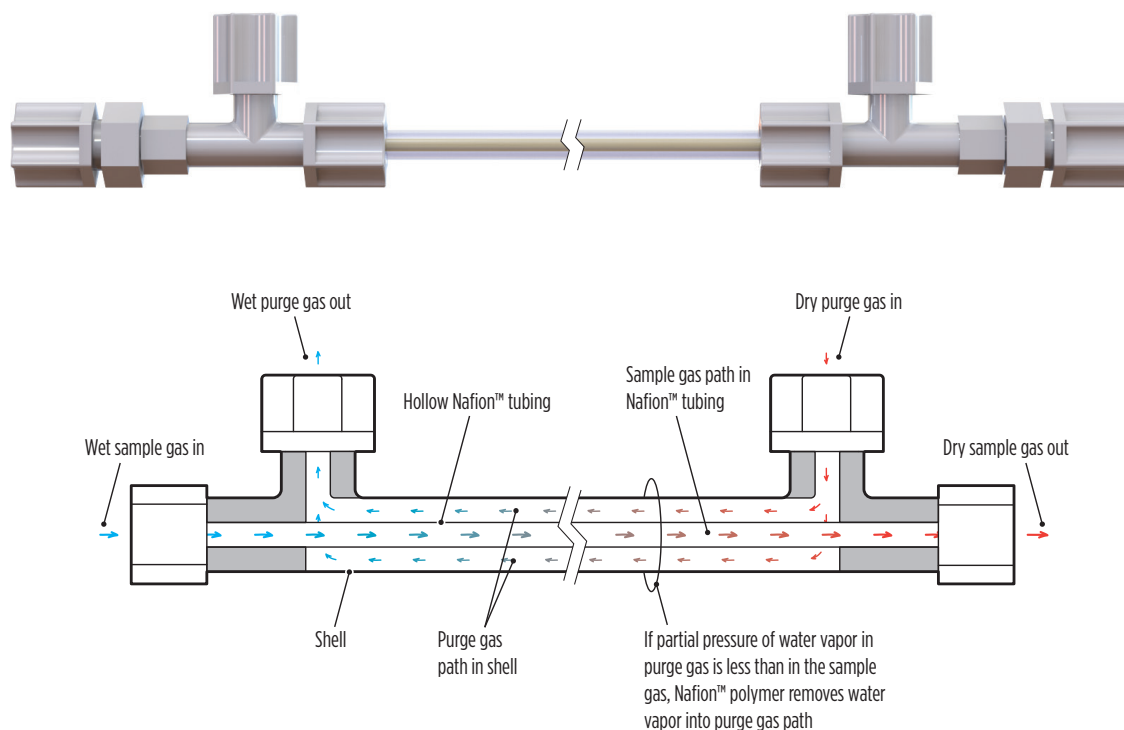


MD-Series Gas Dryers

Powered by Nafion™ tubing, Perma Pure gas dryers selectively remove water from a gas sample. This **selectivity for water vapor** allows our dryers to **remove more moisture than other gas drying solutions**, while **keeping analytes in the gas sample**.

Monotube Dryer Series (MD-Series) gas dryers contain a single Nafion™ tube. The MD-Series can dry a gas to humidity levels **as low as -40 °C dew point** and is ideal for applications with flow rates **up to 4 lpm**.



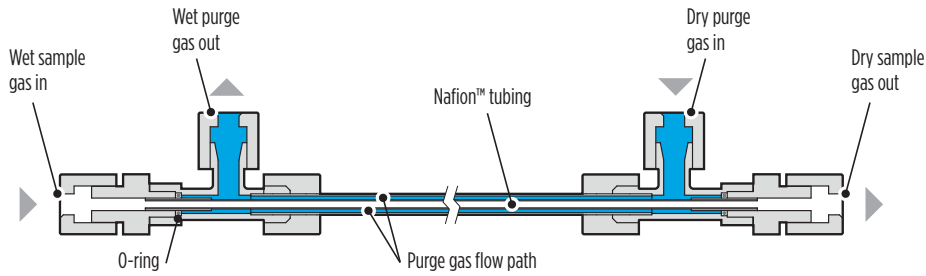
HOW IT WORKS

Flow your sample gas **through** the Nafion™ tubing and flow a dry purge gas **outside** the Nafion™ tubing, countercurrent to the sample gas flow.

While the partial pressure of water in the purge gas is less than in the sample gas, Nafion™ polymer will selectively transfer water and water vapor from the sample gas across its membrane and into the purge gas flow, yielding a drier sample gas at the sample gas output.

DISCOVER YOUR SOLUTION

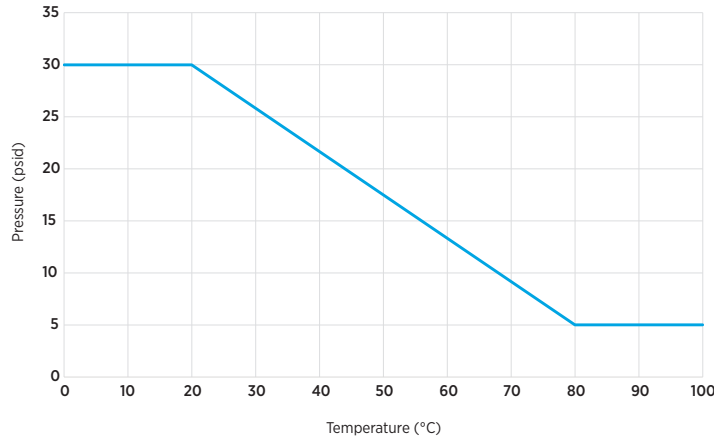
Let us help solve your moisture control problems



SPECIFICATIONS

Nafion™ Tubing Outer Diameter Options	0.050" (MD-050), 0.070" (MD-070), 0.110" (MD-110)
Max. Flow Rate	0.2 lpm (MD-050), 4 lpm (MD-070), 4 lpm (MD-110)
Housing Materials Available	Polypropylene, Fluorocarbon, or Stainless Steel
Max. Operating Temperatures	80 °C for polypropylene housing, 100 °C for fluorocarbon or stainless steel housing
Sample Gas Port – End Fitting Options	Port 1/16" Compression (MD-050, Stainless Steel Only) Port 1/8" Compression (All models) Port 1/4" Compression (MD-070, MD-110)
Purge Gas Port – End Fitting Size	Port 1/8" Compression (MD-050) Port 1/4" Compression (MD-070, MD-110)
Purge Gas Recommendations	<ul style="list-style-type: none"> • Purge gas must be drier than sample gas • Purge gas can be instrument quality air (max -40 °C dew point) or nitrogen • Purge gas should flow at 2 or 3 times the sample rate <p><small>*Alternate methods to using a purge gas are possible, such as recycling the dry sample gas, or pulling vacuum through the purge gas flow path. See website for more information.</small></p>
Coiled Configurations	Certain models are shipped coiled based on length. See page 4 for nominal diameters. Contact us for custom coiled solutions.

Max Pressure Differential on Nafion™ Tubing



psid (psi-differential) = [sample gas pressure (psig) at inlet] - [sample gas pressure at outlet (psig)]

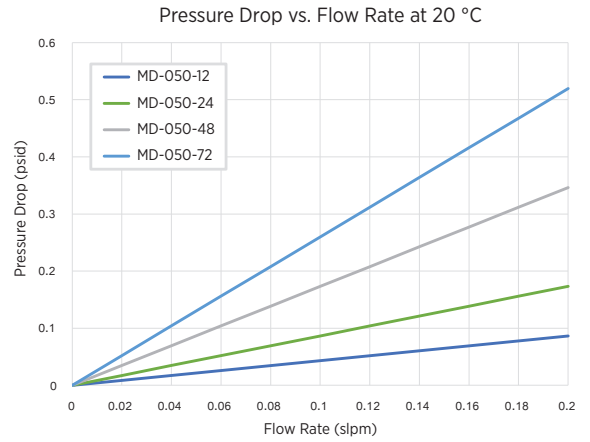
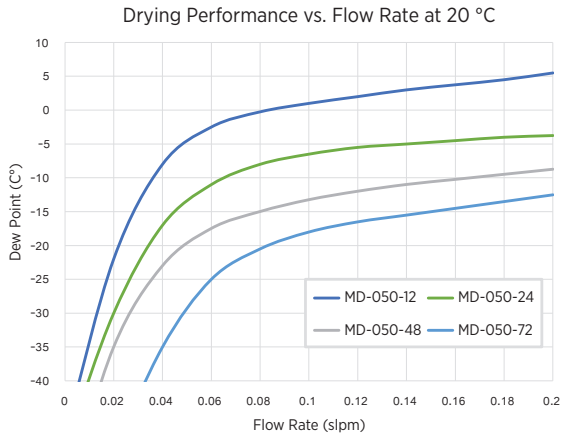


◀ LEARN MORE ABOUT NAFION™ POLYMER

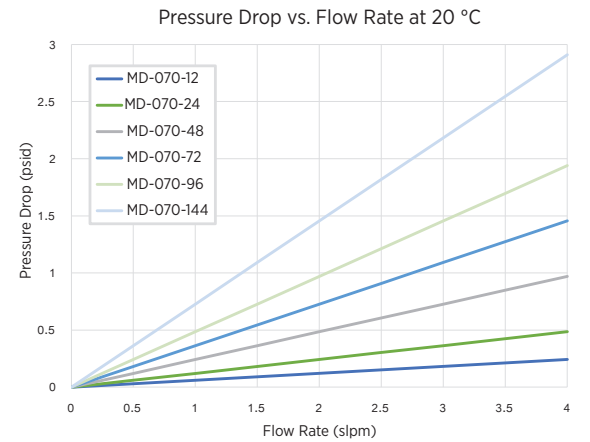
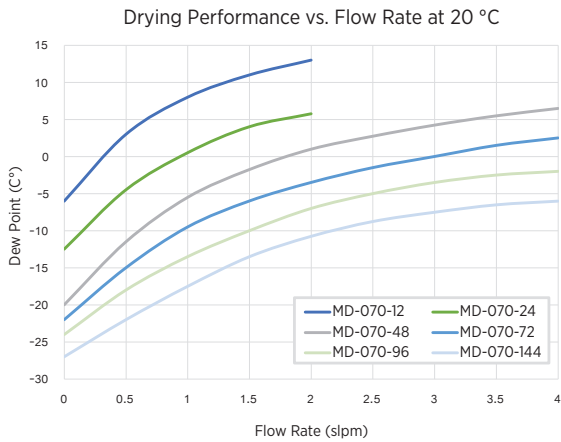
Visit our website to learn more about Nafion™ Polymer's chemical composition and selectivity.

PERFORMANCE BY MODEL

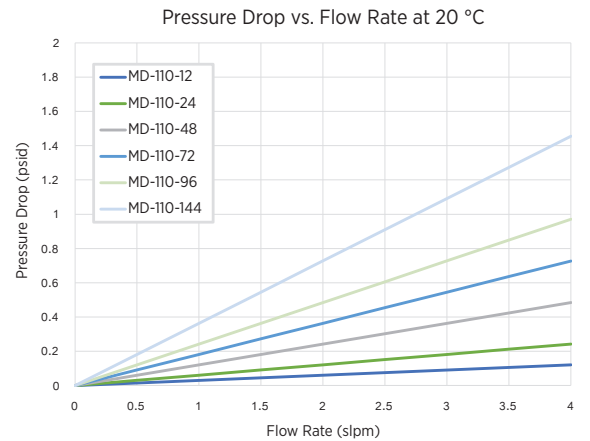
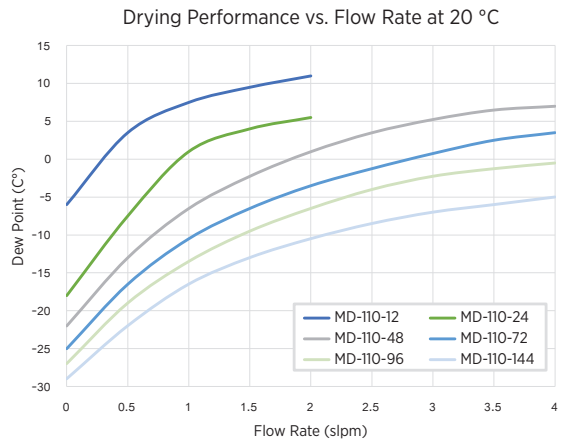
MD-050 Model: Flow rates up to 0.2 lpm



MD-070 Model: Flow rates up to 4 lpm



MD-110 Model: Flow rates up to 4 lpm



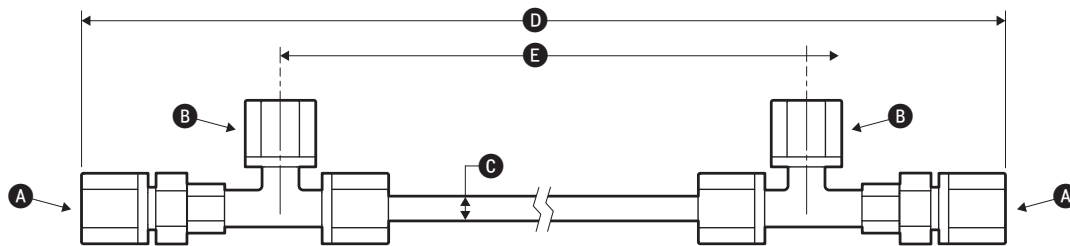
The performance curves above are based upon a sample inlet dew point of 20°C and purge flow rate of 2x the sample flow rate. Consult our team for operation with sample gases condensing above ambient temperature.
 psid (psi-differential) = [sample gas pressure at inlet (psig)] - [sample gas pressure at outlet (psig)], based on atmospheric pressure at outlet.

MATERIAL OPTIONS

MATERIAL CODE	MATERIALS FOR END FITTINGS AND SHELL
P	Molded polypropylene fittings, polypropylene shell
F	Molded fluorocarbon fittings, fluorocarbon shell
FP	Molded fluorocarbon fittings, polypropylene shell
S	Stainless steel fittings, stainless steel shell
FS	Molded fluorocarbon fittings, stainless steel shell

END FITTING CODE	MATERIALS FOR END FITTINGS
1	1/16" Compression (MD-050, Material codes S and FS only)
2	1/8" Compression (All models)
3	1/4" Compression (MD-070 and MD-110 only)

PHYSICAL DIMENSIONS BY MODEL



MODEL	NOMINAL COIL DIAMETER*	MATERIAL CODES: F, P, FP					MATERIAL CODES: S, FS				
		A	B	C	D	E	A	B	C	D	E
MD-050-12	--	1/8"	1/8"	1/8"	14 3/8"	11 1/8"	1/8" or 1/16"	1/8"	1/8"	13 5/8"	11 1/8"
MD-050-24	--	1/8"	1/8"	1/8"	26 3/8"	23 1/8"	1/8" or 1/16"	1/8"	1/8"	25 5/8"	23 1/8"
MD-050-48	4"	1/8"	1/8"	1/8"	50 3/8"	47 1/8"	1/8" or 1/16"	1/8"	1/8"	49 5/8"	47 1/8"
MD-050-72	4"	1/8"	1/8"	1/8"	74 3/8"	71 1/8"	1/8" or 1/16"	1/8"	1/8"	73 5/8"	71 1/8"
MD-070-12	--	1/4" or 1/8"	1/4"	1/4"	14 1/4"	10"	1/4" or 1/8"	1/4"	1/4"	13 3/4"	10 3/4"
MD-070-24	--	1/4" or 1/8"	1/4"	1/4"	26 1/4"	22"	1/4" or 1/8"	1/4"	1/4"	25 3/4"	22 3/4"
MD-070-48	7"	1/4" or 1/8"	1/4"	1/4"	50 1/4"	46"	1/4" or 1/8"	1/4"	1/4"	49 3/4"	46 3/4"
MD-070-72	7"	1/4" or 1/8"	1/4"	1/4"	74 1/4"	70"	1/4" or 1/8"	1/4"	1/4"	73 3/4"	70 3/4"
MD-070-96	7"	1/4" or 1/8"	1/4"	1/4"	98 1/4"	94"	1/4" or 1/8"	1/4"	1/4"	97 3/4"	94 3/4"
MD-070-144	7"	1/4" or 1/8"	1/4"	1/4"	146 1/4"	142"	1/4" or 1/8"	1/4"	1/4"	145 3/4"	142 3/4"
MD-110-12	--	1/4" or 1/8"	1/4"	1/4"	14 1/4"	10"	1/4" or 1/8"	1/4"	1/4"	13 3/4"	10 3/4"
MD-110-24	--	1/4" or 1/8"	1/4"	1/4"	26 1/4"	22"	1/4" or 1/8"	1/4"	1/4"	25 3/4"	22 3/4"
MD-110-48	7"	1/4" or 1/8"	1/4"	1/4"	50 1/4"	46"	1/4" or 1/8"	1/4"	1/4"	49 3/4"	46 3/4"
MD-110-72	7"	1/4" or 1/8"	1/4"	1/4"	74 1/4"	70"	1/4" or 1/8"	1/4"	1/4"	73 3/4"	70 3/4"
MD-110-96	7"	1/4" or 1/8"	1/4"	1/4"	98 1/4"	94"	1/4" or 1/8"	1/4"	1/4"	97 3/4"	94 3/4"
MD-110-144	7"	1/4" or 1/8"	1/4"	1/4"	146 1/4"	142"	1/4" or 1/8"	1/4"	1/4"	145 3/4"	142 3/4"