

# MeshRite Screens

## APPLICATIONS

- All oil and gas producers requiring sand control
- Reservoirs with poor grain-size sorting
- Alternative to gravel packing and prepacked screens
- Water producers and injectors requiring sand control
- Long horizontal completions
- Thermal and steam-assisted gravity drainage (SAGD) wells
- Reservoirs with heavy, viscous oil
- Recompletions inside failed liner
- Pump protection, including high-rate ESP wells

## BENEFITS

- Optimized sand control and productivity
- Reduction of inventory (one gauge fits all sands)
- High flow capacity and plugging resistance
- Reduced completion costs
- Fewer workovers and longer well life

## FEATURES

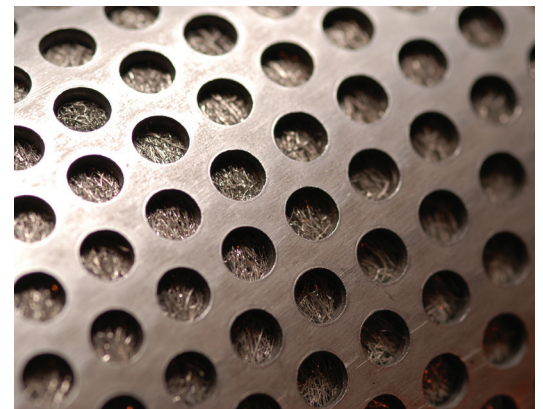
- Large open area (40%) and permeability (400 D)
- Unique 3D filtration to create negative skin
- High mechanical strength
- Rugged and flexible design
- High erosion and corrosion resistance

MeshRite\* sand control screen is a patented and proven technology developed after extensive research and field testing that began in the 1980s.

More than 600,000 ft [182,880 m] of MeshRite screen has been installed worldwide with great success. These screens perform extremely well because of their unique construction and characteristics. The screen consists of perforated basepipe wrapped with a ¼-in-thick layer of highly permeable (>400 D) stainless steel wool. It is protected by a perforated shroud with an open flow area (OFA) of 40%. The compressed wool provides a wide distribution (15 to 600 µm) of angular pores designed to retain only the harmful sand, not the harmless fines (<40 µm) that would restrict fluid flow if trapped. Unlike other screens, MeshRite screens are insensitive to variations in particle size distribution—one gauge fits all sands—which reduces inventory requirements.

The MeshRite medium provides a unique form of 3D filtration, which sorts the oncoming sand to yield a sand-pack permeability significantly higher than that of the formation sand, thereby creating a negative skin at the sand-screen interface. This interface is the most critical zone, where flow velocity through sand (darcy flow) is the highest. Gap-based screens, such as slotted liner or wire-wrapped, plug faster because they provide only 2D filtration. These gap-based screens are sensitive to particle size, and their OFAs are much smaller, thereby increasing flow resistance at the sand-screen interface. Premium and expandable screens have higher OFAs but almost the same 2D filtration. Prepacked screens offer 3D filtration, but they have lower OFAs, with round, uniform pores that plug easily.

The unique combination of high flow capacity and 3D filtration makes MeshRite screens ideal for multiple applications. MeshRite screens are the best stand-alone screen alternative to gravel packs, as proven in a very large heavy-oil field, where a survey of hundreds of wells found MeshRite screens outperforming gravel packs and prepacks.



*MeshRite sand control screens.*

MeshRite screens are ideal for conventional- or heavy-oil production (hot or cold) in long horizontal wells, especially where sand sizes can vary from heel to toe. SAGD wells completed in 1998 with MeshRite screens have required almost no workovers to date. These screens are also popular for pump protection, especially in high-flow-rate wells with ESPs.

# MeshRite Screens

MeshRite screens have proven beneficial inside gravel packs and frac packs because of their high flow capacity and capability of handling a wide range of particle sizes. Although reservoir permeabilities rarely exceed 10 D, MeshRite screens retain a permeability of 50 D. This value, which is similar to that for gravel, minimizes flow resistance, even for viscous crudes.

MeshRite screens are rugged and flexible, with high mechanical strength in all key installation and operation modes: tension, compression, bending, torsion, burst, and collapse. MeshRite screens are provided in 10-ft [3-m],

20-ft [6-m], and 30-ft [9-m] sections wrapped on range 1, 2, and 3 basepipe. MeshRite screens are built on basepipe with diameters ranging from 2% in to 9% in [60.3 mm to 244.5 mm].

MeshRite screen sand retention characteristics depend on wool compression. For most applications ( $D_{50} > 140 \mu\text{m}$ ), standard-compression MeshRite screen is recommended. For finer sands ( $140 < D_{50} < 80 \mu\text{m}$ ), high-compression MeshRite screen is recommended.

Specifications					Mechanical Properties <sup>‡</sup>			
Basepipe Size, in [mm]	Basepipe Weight, <sup>†</sup> lbf/ft [kg/m]	Min. ID, in [mm]	Max. OD, in [mm]	Open Flow Area, %	Max. Tensile Rating, lbf [N]	Max. Torque Rating, lbf.ft [N.m]	Max. Collapse Pressure, psi [MPa]	Max. Burst Pressure, psi [MPa]
2.375 [60.3]	4.6 [6.8]	1.995 [50.7]	3.00 [76.2]	40	48,614 [216,250]	2,225 [3,017]	10,373 [71.52]	9,293 [64.07]
2.875 [73.0]	6.4 [9.5]	2.441 [62.0]	3.50 [88.9]	40	64,558 [287,167]	3,368 [4,567]	9,405 [64.85]	8,804 [60.70]
3.500 [88.9]	9.2 [13.7]	2.992 [76.0]	4.05 [102.9]	40	83,235 [370,250]	5,439 [7,375]	8,035 [55.40]	8,957 [61.76]
4.000 [102]	11.0 [16.4]	3.459 [87.9]	4.55 [115.6]	40	100,602 [447,500]	7,081 [9,600]	7,614 [52.50]	7,178 [49.49]
4.500 [114]	11.6 [17.3]	4.000 [101.6]	5.05 [128.3]	40	104,817 [466,250]	8,543 [11,583]	6,306 [43.48]	5,805 [40.02]
5.000 [127]	15.0 [22.3]	4.408 [112.0]	5.55 [141.0]	40	119,223 [530,333]	10,633 [14,417]	5,730 [39.51]	5,500 [37.92]
5.500 [140]	17.0 [25.3]	4.892 [124.3]	6.05 [153.7]	40	147,418 [655,750]	15,194 [20,601]	5,922 [40.83]	5,829 [40.19]
6.625 [168]	24.0 [35.7]	5.921 [150.4]	7.13 [181.1]	40	211,620 [941,333]	25,912 [35,132]	5,792 [39.93]	5,721 [39.44]
7.000 [178]	26.0 [38.7]	6.276 [159.4]	7.65 [194.3]	40	226,787 [1,008,800]	28,857 [39,125]	5,642 [38.90]	5,638 [38.87]
7.625 [194]	29.7 [44.2]	6.875 [174.6]	8.25 [209.6]	40	230,635 [1,025,917]	32,303 [43,798]	4,801 [33.10]	4,653 [32.08]
8.625 [219]	32.0 [47.6]	7.921 [201.2]	9.25 [235.0]	40	272,014 [1,209,980]	42,403 [57,492]	4,484 [30.92]	4,504 [31.05]
9.625 [244]	40.0 [59.5]	8.835 [224.4]	10.30 [261.6]	40	308,830 [1,373,748]	54,057 [73,292]	4,054 [27.95]	4,067 [28.04]

<sup>†</sup> Tubing weights are examples of what is available.

<sup>‡</sup> The values of all mechanical properties contain an engineering safety factor.

[www.slb.com/completions](http://www.slb.com/completions)

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