

1607 Elastomeric Compression Joint Seal Compression–Deflection Test Method

1. Perform the compression test using a machine meeting the requirements of ASTM E 4 and operating at a speed of $\frac{1}{2}$ in [12 mm] per min. Use a machine capable of determining the load-to-cause deflection to the specified width to the nearest $\frac{1}{2}$ lb [0.2 kg] and determining when the specified compressed width of the specimen, to the nearest 0.01 in [0.25 mm] has been reached
2. Test the specimens at 73° F [23° C] $\pm 5^{\circ}\text{ F}$ [2° C]. Maintain the specimens at 73° F [23° C] $\pm 5^{\circ}\text{ F}$ [2° C] for at least 30 min before testing.
3. Measure and record the test specimen length to the nearest 0.1 in [2 mm]. Place the specimen between the platens of the testing machine and ensure the load is applied to the sides of the specimen. Ensure the top, bottom, and the ends of the specimen can deform unrestricted during the loading cycle. Place waterproof, 400 grit sandpaper slightly larger than the specimen between the rubber surfaces and the testing machine platens to resist slippage of the rubber at the contact surfaces
4. Apply the load at the rate of $\frac{1}{2}$ in [12 mm] per min until reaching the test-width for the minimum pressure specified in Table 1. After reaching the minimum pressure, immediately begin releasing the load at the same rate. Repeat this loading cycle a second time. Reapply the load at the same rate until reaching the test-width for minimum pressure specified in Table 1. Read and record the load. Continue loading the specimen until reaching the test-width for maximum pressure as specified in Table 1. Hold at this width for 30 s, then read and record the load.

Calculate the compression-deflection force using the following equation:

Table 1
Specified Specimen Size and Test Deflections

Nominal width of seal, in [mm]	Specimen length, 0.2 in [5 mm]	Test width for minimum pressure, in [mm]	Test Width for maximum pressure, in [mm]
13/16 [20]	4 [100]	0.65 [16.5]	0.41 [10]
1 ¼ [32]	4 [100]	1.00 [25.0]	0.44 [11]
2 [50]	6 [150]	1.62 [41]	0.69 [17]
3 ½ [90]	6 [150]	3.00 [75.0]	1.38 [35]