

Carbohydrate and Organic Acid Analysis

Retention Times of Sugars, Polyols, and Organic Acids on Transgenomic Columns

Columns Primarily for Carbohydrates					Columns Primarily for Organic Acids					
Compound	CHO620	87N	87C+CaPlus	87P	CHO682	87K	87H	ION300	ORH801	Compound
Nitrate	4.50	5.70	7.37	8.40	10.37	6.40	6.85	-----	-----	Nitrate
Maltoheptose	4.66	5.84	7.35	8.52	11.81	6.61	6.96	-----	-----	Maltoheptose
Maltohexose	4.78	5.94	7.45	8.80	13.31	6.74	7.00	-----	-----	Maltohexose
Maltopentose	5.00	6.11	7.60	9.34	13.15	7.02	7.10	-----	-----	Maltopentose
Amiprylose	-----	5.74	7.75	9.46	Ng	6.42	6.86	-----	-----	Amiprylose
Styachyose	5.94	6.33	7.85	11.84	13.48	6.32	6.94	-----	-----	Styachyose
Maltotetrose	5.37	6.42	7.87	9.84	14.14	7.02	7.30	-----	-----	Maltotetrose
Melezitose	5.78	6.81	8.27	13.08	13.92	7.82	-----	-----	-----	Melezitose
Raffinose	6.56	6.88	8.31	10.22	14.47	7.92	-----	-----	-----	Raffinose
Maltotriose	6.68	6.98	8.35	10.54	15.24	8.16	7.72	10.28	4.23	Maltotriose
Cellobiose	7.36	7.90	9.01	10.98	15.65	9.26	8.43	-----	-----	Cellobiose
Trehalose	7.32	7.85	9.14	11.20	16.05	9.02	8.64	-----	-----	Trehalose
Sucrose	7.48	7.99	9.18	11.10	15.77	9.11	-----	-----	-----	Sucrose
Maltose	7.59	8.08	9.24	11.54	16.68	9.48	8.57	11.52	4.74	Maltose
Melibiose	7.67	8.19	9.43	11.74	17.70	9.72	8.56	-----	-----	Melibiose
Lactose	7.84	8.18	9.51	11.84	17.44	9.63	8.77	11.86	4.88	Lactose
Lactulose	8.53	8.48	10.24	13.24	20.77	10.08	9.00	12.41	5.10	Lactulose
Glucose	9.36	10.72	11.24	13.38	19.21	12.55	10.57	14.18	5.83	Glucose
Lactitol	9.16	8.45	12.24	19.50	33.30	9.34	9.26	-----	-----	Lactitol
Xylose	10.31	11.77	12.39	14.42	20.71	13.69	11.32	-----	-----	Xylose
Maltitol	9.15	8.28	12.29	17.76	30.45	9.06	9.00	-----	-----	Maltitol
Galactose	10.29	11.44	13.89	15.16	22.39	13.36	11.12	15.32	6.31	Galactose
Sorbose	10.22	11.08	12.93	15.24	22.45	12.66	-----	-----	-----	Sorbose
Mannose	10.51	11.57	12.83	16.76	25.57	13.74	11.13	-----	-----	Mannose
Rhamnose	10.41	11.08	12.93	15.26	22.63	12.83	11.94	-----	-----	Rhamnose
Fructose	11.40	11.61	13.70	16.96	25.91	13.31	11.25	15.71	6.46	Fructose
Fucose	11.33	12.34	13.89	16.44	24.23	14.39	12.80	17.89	7.35	Fucose
Arabinose	11.63	12.64	14.00	16.32	24.02	14.72	12.08	17.02	6.99	Arabinose
Myo-inositol	11.83	12.48	14.34	20.06	35.65	14.08	11.02	-----	-----	Myo-inositol
Digitoxose	-----	12.41	14.27	-----	21.02	-----	-----	-----	-----	Digitoxose
Ribitol	11.95	11.26	15.62	20.44	30.79	11.84	12.44	-----	-----	Ribitol
Tagatose	-----	11.86	16.53	-----	Ng	-----	-----	-----	-----	Tagatose
Mannitol	12.76	10.81	17.89	24.98	40.10	11.42	11.66	15.85	6.52	Mannitol
Arabitol	13.23	11.64	18.43	25.24	39.89	12.10	12.65	-----	-----	Arabitol
Xylitol	14.61	12.16	22.00	31.10	51.22	12.64	12.82	-----	-----	Xylitol
Galactitol	14.41	11.15	20.53	31.60	52.50	11.61	11.08	-----	-----	Galactitol
Sorbitol	14.91	11.32	21.41	33.40	56.63	11.86	11.77	16.17	-----	Sorbitol
Ribose	16.46	11.52	21.99	28.59	55.00	14.16	-----	-----	-----	Ribose
Glucuronic Acid	-----	-----	-----	-----	-----	-----	8.10	11.99	4.87	Glucuronic Acid
Galacturonic Acid	-----	-----	-----	-----	-----	-----	-----	13.23	5.44	Galacturonic Acid
Oxalic Acid	-----	-----	-----	-----	-----	-----	6.35	9.30	3.89	Oxalic acid
Maleic Acid	-----	-----	-----	-----	-----	-----	7.21	10.92	4.49	Maleic Acid
Citric Acid	-----	-----	-----	-----	-----	-----	8.03	12.21	5.02	Citric Acid
IsoCitric Acid	-----	-----	-----	-----	-----	-----	8.25	12.48	5.13	IsoCitric Acid
Tartaric Acid	-----	-----	-----	-----	-----	-----	8.68	12.91	5.31	Tartaric Acid
Malonic Acid	-----	-----	-----	-----	-----	-----	8.55	14.32	5.89	Malonic Acid
Malic Acid	-----	-----	-----	-----	-----	-----	10.04	15.21	6.25	Malic Acid
Succinic Acid	-----	-----	-----	-----	-----	-----	13.11	19.85	8.16	Succinic Acid
Lactic Acid	-----	-----	-----	-----	-----	-----	13.51	20.43	8.41	Lactic Acid
Formic Acid	-----	-----	-----	-----	-----	-----	14.74	22.32	9.13	Formic Acid
Fumaric Acid	-----	-----	-----	-----	-----	-----	15.40	22.21	9.18	Fumaric Acid
Acetic Acid	-----	-----	-----	-----	-----	-----	16.54	25.05	10.30	Acetic Acid
Adipic Acid	-----	-----	-----	-----	-----	-----	19.05	28.85	11.86	Adipic Acid
Propionic Acid	-----	-----	-----	-----	-----	-----	19.67	29.77	12.24	Propionic Acid
Butyric Acid	-----	-----	-----	-----	-----	-----	24.51	37.09	15.25	Butyric Acid
Glycerol	-----	-----	-----	-----	-----	-----	14.22	21.45	8.82	Glycerol
Ethylene Glycol	-----	-----	-----	-----	-----	-----	17.08	25.85	10.63	Ethylene Glycol
Diethylene Glycol	-----	-----	-----	-----	-----	-----	17.48	26.46	10.88	Diethylene Glycol
Methanol	-----	-----	-----	-----	-----	-----	20.01	30.06	12.43	Methanol
Ethanol	-----	-----	-----	-----	-----	-----	22.37	33.85	13.92	Ethanol
Isopropanol	-----	-----	-----	-----	-----	-----	24.31	36.80	15.13	Isopropanol
Propanol	-----	-----	-----	-----	-----	-----	28.29	42.81	17.61	Propanol
Azide	-----	-----	-----	-----	-----	-----	25.38	38.43	15.80	Azide

All columns operated under the recommended standard conditions of flow rate and temperature as typically recorded on the QC test data sheet.