Metallic-Coated or Polyvinyl Chloride \(PVC\) Coated\)](#)

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.25 on Erosion and Sediment Control Technology.

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

[A975 Specification for Double-Twisted Hexagonal Mesh Gabions and Revet Mattresses \(Metallic-Coated Steel Wire or Metallic-Coated Steel Wire With Poly\(Vinyl Chloride\) \(PVC\) Coating\)](#)

[D4992 Practice for Evaluation of Rock to be Used for Erosion Control](#)

[D5519 Test Methods for Particle Size Analysis of Natural and Man-Made Riprap Materials](#)

## 3. Terminology

3.1 *gabion, n—in erosion control*, a wire mesh container of variable size and interconnected with other similar containers. It is filled with rock to form flexible, permeable, monolithic structures.

3.2 *mattress, n—in erosion control*, a wire mesh container uniformly partitioned into internal cells with relatively small height in relation to other dimensions. Mattresses have smaller mesh openings than the mesh used for gabions.

## 4. Summary of Practice

4.1 The designer shall establish the suitable sizes, weight, and quality of rock for project use, and examine sources to ensure that the required rock is available.

4.2 Rock shall be delivered to the work site in a manner to minimize its reduction in sizes (breakdown) during the handling of the rock, and then placed and secured within the assembled and interconnected gabion or mattress.

NOTE 1—Clean crushed concrete may be used as an alternative when rock is not available.

## 5. Significance and Use

5.1 Gabions and mattresses, described in Specifications [A974](#) and [A975](#), are placed on sites for soil stabilization and to prevent soil erosion. Their ability to function properly depends on their stability, which is partly dependent upon the rocks filling them. Rock sizes should be chosen to prevent individual rocks from falling through the mesh of the gabions or mattresses. The rock also has to withstand natural weathering processes during the life of the project that would cause it to breakdown to sizes smaller than the wire mesh opening dimensions.