



**Note: The PROV published in November 2017 replaces OPSS 1430 COMMON, November 2012 with no technical content changes.**

## **MATERIAL SPECIFICATION FOR GABION BASKETS AND MATS**

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#### **1430.01 SCOPE**

This specification covers the requirements for gabion baskets or gabion mats and related accessories.

#### **1430.02 REFERENCES**

This specification refers to the following standards, specifications, or publications:

##### **ASTM International**

A 90/A 90M-11	Standard Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
A 313/A 313M-10e1	Stainless Steel Spring Wire
A 370-11a	Standard Test Methods and Definitions for Mechanical Testing of Steel Products
A 641/A 641M-09a	Zinc-Coated (Galvanized) Carbon Steel Wire
A 764-07	Metallic Coated Carbon Steel Wire, Coated at Size and Drawn to Size for Mechanical Springs
A 975-11	Double-Twisted Hexagonal Mesh Gabions and Revet Mattresses (Metallic-Coated Steel Wire or Metallic-Coated Steel Wire with Poly (Vinyl Chloride) (PVC) Coating)

## **Underwriters Laboratories**

746B-96 Polymeric Materials - Long-Term Property Evaluations

### **1430.03 DEFINITIONS**

For the purpose of this specification, the following definitions apply:

**Gabion Baskets** means rectangular containers made of double twisted steel wire mesh produced to the dimensions shown in Table 1.

**Gabion Mats** means rectangular containers made of double twisted steel wire mesh produced to the dimensions shown in Table 2.

**Lacing Wire** means a galvanized steel wire or galvanized steel wire with PVC coating used to assemble and interconnect gabion basket or gabion mat containers and to close and secure stone filled containers.

### **1430.05 MATERIALS**

#### **1430.05.01 Gabion Baskets and Gabion Mats**

Gabion baskets shall be manufactured from galvanized steel wire mesh or PVC coated galvanized steel wire mesh as specified in the Contract Documents. When the type of mesh is not specified in the Contract Documents, the gabion baskets shall be manufactured from PVC coated galvanized steel wire mesh.

Gabion mats shall be manufactured from PVC coated galvanized steel wire mesh.

Gabion baskets and the base section of gabion mats shall have all components connected in such a manner that the strength at the point of connection meets the requirements of Table 3 as tested according to ASTM A 975, Section 13.1.

#### **1430.05.02 Wire Mesh**

The mesh shall be woven from wire using a double twist pattern to create uniform hexagonal openings of 83 x 114 mm. The wire mesh shall be non-ravelling and shall provide the strength listed in Table 3 as tested according to ASTM A 975, Section 13.1.

The perimeter edges of the wire mesh shall be woven around a selvage wire in a manner designed to prevent slippage and to create a selvage.

##### **1430.05.02.01 Wire**

The wire for wire mesh, selvage wire, lacing wire, and internal connections shall be galvanized wire, soft temper, Class 3 coating, according to ASTM A 641. The wire diameter shall be according to Table 4. The tensile strength of the wire shall be according to ASTM A 641 as tested according to ASTM A 370. Galvanizing on the wire shall meet the requirements of Table 4 as tested according to ASTM A 90M.

##### **1430.05.02.02 PVC Coating**

PVC coating shall be according to ASTM A 975 and shall have a minimum thickness of 0.38 mm with a nominal thickness of 0.50 mm. Prior to UV and abrasion degradation, the PVC polymer coating shall have a projected durability life of 60 years as tested according to UL 746B.

**1430.05.03                    Fasteners**

**1430.05.03.01                General**

Fasteners shall be fabricated such that when the ends of the fastener are brought together and properly locked, the fastener forms a closed loop. The inside area of the closed loop shall be at least 325 mm<sup>2</sup> to enclose up to four selvage wires.

Locked fasteners shall be able to resist a minimum direct force across any axis of 3 kN while remaining closed and locked.

**1430.05.03.02                Stainless Steel Rings**

Stainless steel rings shall be manufactured from 3 mm diameter stainless steel spring wire Type 302, Class 1, according to ASTM A 313M.

**1430.05.03.03                Interlocking Wire Fasteners**

Interlocking fasteners shall be manufactured from 3 mm diameter steel mechanical spring wire Class 1, Finish 2, Type B, Tensile Class 2, according to ASTM A 764.

**1430.07                        PRODUCTION**

**1430.07.01                    General**

Gabion baskets and gabion mats shall be manufactured so that the sides, ends, lid, base, and diaphragms can be readily assembled into rectangular units.

Where the length of the gabion basket exceeds its horizontal width, the gabion basket shall be divided into equal cells by diaphragms. Cell length shall not exceed its horizontal width. Diaphragms shall be made of wire mesh and shall be secured in the proper position on the base section. Gabion mats shall have diaphragms spaced at 1.0 m across the width of the mat and 3.0 m along the length of the mat.

Gabion baskets or gabion mats shall be manufactured with all components connected at the production facility with the exception of the gabion mat lid. Gabion baskets manufactured from galvanized wire mesh shall be assembled using either lacing wire or fasteners. Gabion baskets and gabion mats manufactured from PVC coated galvanized wire mesh shall be assembled using stainless steel ring fasteners. Fasteners shall be installed at a maximum spacing of 150 mm with at least one fastener per gabion mesh opening.

**1430.07.02                    Dimensions and Tolerances**

Gabion baskets and gabion mats shall be produced to the sizes and dimensions shown in Tables 1 and 2. All dimensions are subject to a tolerance limit of ± 5%, except depth dimensions, which are subject to tolerance limit of ± 5% for gabion baskets and ± 10% for gabion mats.

**1430.07.03                    Packaging and Marking**

Each gabion basket and gabion mat shall be clearly colour coded according to Tables 1 and 2 or otherwise suitably identified to indicate its size.

Gabion baskets shall be shipped folded flat in bundles. Each bundle shall contain an equal number of one size of gabion baskets, except as necessary to complete an order. Each bundle shall be clearly marked to show the size and number of baskets it contains. The maximum weight of one bundle shall be 850 kg.

Gabion mats shall be shipped in rolls with ends, sides, and dividers attached to the base. The gabion mat lid and base units are to be shipped unattached, but rolled together as one. The maximum weight of one roll shall be 850 kg.

**1430.08**                      **QUALITY ASSURANCE**

**1430.08.01**                  **Inspection and Testing**

The Owner reserves the right to make inspections and tests and at times the Owner may consider necessary to ensure that the materials supplied are in accordance with this specification.

All materials failing to comply with the requirements of this specification shall be rejected.

**TABLE 1**  
**Gabion Basket Sizes and Dimensions**

Size Number	Number of Diaphragms	Approximate Dimensions and Volumes				Colour Code
		Length m	Width m	Depth m	Capacity m <sup>3</sup>	
1	1	2.00	1.00	0.30	0.60	Blue/Red
2	1	2.00	1.00	0.50	1.00	Red
3	1	2.00	1.00	1.00	2.00	Blue
4	2	3.00	1.00	0.30	0.90	Blue/Yellow
5	2	3.00	1.00	0.50	1.50	Green
6	2	3.00	1.00	1.00	3.00	White
7	3	4.00	1.00	0.30	1.20	Blue/Green
8	3	4.00	1.00	0.50	2.00	Yellow
9	3	4.00	1.00	1.00	4.00	Black
10	1	2.00	0.50	0.50	0.50	White/Yellow
11	2	3.00	0.50	0.50	0.75	White/Green

**TABLE 2**  
**Gabion Mat Sizes and Dimensions**

Size Number	Number of Dividers	Number of Diaphragms	Approximate Dimensions and Areas				Colour Code
			Length m	Width m	Depth m	Area m <sup>2</sup>	
12	1	18	30	2	0.23	60	Black/Green
13	2	27	30	3	0.23	90	Black/Yellow
14	1	18	30	2	0.30	60	Black/Blue
15	2	27	30	3	0.30	90	Black/White

**TABLE 3**  
**Minimum Strength Requirements of Mesh and Connections**

Test Description	Galvanized Gabion Basket	PVC Coated	
		Gabion Basket	Gabion Mat
Parallel to Twist	51.1 kN/m	42.3 kN/m	33.6 kN/m
Perpendicular to Twist	26.3 kN/m	20.4 kN/m	13.1 kN/m
Connection to Selvages	20.4 kN/m	17.5 kN/m	10.2 kN/m
Panel to Panel Connection Using Lacing Wire or Fasteners	20.4 kN/m	17.5 kN/m	10.2 kN/m
Punch Test	26.7 kN	23.5 kN	17.8 kN

**TABLE 4**  
**Gabion Baskets and Gabion Mats**

	Galvanized Gabion Basket	PVC Coated	
		Gabion Basket	Gabion Mat
Mesh Type	80 x 100 mm	80 x 100 mm	80 x 100 mm
Mesh Opening	83 x 114 mm	83 x 114 mm	83 x 114 mm
Wire Diameter for Mesh	2.95 mm	2.70 mm	2.20 mm
Wire Diameter for Selvages and Corners	3.85 mm	3.40 mm	2.65 mm
Wire Diameter for Lacing and Internal Connections	2.20 mm	2.20 mm	2.20 mm
Galvanizing for Mesh Wire	244 g/m <sup>2</sup> min	244 g/m <sup>2</sup> min	213 g/m <sup>2</sup> min
Galvanizing for Selvage Wire	274 g/m <sup>2</sup> min	260 g/m <sup>2</sup> min	244 g/m <sup>2</sup> min
Galvanizing for Lacing Wire	213 g/m <sup>2</sup> min	213 g/m <sup>2</sup> min	213 g/m <sup>2</sup> min