

JANUARY 2011 SANDFACE COMPLETIONS GUIDE

**Sand Exclusion Devices, ICD Products and Suppliers
plus Sandface Completions and Gravel/Proppant Data**

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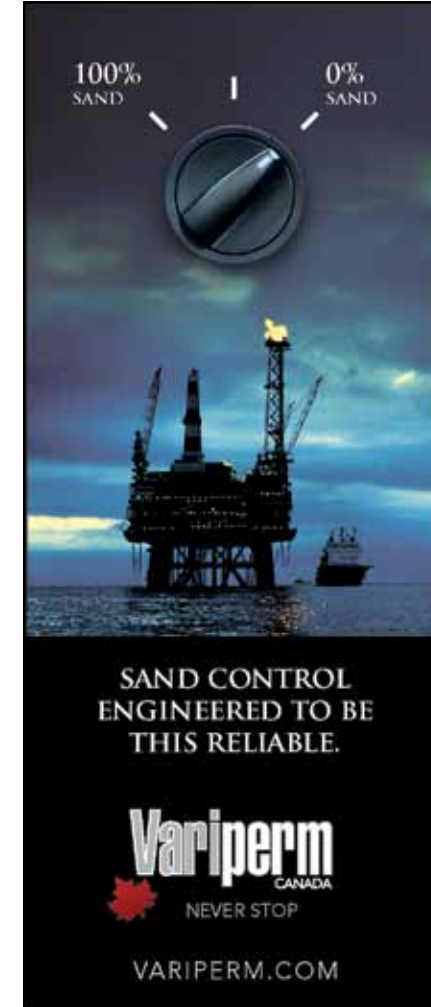
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SAND CONTROL PRODUCTS CLASSIFIED BY MANUFACTURER AND BY TYPE OF DESIGN

Photo Key	Supplier / Product Trade Name	Wire-Wrapped	Pre-Packaged	Screen/Product Type			Inflow Control Device
				Shrouded Metal Mesh	Expandable	Other	
	ABSOLUTE COMPLETION TECHNOLOGIES www.absolutect.com						
	ACCURITE	X					
1	FACSRITE*					BPI	
2	FLUXRITE ICD						P/I
3	MESHRITE*			X			
	PACKRITE		X				
	PREMIUM PORT 3 ICD						P/I
	ALLOY SCREEN WORKS www.alloyscreenworks.com						
	ASW ALPHA ROD BASE	X					
4	ASW DUAL PRE-PACK AND DUAL PRE-PACK/TT		X				
	ASW DUAL PRE-PACK/SC		X				
5	ASW PIONEER AND PIONEER/TT	X					
6	ASW SAND-BAR			X			
	ASW WILDCATTER ALL-WELDED WRAP-ON	X					
	ANTON OIL www.antonoil.com						
7	PRECISE MICRO COMPOSITE			X			
8	PRECISE PUNCHED SLOT					PSS	
9	PRECISE GRAVEL PRE-PACK		X				
	INFLOW CONTROL SCREEN ICD						P/I
	BAKER HUGHES www.bakerhughes.com/sandcontrol						
	BAKERWELD	X					
	BAKERWRAPXP	X					
	EQUALIZER HELIX ICD						P/I
10	EQUALIZER SELECT ICD						P/I
	EXCLUDER2000 AND EXCLUDERDB			X			
	EXPRESS				BPE		
	SELECTFLOW II AND SELECTFLOW MST					FCS	
11	SHAPE MEMORY POLYMER					SMP	
	SLIM-PAKXP						
	SLIM-PAKXP		X				
12	XPRFAC					BPI	
	DELTA SCREENS www.deltascreens.com						
	DELTA DIRECT WRAP-ON	X					
13	DELTA ELITE			X			
14	DELTA PAK		X				
15	DELTA WELD	X					
	G&L SLOTCO www.gl-slotco.com						SL
16	SLOTTED LINERS						
	HALLIBURTON www.halliburton.com						
	ALL-WELD	X					
	ENHANCED LOW-PROFILE		X				
	EQUIFLOW ICD						P/I
	PETROGUARD ADVANCED MESH			X			
17	PETROGUARD MESH			X			
18	PETROGUARD SWELL					SFE	
19	PETROGUARD WRAP (DIRECT WRAP)	X					
	POROMAX			X			
	PREMIUM LOW-PROFILE		X				
	REGENT ENERGY GROUP www.regentenergygroup.com						SL
20	REGENT SLOTTING						
	SCHLUMBERGER www.slb.com/transcend						
21	ENDURE/ASSURE				X		
	EXTRACTOR	X					BPI
	FACSRITE*						
	LINESLOT/LITESLOT DIRECT WRAP	X					
	MESHRITE*						
	PACKRITE		X	X			
22	RESFLOW ICD						P
23	RESINJECT ICD						I
	TEJAS COMPLETION SOLUTIONS www.tejascs.com						
	TCS ICD						P/I
24	TCS ON/OFF ICD						P/I
25	TRUMESH			X			
26	TRUWELD	X					
	TRUWRAP	X					
	TUBULAR PERFORATING MANUFACTURING www.tpmild.com				X		
27	UNISCREEN						
	VARIPERM www.variperm.com						
28	WEDGE WIRE 904		X				
29	WIRE WRAPPED PRE-PACKED 906		X				
30	WIRE WRAPPED THIN-PACKED 907	X					
	WEATHERFORD www.weatherford.com						
31	DURA-GRIP DIRECT WRAP	X					
32	ESS					BPE	
	EXCELFLO			X			
33	FLOREG ICD			X			P/I
	MAXFLO						
	MICRO-PAK		X				
	SUPERFLO SLIP-ON JACKET	X					
	SUPERWELD SLIP-ON JACKET	X					
	ULTRA-GRIP AND ULTRA-GRIP HD DIRECT WRAP	X					

NOTES: BPE = Base Pipe Expansion, BPI = Bead Pack Insert, FCS = Flow Control Screen, I = Injection, P = Production, PSS = Punched Slot Screen, SC = Special Clearance, SFE = Swellable Filter Expansion, SL = Slotted Liners, SMP = Shaped Memory Polymer, TT = Thru-Tubing. Most manufacturers provide a wide range of screen sizes including slimhole sizes for thru-tubing applications.

*Facsrite and Meshrite are exclusive to Schlumberger.



SAND CONTROL PRODUCTS



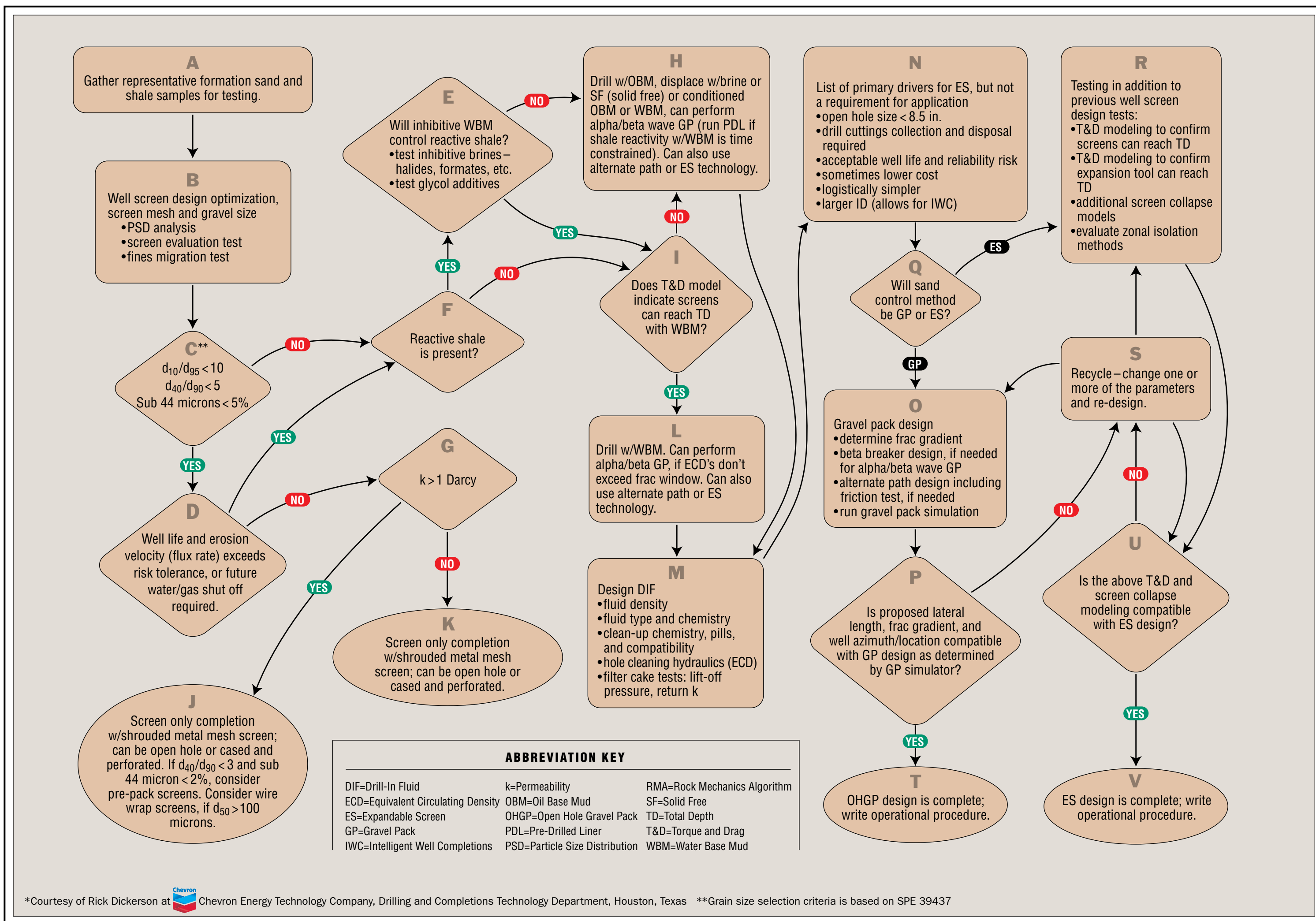
COMMON WOVEN MESH USED IN SHROUDED SAND SCREENS

Micron Rating	Weave Type	Weave Count	Thickness (in./mm)
85-110	Plain Dutch Weave	30 x 150	0.023/0.59
125-145	Plain Dutch Weave	24 x 110	0.034/0.87
175-225	Twill Dutch Weave	18 x 210	0.037/0.95
260-315	Reverse Twill Dutch Weave	132 x 16	0.046/1.16
280-330	Plain Dutch Weave	12 x 64	0.05/1.44

NOTES: **Plain Dutch Weave:** woven in plain over under pattern of weft wires (warp wires are typically heavier and larger in diameter than weft wires).
Twill Weave: similar to Plain Dutch Weave except woven in a twill style over 2 wires and under 2 wires.
Reverse Weave: warp and weft wires are reversed.



OPEN HOLE SANDFACE COMPLETION DESIGN FLOW CHART*



REQUIREMENTS AND GUIDELINES FOR SAND CONTROL SCREENS

ISO 17824:2009 Standard (www.iso.org/iso/catalogue_detail.htm?csnumber=44632)
Provides the requirements and guidelines for sand control screens for use in the petroleum and natural gas industries.
Included:
The requirements for design, design validation, functional evaluation, manufacturing, storage and transport. There are three grades of design validation and quality requirements. Includes test methods to determine when screens lose sand control when subjected to a hydraulic collapse or burst load.
Requirements Apply To:
• Wire-wrap screens
• Pre-pack screens
• Metal-mesh screens
Outside the Scope of the Standard:
• Centralizers or bull plugs
• Downhole sensors and selective isolation devices
• End connections of the base pipe
• Expandable sand screens
• Inflow control devices
• Screen filtration performance criteria
• Shunt screen technology
• Slotted liners or tubing
• Test methods or analysis for sand retention efficiency

TYPES OF GRAVEL/PROPPANT

Class	Type	Examples
Natural	Sand	Ottawa, Jordan, England, Brady, etc.—SG 2.65
Natural Modified	Sand	Resin-coated, curable (sand flowback problems) and pre-cured (enhanced strength)—SG 2.60
Man-made Materials	Ceramics, modified ceramics and non-ceramics	Ultra-light weight (ULWP)—SG <2.0 Light weight (LWP)—SG 2.70 Intermediate (ISP)—SG 3.20
Natural Modified	High-strength aluminum oxide	Sintered Bauxite (strongest)—SG 3.49

NOTE: SG=Apparent Specific Gravity

SCREEN GAUGE USED WITH VARIOUS GRAVEL/PROPPANT

Gravel Size (US Mesh)	Gravel Size (in.)	Screen Opening (micron)	Screen Gauge
40/60	0.0165 - 0.0098	0.008 ~200	8
30/50	0.0230 - 0.0120	0.010 ~250	10
20/40	0.0330 - 0.0165	0.012 ~300	12
16/30	0.0470 - 0.0230	0.016 ~400	16
12/20	0.0660 - 0.0330	0.020 ~500	20
8/12	0.0940 - 0.0470	0.028 ~700	28

