

Oilfield Challenges SAND

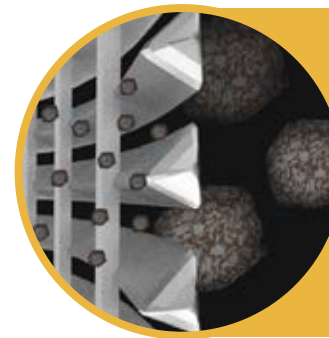


Sand in the well damages downhole hardware and restricts efficient fluid pumping operations.

FAMILIARITY WITH TYPES OF SAND

- *Formation sand is generally smaller and irregular in size.*
- *Frac sand is comparably larger, very uniform in size, and more abrasive.*

Slot Size	Description	Plugging Potential
0.006 - 0.008	Fine Formation Sand	High
0.012	Med Formation Sand and 20-40 Frac Sand	Medium
0.015	Large Formation Sand and 16-30 Frac Sand	Medium
0.018 - 0.020	Small Trash & 12-20 Frac Sand	Low
0.025 - 0.035	Med Trash - No Sand	Medium
0.050	Large Trash - No Sand - Large Iron Particles	Medium
0.075	Large Trash - No Sand - Large Iron Particles	Low



Slot size is the opening between the V-wires. This space indicates filtration size and type.

It is not common for tubing screens to plug when the OSI APPROACH is followed. OSI conducts solids and sieves wells analysis to properly size slots, tool lengths, & stages of filtration for maximum pump operations.

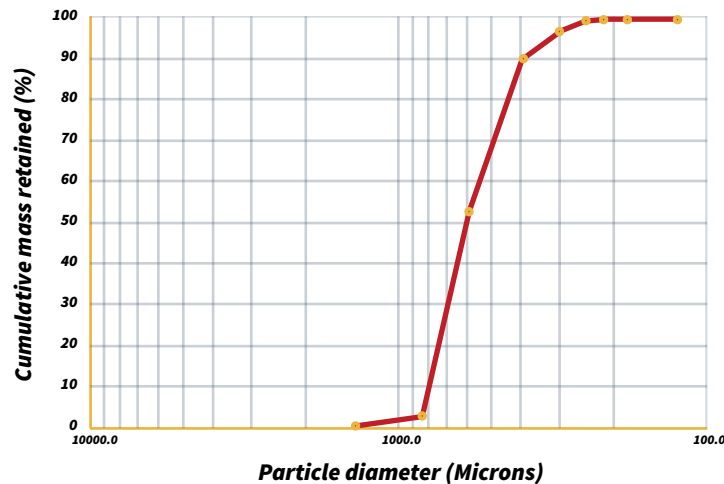
Granulometric Distribution

The particle size distribution of a sample of sand, is the graphical representation of the results of an analysis to count or assess the particle size distribution (gradation) of a granular material in the laboratory.

In the case of sieve analysis, the particles are retained for each mesh according to the size of the opening.

This procedure is performed to identify the percentage by weight which has been retained by each sieve, which makes relative to a certain particle size.

Slot	Size (Microns)	US. Mesh Sieves	Retained Weight (gr)	Retained Weight (%)	Cumulative % (gr)
50	1,410	14	0.2	0.2	0.2
30	841	20	0.4	0.4	0.4
20	595	30	2	2	2.61
15	400	40	53.3	53.41	56.01
12	297	50	21.6	21.64	77.66
10	250	60	12.8	12.83	90.48
8	210	70	6.4	6.41	96.89
7	177	80	2.4	2.4	99.3
Pan	Pan	Pan	0.7	0.7	100
Total Weight =			99.8	100	100



The cumulative weight percentage is illustrated in a semi-logarithmic graph where the abscissa corresponds to grain size values in logarithmic scale and full scale with the ordered values accumulated weight percentage of sand sample.