

COMPARISON BETWEEN MINIMUM RING STIFFNESS CONSTANT AND PIPE STIFFNESS FOR PS 46

Some plastic pipe manufacturers rate the stiffness of their pipes by Ring Stiffness Constant (RSC), rather than the customary Pipe Stiffness (PS) method. Since the numbers appear to be similar, this causes confusion among engineers, who may assume the two methods are interchangeable when in fact they are not. The formula for converting from Pipe Stiffness to Ring Stiffness Constant is as follows:

$$RSC = \frac{PS \times D_m \text{ inches}}{6.67}$$

Or

$$PS = \frac{C \times 8.337 RSC}{D_m}$$

Where:

C = 0.8 for HDPE

D_m = Mean Diameter

The following table indicates the calculated RSC for a Pipe Stiffness of 46 psi, as well as showing a specified RSC:

PIPE STIFFNESS -- 46 psi

Diameter	Calculated RSC	Minimum Specified RSC*
18"	130	144
24"	174	193
30"	217	241
36"	261	290
42"	304	338
48"	348	387
54"	391	434
60"	435	483
66"	478	531
72"	522	580
78"	565	628
84"	609	677
90"	652	724
96"	696	733

*ASTM F 894, Table 2, allows for a 10% ± variance. The minimum specified RSC values have been adjusted to compensate for the negative variance.

The following table lists the actual Pipe Stiffness for pipes rated as RSC 40, RSC 63, RSC 100, and RSC 160:

***PIPE STIFFNESS (psi) (PS)**

PIPE I.D.	RSC = 40	RSC = 63	RSC = 100	RSC = 160
18"	13.2	20.8	33.0	52.7
24"	9.9	15.6	24.8	39.6
30"	8.0	12.5	19.9	31.7
36"	6.6	10.4	16.6	26.5
42"	5.7	9.0	14.2	22.7
48"	5.0	7.8	12.4	19.9
54"	4.4	7.0	11.0	17.7
60"	4.0	6.3	10.0	15.9
66"	3.6	5.7	9.0	14.4
72"	3.3	5.2	8.3	13.2
78"	3.1	4.9	7.6	12.2
84"	2.8	4.5	7.1	11.3
90"	2.7	4.2	6.6	10.6
96"	2.5	3.9	6.2	9.9

*ASTM F 894, Table 2, allows for a 10% ± variance. The PS values have been adjusted to compensate for the negative variance.