

F L U I D E D E S I G N

PIPE ROUGHNESS VALUES
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Pipe absolute roughness values (RMS)		
Material	Absolute roughness (in x 10 ⁻³)	Absolute roughness (micron or m x 10 ⁻⁶)
Riveted steel ¹	36-360	915-9150
Concrete ¹	12-120	305-3050
Ductile iron ²	102	2591
Wood stave ¹	3.6-7.2	91-183
Galvanized iron ¹	6	152
Cast iron – asphalt dipped ¹	4.8	122
Cast iron uncoated ¹	10	254
Carbon steel or wrought iron ¹	1.8	45
Stainless steel ¹	1.8	45
Fiberglass ³	0.2	5
Drawn tubing – glass, brass, plastic ¹	0.06	1.5
Copper ²	0.06	1.5
Aluminium ²	0.06	1.5
PVC ²	0.06	1.5
Red brass ²	0.06	1.5

- Sources :
1. Cameron hydraulic data Book
 2. Engineered Software's PIPE-FLO software www.engineered-software.com
 3. Fiberglass Pipe Handbook, SPI Composites Institute