



**INDUSTRIES, INC.** It's what's inside that counts.™

## About Knitted Wire Mesh

Knitted wire mesh is a highly adaptable and configurable material offering superior functionality in a variety of applications. Knitted in a circular pattern resembling a tube sock, its interlocking-loop construction gives it tremendous strength and resiliency while allowing it to be pliable and to conform to almost any size, shape or density requirements. Because it can be made from any metal, plastic or fiberglass thread or wire, its physical characteristics can be tailored and tweaked to meet any operating environment requirements.

## Producing Knitted Wire Mesh

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After wire drawing, a multi-step process that stretches raw wire rod into fine or finished diameters, wire is converted into a tube of knitted wire mesh on a circular machine. Unlike other mesh-making processes such as weaving, the cylindrical, interlocking-loop structure found in knitted wire mesh gives it tremendous flexibility and strength. Whereas woven wire mesh is locked into a rigid, square pattern and does not tolerate some types of motion, knitted wire mesh's interlocking-loops move with each other, giving it unique flexibility.

## Value Added Knitted Wire Mesh Products

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After it is produced, knitted wire mesh can be processed in a number of different ways. For some applications, such as catalytic converter knitted wire mesh supports, flattening mesh to a specific thickness and then crimping it provide a certain amount of spring back and prescribed holding force. For other applications, such as breathers and filters, lengths of knitted wire mesh are pressed into shapes that yield specific densities. Additional finished goods processing include over-knitting (adding an additional layer of knitted wire mesh) and co-knitting (making knitted wire mesh with more than one type of wire).

## **Mechanical and Physical Characteristics of Knitted Wire Mesh**

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In most engineered knitted wire mesh solutions, the key characteristic is compression. This is highly controllable and starts with a wire's physical construction. Alloy selection, a wire's diameter, geometry, temper, surface profile and various knitting options; all of these variables ultimately contribute to how resilient a mesh will be after experiencing operational stress. Because we draw our own wire and design and build our own tooling and equipment ACS is able to control all of these variables with unmatched precision.

## **The Interlocking-Loop Construction of Knitted Wire Mesh**

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Aside from its various finished forms, the biggest advantage of knitted wire mesh is its construction. As mentioned, knitting produces an interlocking-loop pattern. In this configuration, each loop is integrated with its neighbors as each supports the other. When a mesh or mesh element is compressed, stretched or bent, and provided that exertion is not past the material's yield point, the interlocking-loop construction allows the element to spring back to its original form. This resiliency is even apparent in compressed elements as they take the shape of the tool or die they are pressed into and respond to additional stresses (such as in-use loads).

## **Knitted Wire Mesh Materials**

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Because ACS is the world's largest vertically integrated knitted wire mesh manufacturer, we are able to offer a wide variety of alloy options with minimal cost and lead times. The most commonly used alloys are 300 and 400 series stainless steel, carbon steel, galvanized steel, aluminum, copper, tinned-copper, SnCuFe, Inconel and Monel. ACS can produce knitted wire mesh from any material that can be drawn into fine wire.

## **Full Service Engineering**

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ACS is the world leader in engineered knitted wire mesh solutions. From our technical sales staff to our design, applications and production engineers, we have the capability to engineer custom knitted wire mesh for any application and mass produce it with confidence and quality. Additionally, we are the world's largest vertically integrated manufacturer, allowing us to offer knitted wire mesh components at the most competitive prices in the market.