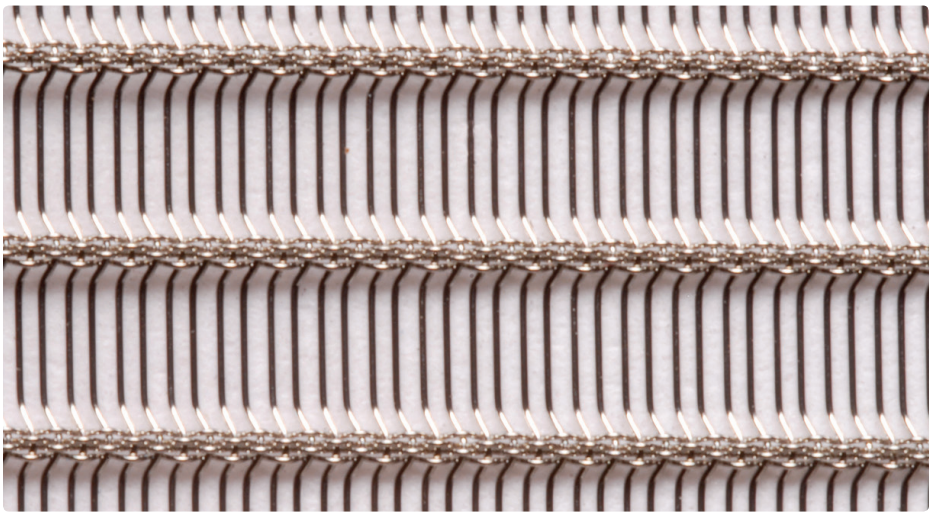
HCR® MagnaFlow Screens

What is HCR® MagnaFlow Technology?

The HCR® is a rectangular mesh weave developed by Cagle Oilfield Services, Inc. As the primary layer in the manufacture of HCR® MagnaFlow flat panel style replacement screens, the HCR® mesh is used on vibratory shakers in the oilfield, mining, and industrial markets. Severe heat and harsh chemicals present in drilling fluids make a perfect laboratory to test the durability and performance of any shaker screen. Prior to its



development, standard industry screens were either short-lived with acceptable solids separation potential; or, the field had the choice of long life and inferior solids separation. The HCR® MagnaFlow results in both superior solids separation and long life. Developed to handle today's demanding field conditions, the HCR® MagnaFlow is the result of over fifty years experience in the oil field.

The HCR® MagnaFlow Difference

- *Much greater opening length to width ratio than any other rectangular meshes on the market.*
- *HCR® mesh features multiple oppositely-woven warp wires which maintain the integrity of the rectangular opening.*
- *The HCR® mesh, because of the long rectangular opening, has approximately twice the conductance of other square mesh triple-layer screens.*

The HCR® MagnaFlow Advantages

- *Finer particle separations than triple-layer screens*
- *Approximately twice the conductance & greater flow capacity*
- *Longer screen life which results in cost savings*

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What is the HCR® MagnaFlow Advantage?

"Finer Particle separations than triple-layer screens." The higher conductance of the HCR® MagnaFlow permits greater fluid throughput and therefore allows the end user to run one or two mesh sizes finer. Finer particle separations prevent excessive wear on process equipment and mud pumps, reduce mud costs and waste disposal costs, and decrease downhole problems. Cleaner drilling fluids and increased rates of penetration (ROP) while drilling means LOWER DRILLING COSTS for both the operator and drilling contractor.

Approximately twice the conductance and greater flow capacity

"Conductance." "Throughput." These terms are widely used throughout the industry and often used interchangeably, describe a screen's ability to allow drilling fluids to pass through. Hence, conductance is a measure of liquid throughput. The HCR® MagnaFlow weave, because of its bundles of wires which lock the long sides of the rectangle into place, provides maximum conductance. The extremely high aspect ratio of the rectangular opening yields greater flow capability than that of standard square mesh screens. Maximum conductance allows for finer separation. Greater solids separation reduces not only abrasion and equipment wear but also results in fewer downhole difficulties. Fewer hole problems equates to reduced costs for the end user.

Longer Screen Life results in cost savings

The HCR® bundled wire effect coupled with our innovative manufacturing process results in a durable screening surface. For the end user, this means fewer screen failures, less downtime, and less overall solids content and ultimately greater equipment life.

Our durable construction methods yield a screen strong enough to endure the toughest of drilling conditions. We routinely receive reports of rigs drilling deep wells, with extremely hot, heavy muds with abrasive solids, that the HCR® MagnaFlow lasts the entire well and is even taken to the next location. Easily, the HCR® MagnaFlow outlasts the competition by about 4 to 1. It was developed with the operator and drilling contractor in mind.

Technical Information

HCR® MagnaFlow Designation	D50 Cutpoint[1,2] (Microns)	Conductance[3] (kd/mm)
85	183	6.02
100	141	5.58
150	105	4.19
170	88	3.53
200	78	2.87
250	61	2.32
325	43	1.40

Notes:

1) Cut points for rounded particles; will be higher for flaky or rod-shaped particles.

2) D50 cut points were measured or estimated from actual sieve tests in the lab, shop, and field.

3) Conductance calculated according to API RP 13E, 3rd Edition.

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