

3M™ Ceramic Sand Screens

Technical Data Sheet

Introduction

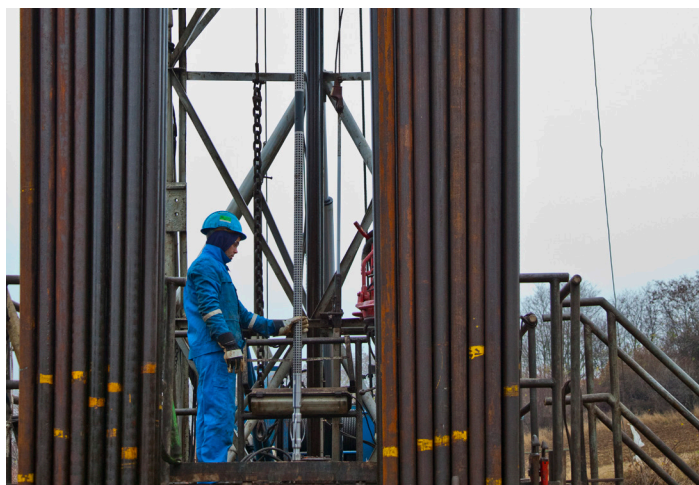
3M Ceramic Sand Screen is a globally field proven downhole tool which offers an efficient sand control technique for a wide range of reservoir conditions to help you unlock production potential and extend your asset's lifecycle management. 3M Ceramic Sand Screens offer the longevity of sand-free production 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)	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)	1.900	2 ³ / ₈	2 ⁷ / ₈	3.5	3.5	4	4.5	5.5	5.5
Base pipe weight	(lbs/ft)	2.75	4.60	6.40	9.20	9.20	9.50	12.60	17.00	17.00
Screen ID	(inch)	1.610	1.995	2.441	2.992	2.992	3.548	3.958	4.892	4.892
Connections	API NUE PIN/BOX	1.9	2 ³ / ₈	2 ⁷ / ₈						
	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		R1	R2	R2	R2	R2	R2	R3	R3	R3
Slot opening	(Micron)	150, 200, 250, 300 and 350 µm								
Average weight of screen	(lbs/ft)	8.05	9.53	12.94	17.17	23.82	19.68	21.75	37.00	41.49
Diameter perforation	(inch)	0.236	0.374	0.433	0.433	0.433	0.492	0.492	0.492	0.492
Perforations base pipe	(avg perfs/ft)	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)	4500	4500	4500	4500	4500	4500	4500	4500	4500
Minimum burst pressure ³	(psi)	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)	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 & 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



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German (Germany) 3M Technical Ceramics

Zweigniederlassung der 3M Deutschland GmbH
Max-Schaidhauf-Str. 25, 87437 Kempten, Germany

Phone +49 (0)831 5618-0
Web 3M.com/ceramicsandscreens

3M Advanced Materials Division

3M Center
St. Paul, MN 55144 USA

Phone 1-800-367-8905

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