

**FLOW CHARACTERISTICS OF PROTECTO 401™
 CERAMIC EPOXY LINED DUCTILE IRON PIPE**

The inside diameter of ductile iron pipe averages 8.25% larger than the inside diameter of most other pipes. The calculations for flow should include the larger inside diameters of ductile iron pipe.

The Manning "n" and the Hazen-Williams "C Factor" for Protecto 401™ Ceramic Epoxy lined ductile iron pipe is equal to or better than cement mortar lined ductile pipe which is:

1. Manning "n" (open channel or partially-full sewers) = .011
2. C-Factor (full-flowing pressure pipe) = 140

The inside diameter of ductile iron pipe lined with the standard thickness (0.040 in. nominal) of Protecto 401™ Ceramic Epoxy is listed below:

Size (in.)	Outside* Diameter (in.)	Thickness Class 50 Inside* Diameter (in.)	Thickness Class 52 Inside* Diameter (in.)
6	6.90	6.32	6.20
8	9.05	8.43	8.31
10	11.10	10.44	10.32
12	13.20	12.50	12.38
14	15.30	14.56	14.44
16	17.40	16.64	16.52
18	19.50	18.72	18.60
20	21.60	20.80	20.68
24	25.80	24.96	24.84
30	32.00	31.14	30.98
36	38.30	37.36	37.16
42	44.50	43.48	43.24
48	50.80	49.70	49.42
54	57.56	56.34	56.02

***NOTE:** Tolerances per ANSI/AWWAC151/A21.51