

3M™ Ceramic Sand Screens

Technical Data Sheet

Introduction

3M Ceramic Sand Screen is a globally field proven downhole tool which offers an efficient sand control technique for a wide range of reservoir conditions to help you unlock production potential and extend your asset's lifecycle management. 3M Ceramic Sand Screens offer the longevity of sand-free production to help you maximize your asset productivity return at reduced operational risk.

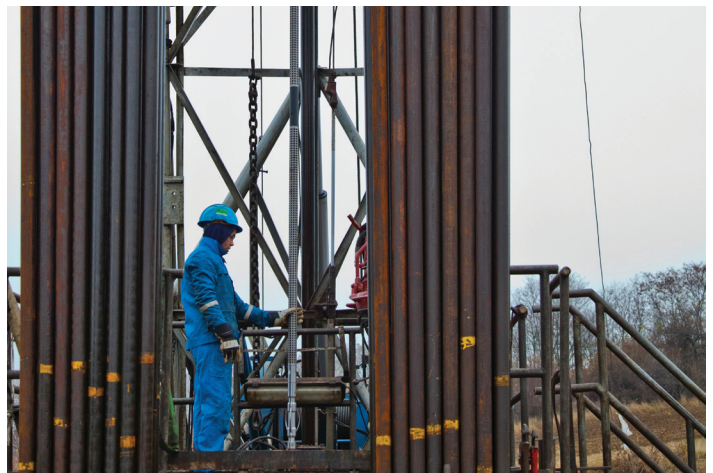
Integrating technical ceramic material into a downhole sand screen system, with the exceptional properties of erosion and corrosion resistance, helps you solve the common metallic sand screen failure mechanism.

As a result, 3M Ceramic Sand Screens offer an excellent service lifetime and help extend stand-alone screen (SAS) applications beyond the industry-known practices based on metallic filter media. 3M Ceramic Sand Screen systems comprise of a flexible stack of full-body ceramic rings with V-shaped or keystone slot opening design assembled on a pre-perforated base pipe secured by endcaps with an external metallic shroud.

3M Ceramic Sand Screens can be used in existing wells and new wells as a standard tool for lower sand control completion deployed on RIG or RIGLESS installation methods. 3M offers a broad range of standard sand screens in L80 & L80Cr13 to used under normal reservoir conditions of 10,000 PSI/150°C and cover common well completion dimensions. Tailored solutions can be discussed to address by application scope outside normal operating reservoir conditions and sour environment

Features

- Solid state ceramic ring technology applied through proven design
- Design validation and quality control in alignment with ISO 17824/ API 19SS where applicable
- NACE MR0175 / ISO 15156 compliant
- Extensive destructive and non-destructive customer testing performed to qualify technology



3M™ Ceramic Sand Screen Material Description (Not for specification purposes.)

Maximum Screen OD	(inch)	2.100	2.441	3.287	3.539	4.287	4.917	5.571 ²	5.496	5.811	7.809	7.809 ²
Base pipe OD ¹	(inch)	1.181	1.575	1.900	2 ⅜	2 ⅞	3.5	3.5	4	4.5	5.5	5.5
Base pipe weight	(lbs/ft)	0.95	1.87	2.75	4.60	6.40	9.20	9.20	9.50	12.60	17.00	17.00
Screen ID	(inch)	1.024	1.339	1.610	1.995	2.441	2.992	2.992	3.548	3.958	4.892	4.892
Connections	API NUE PIN/BOX	1.315	1.9	1.9	2 ⅜	2 ⅞						
	VAM/TOP Tubing						3.5	3.5	4	4.5		
	VAM/TOP HC										5.5	5.5
Metallurgy	Base pipe	316 / 316L			L80CR-13 / L80							
	Metal parts				316 / 316L / S355J2							
Maximum joint length		7.1 ft	7.1 ft	R1	R2	R2	R2	R2	R2	R3	R3	R3
Slot opening	(micron)	150, 200, 250, 300, 350 µm										
Average weight of screen	(lbs/ft)	4.75	6.18	8.05	9.53	12.94	17.17	23.82	19.68	21.75	37.00	41.49
Diameter perforation	(inch)	0.236	0.236	0.236	0.374	0.433	0.433	0.433	0.492	0.492	0.492	0.492
Perforations base pipe	(avg perfs/ft)	52	66	88	88	76	76	76	69	69	69	69
Documentation		According to 3M standard STA7_SC-A-600-00 (Based on ISO 17824 2009 E)										
Minimum collapse pressure ³	(psi)	3500	3500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Minimum burst pressure ³	(psi)	1200	1200	1500	1500	1500	1500	1500	1500	1500	1500	1500
End ring pushoff ⁴	(tons)			17	20	23	26	26	30	32	38	38
DLS	(%/100 ft)	18	18	12	12	12	12	12 ⁵	12	12	12	12 ⁵

¹ Base Pipe Outer Diameter (OD) & Inside Diameter tolerances according to API Spec 5CT

² Additional shroud compaction strength for Open Hole Stand Alone Screen completions

³ Collapse and burst values are tested in alignment to ISO17824 and API19SS with no screen failure/no loss of sand control

⁴ Requirements according to Statoil TR2385, Ver. 2

⁵ Calculated

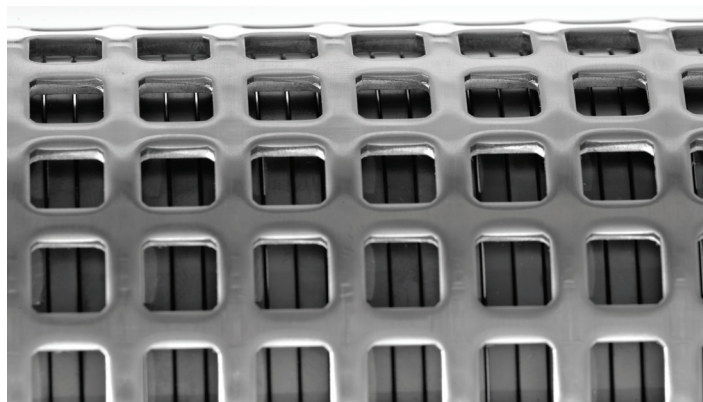
Standard 3M™ Ceramic Sand Screens rated for temperatures up to 150°C

Applications

- For Oil, Gas & Condensate producers in green fields, marginal fields, and brown fields
- Gas storage wells and injector wells
- Open hole, cased hole and through tubing downhole sand control
- All types of well architecture and sidetrack well completions
- Deployable by slick line, E-line, through tubing, coil and pipe conveyance
- Standard portfolio for BHT up to 150°C/ 302°F
- Custom design for HPHT and sour environment
- Screen protection on flow control devices for smart completions
- All types of reservoir sand particle distribution
- High temperature/pressure sand screens
- Proppant flow back in hydraulic frac stimulation

Advantages

- Proven effective erosion resistant sand control in extreme conditions, in terms of flux velocities and impingement velocities on filter media
- High corrosion resistant ceramic filter media maintains slot opening in corrosive fluid environments or cyclic acid stimulations
- A field proven stand-alone screen solution in homogenous to heterogenous geological reservoirs, well sorted to poorly sorted and low to high Fines reservoir particle sand distribution
- Ceramic filter media which can resist hot-spotting conditions enabling effective, stable natural sand pack formation, during multiple well re-openings throughout asset maintenance cycles
- Ease of compatibility with other well equipment to simplify well completion design



Closeup of a 3M™ Ceramic Sand Screen

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