



# Valuation Multiples by Industry

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SIC Sector: **(2000-3999) Manufacturing**

Report Date: **30 August 2019**

Country: **United States of America (U.S.A.)**

## Industry Valuation Multiples

The table below provides a summary of median industry enterprise value (EV) valuation multiples, as at the Report Date. The data is grouped by industry SIC code:

	Max #	EV Multiple				
		Rev	EBITDA	EBIT	TotAss	TanAss
Food And Kindred Products (2000)	10	1.76	16.15	24.49	1.31	3.38
Canned, Frozen & Preservd Fruit, Veg & Food Specialties (2030)	6	2.76	-	-	0.85	2.58
Grain Mill Products (2040)	5	2.26	-	19.39	1.54	3.41
Sugar & Confectionery Products (2060)	5	1.46	14.31	-	2.09	2.50
Beverages (2080)	10	5.05	20.20	27.23	2.51	3.82
Malt Beverages (2082)	5	1.82	19.95	-	0.84	2.41
Bottled & Canned Soft Drinks & Carbonated Waters (2086)	11	1.52	8.97	9.73	1.40	2.14
Cigarettes (2111)	5	3.42	11.47	12.11	2.00	4.07
Apparel & Other Finishd Prods Of Fabrics & Similar Matl (2300)	12	1.66	11.37	13.70	1.04	1.88
Men'S & Boys' Furnishgs, Work Clothg, & Allied Garments (2320)	6	1.40	10.89	16.02	1.70	2.12
Lumber & Wood Products (No Furniture) (2400)	5	1.10	9.87	14.58	1.34	1.46
Millwood, Veneer, Plywood, & Structural Wood Members (2430)	5	0.98	8.90	13.07	1.12	2.21
Household Furniture (2510)	9	0.75	10.13	16.20	1.05	1.25
Paper Mills (2621)	7	1.06	7.49	9.06	0.74	0.91
Paperboard Containers & Boxes (2650)	5	1.27	7.38	12.98	0.97	1.32
Newspapers: Publishing Or Publishing & Printing (2711)	9	0.67	7.87	19.79	0.65	1.27
Commercial Printing (2750)	5	0.40	8.55	34.52	0.66	0.76
Chemicals & Allied Products (2800)	12	2.15	11.06	15.52	1.22	1.52
Industrial Inorganic Chemicals (2810)	10	0.84	8.25	10.32	0.72	0.74
Plastic Materials, Synth Resins & Nonvulcan Elastomers (2821)	11	1.09	9.03	13.56	0.91	1.31
Medicinal Chemicals & Botanical Products (2833)	13	4.81	5.22	-	0.87	1.09
Pharmaceutical Preparations (2834)	393	5.38	8.92	11.11	1.60	1.98
In Vitro & In Vivo Diagnostic Substances (2835)	19	3.55	22.01	24.34	1.29	1.83
Biological Products, (No Disgnostic Substances) (2836)	102	13.23	12.68	15.24	1.81	2.02
Soap, Detergents, Cleang Preparations, Perfumes, Cosmetics (2840)	6	3.51	16.06	20.98	2.50	4.28
Perfumes, Cosmetics & Other Toilet Preparations (2844)	10	3.09	17.35	19.19	1.69	3.79
Industrial Organic Chemicals (2860)	20	1.07	8.34	10.82	0.93	1.02
Agricultural Chemicals (2870)	11	2.36	7.94	16.52	0.94	1.28
Miscellaneous Chemical Products (2890)	8	1.64	14.51	19.94	1.05	1.30
Petroleum Refining (2911)	19	0.62	5.54	7.11	0.77	0.92



Industry Valuation Multiples

(continued)

	Max #	EV Multiple				
		Rev	EBITDA	EBIT	TotAss	TanAss
Fabricated Rubber Products, Nec (3060)	5	2.02	-	-	1.50	3.34
Plastics Products, Nec (3089)	12	0.77	10.57	17.33	0.92	1.32
Footwear, (No Rubber) (3140)	6	1.12	10.50	12.33	1.02	1.73
Cement, Hydraulic (3241)	5	1.06	4.86	7.59	0.50	0.69
Steel Works, Blast Furnaces & Rolling & Finishing Mills (3310)	7	0.75	10.69	17.13	0.66	0.70
Steel Works, Blast Furnaces & Rolling Mills (Coke Ovens) (3312)	14	0.59	5.33	7.51	0.61	0.62
Rolling Drawing & Extruding Of Nonferrous Metals (3350)	7	0.77	8.84	11.23	1.10	1.27
Cutlery, Handtools & General Hardware (3420)	10	0.80	8.66	9.41	0.90	1.17
Metal Forgings & Stampings (3460)	5	0.77	8.76	14.79	0.87	1.37
Ordnance & Accessories, (No Vehicles/Guided Missiles) (3480)	6	1.53	9.99	16.76	1.78	1.81
Miscellaneous Fabricated Metal Products (3490)	10	2.05	11.09	14.14	1.18	2.37
Engines & Turbines (3510)	6	0.83	19.67	-	1.16	1.21
Farm Machinery & Equipment (3523)	6	1.19	11.57	14.67	1.03	1.21
Construction Machinery & Equip (3531)	8	1.13	10.15	13.91	0.95	0.98
Oil & Gas Field Machinery & Equipment (3533)	12	1.15	9.21	12.39	0.74	0.99
Metalworkg Machinery & Equipment (3540)	5	1.02	10.91	15.55	0.70	0.85
Special Industry Machinery, Nec (3559)	13	1.59	22.02	17.21	0.80	0.99
General Industrial Machinery & Equipment (3560)	7	2.03	10.79	14.05	1.16	2.55
Pumps & Pumping Equipment (3561)	8	1.84	16.18	18.44	1.63	2.00
Electronic Computers (3571)	9	1.71	22.14	66.50	1.66	1.90
Computer Storage Devices (3572)	5	1.60	-	-	1.49	1.68
Computer Communications Equipment (3576)	12	1.92	12.56	16.61	1.12	1.60
Computer Peripheral Equipment, Nec (3577)	12	3.21	17.65	22.23	1.78	2.49
Refrigeration & Service Industry Machinery (3580)	5	1.90	-	17.18	1.61	2.83
Misc Industrial & Commercial Machinery & Equipment (3590)	5	1.67	11.83	15.33	1.24	2.99
Electrical Industrial Apparatus (3620)	8	2.73	8.76	12.86	1.52	2.25
Motors & Generators (3621)	5	1.77	13.62	15.47	1.82	2.60
Electric Lighting & Wiring Equipment (3640)	6	0.65	12.23	18.08	0.94	1.06
Household Audio & Video Equipment (3651)	8	1.00	-	40.52	1.17	1.64
Telephone & Telegraph Apparatus (3661)	16	1.10	18.24	22.83	0.85	1.25
Radio & Tv Broadcasting & Communications Equipment (3663)	30	1.33	13.05	18.36	0.88	1.30
Communications Equipment, Nec (3669)	12	1.94	11.44	16.41	1.57	2.21
Electronic Components & Accessories (3670)	8	1.16	9.46	11.93	1.14	1.25
Printed Circuit Boards (3672)	15	0.34	7.75	13.75	0.68	0.73
Semiconductors & Related Devices (3674)	92	2.70	14.16	20.40	1.36	1.78
Electronic Components, Nec (3679)	12	1.79	17.25	33.38	1.01	1.42
Miscellaneous Electrical Machinery, Equipment & Supplies (3690)	12	1.75	16.35	23.01	1.02	1.37
Motor Vehicles & Passenger Car Bodies (3711)	18	0.62	9.71	14.59	0.89	0.96
Motor Vehicle Parts & Accessories (3714)	33	0.56	8.09	12.78	0.70	0.81
Aircraft Parts & Auxiliary Equipment, Nec (3728)	6	1.29	11.18	16.41	1.18	1.42
Ship & Boat Building & Repairing (3730)	5	1.23	10.04	12.50	1.46	2.64
Search, Detection, Navagation, Guidance, Aeronautical Sys (3812)	7	3.52	15.95	18.86	2.21	3.19
Industrial Instruments For Measurement, Display, And Control (3823)	14	3.68	22.81	29.21	1.45	2.10
Instruments For Meas & Testing Of Electricity & Elec Signals (3825)	11	1.19	11.57	17.84	0.90	1.29



Industry Valuation Multiples

(continued)

	Max #	EV Multiple				
		Rev	EBITDA	EBIT	TotAss	TanAss
Laboratory Analytical Instruments (3826)	20	4.41	20.32	25.63	1.79	4.31
Optical Instruments & Lenses (3827)	6	1.94	11.68	15.61	1.58	1.77
Measuring & Controlling Devices, Nec (3829)	9	1.81	16.21	18.45	1.40	2.27
Surgical & Medical Instruments & Apparatus (3841)	88	5.46	23.65	32.59	2.62	3.79
Orthopedic, Prosthetic & Surgical Appliances & Supplies (3842)	24	2.42	24.31	26.96	1.52	2.86
Electromedical & Electrotherapeutic Apparatus (3845)	24	2.66	18.55	24.84	1.74	2.43
Photographic Equipment & Supplies (3861)	6	0.77	-	-	1.05	1.22
Games, Toys & Children'S Vehicles (No Dolls & Bicycles) (3944)	5	1.88	-	-	2.02	3.47
Sporting & Athletic Goods, Nec (3949)	6	1.14	11.91	19.63	1.11	1.68
Miscellaneous Manufacturing Industries (3990)	10	1.10	10.09	16.41	1.05	1.77

## EV/Revenue Valuation Multiple

We provide additional data relating to industry EV/Revenue valuation multiples:

	#	Average	Median	Std. Dev.	Std. Err.
Food And Kindred Products (2000)	9	1.91	1.76	0.95	0.32
Canned, Frozen & Preservd Fruit, Veg & Food Specialties (2030)	5	2.47	2.76	0.91	0.41
Grain Mill Products (2040)	5	2.56	2.26	1.13	0.50
Sugar & Confectionery Products (2060)	5	2.67	1.46	1.79	0.80
Beverages (2080)	10	5.24	5.05	3.02	0.96
Malt Beverages (2082)	5	2.79	1.82	1.90	0.85
Bottled & Canned Soft Drinks & Carbonated Waters (2086)	10	1.68	1.52	1.29	0.41
Apparel & Other Finishd Prods Of Fabrics & Similar Matl (2300)	12	2.30	1.66	1.81	0.52
Men'S & Boys' Furnishgs, Work Clothg, & Allied Garments (2320)	5	2.15	1.40	1.36	0.61
Millwood, Veneer, Plywood, & Structural Wood Members (2430)	5	1.08	0.98	0.44	0.20
Household Furniture (2510)	9	0.82	0.75	0.70	0.23
Paper Mills (2621)	7	0.88	1.06	0.57	0.22
Newspapers: Publishing Or Publishing & Printing (2711)	7	0.65	0.67	0.35	0.13
Commercial Printing (2750)	5	0.87	0.40	0.72	0.32
Chemicals & Allied Products (2800)	11	2.27	2.15	1.32	0.40
Industrial Inorganic Chemicals (2810)	7	0.98	0.84	0.58	0.22
Plastic Materials, Synth Resins & Nonvulcan Elastomers (2821)	11	1.49	1.09	0.96	0.29
Medicinal Chemicals & Botanical Products (2833)	12	14.05	4.81	20.50	5.92
Pharmaceutical Preparations (2834)	221	12.25	5.38	15.12	1.02
In Vitro & In Vivo Diagnostic Substances (2835)	15	5.61	3.55	4.53	1.17
Biological Products, (No Disgnostic Substances) (2836)	61	24.16	13.23	31.69	4.06
Soap, Detergents, Cleang Preparations, Perfumes, Cosmetics (2840)	6	3.33	3.51	1.71	0.70
Perfumes, Cosmetics & Other Toilet Preparations (2844)	10	3.34	3.09	2.14	0.68
Industrial Organic Chemicals (2860)	18	1.57	1.07	1.32	0.31
Agricultural Chemicals (2870)	11	6.64	2.36	9.61	2.90
Miscellaneous Chemical Products (2890)	8	2.73	1.64	2.33	0.82
Petroleum Refining (2911)	19	0.77	0.62	0.48	0.11
Fabricated Rubber Products, Nec (3060)	5	2.84	2.02	2.36	1.06
Plastics Products, Nec (3089)	11	1.21	0.77	1.17	0.35
Footwear, (No Rubber) (3140)	5	1.13	1.12	0.38	0.17
Steel Works, Blast Furnaces & Rolling & Finishing Mills (3310)	7	0.76	0.75	0.42	0.16
Steel Works, Blast Furnaces & Rolling Mills (Coke Ovens) (3312)	14	0.64	0.59	0.37	0.10
Rolling Drawing & Extruding Of Nonferrous Metals (3350)	7	0.79	0.77	0.28	0.11
Cutlery, Handtools & General Hardware (3420)	10	1.13	0.80	0.79	0.25
Ordnance & Accessories, (No Vehicles/Guided Missiles) (3480)	5	2.42	1.53	2.85	1.27
Miscellaneous Fabricated Metal Products (3490)	10	1.98	2.05	0.79	0.25
Engines & Turbines (3510)	6	0.82	0.83	0.34	0.14
Farm Machinery & Equipment (3523)	6	1.39	1.19	0.67	0.28
Construction Machinery & Equip (3531)	8	1.23	1.13	0.67	0.24
Oil & Gas Field Machinery & Equipment (3533)	12	1.50	1.15	0.94	0.27
Metalworkg Machinery & Equipment (3540)	5	1.03	1.02	0.61	0.27
Special Industry Machinery, Nec (3559)	13	2.07	1.59	1.74	0.48
General Industrial Machinery & Equipment (3560)	7	2.21	2.03	1.04	0.39
Pumps & Pumping Equipment (3561)	8	2.53	1.84	1.63	0.58
Electronic Computers (3571)	9	2.46	1.71	2.09	0.70
Computer Communications Equipment (3576)	11	1.98	1.92	1.15	0.35
Computer Peripheral Equipment, Nec (3577)	12	3.35	3.21	2.38	0.69
Refrigeration & Service Industry Machinery (3580)	5	1.90	1.90	0.62	0.28
Electrical Industrial Apparatus (3620)	8	4.29	2.73	3.81	1.35
Motors & Generators (3621)	5	2.31	1.77	1.24	0.55

(continued)

	#	Average	Median	Std. Dev.	Std. Err.
Electric Lighting & Wiring Equipment (3640)	6	0.81	0.65	0.46	0.19
Household Audio & Video Equipment (3651)	7	1.48	1.00	1.09	0.41
Telephone & Telegraph Apparatus (3661)	14	1.14	1.10	0.70	0.19
Radio & Tv Broadcasting & Communications Equipment (3663)	25	1.61	1.33	1.13	0.23
Communications Equipment, Nec (3669)	12	2.19	1.94	1.77	0.51
Electronic Components & Accessories (3670)	7	1.31	1.16	0.58	0.22
Printed Circuit Boards (3672)	12	0.43	0.34	0.22	0.06
Semiconductors & Related Devices (3674)	92	3.34	2.70	2.80	0.29
Electronic Components, Nec (3679)	12	2.16	1.79	1.74	0.50
Miscellaneous Electrical Machinery, Equipment & Supplies (3690)	12	1.93	1.75	1.10	0.32
Motor Vehicles & Passenger Car Bodies (3711)	17	0.96	0.62	0.73	0.18
Motor Vehicle Parts & Accessories (3714)	31	0.65	0.56	0.35	0.06
Aircraft Parts & Auxiliary Equipment, Nec (3728)	6	1.36	1.29	0.31	0.13
Ship & Boat Building & Repairing (3730)	5	1.31	1.23	0.39	0.18
Search, Detection, Navigation, Guidance, Aeronautical Sys (3812)	7	3.22	3.52	1.00	0.38
Industrial Instruments For Measurement, Display, And Control (3823)	14	4.32	3.68	3.36	0.90
Instruments For Meas & Testing Of Electricity & Elec Signals (3825)	10	1.09	1.19	0.44	0.14
Laboratory Analytical Instruments (3826)	17	5.73	4.41	4.08	0.99
Optical Instruments & Lenses (3827)	5	1.69	1.94	0.77	0.34
Measuring & Controlling Devices, Nec (3829)	9	1.90	1.81	0.91	0.30
Surgical & Medical Instruments & Apparatus (3841)	72	5.44	5.46	3.45	0.41
Orthopedic, Prosthetic & Surgical Appliances & Supplies (3842)	19	2.87	2.42	1.88	0.43
Electromedical & Electrotherapeutic Apparatus (3845)	20	4.26	2.66	4.08	0.91
Photographic Equipment & Supplies (3861)	5	0.65	0.77	0.38	0.17
Games, Toys & Children'S Vehicles (No Dolls & Bicycles) (3944)	5	2.29	1.88	1.92	0.86
Sporting & Athletic Goods, Nec (3949)	6	1.08	1.14	0.57	0.23
Miscellaneous Manufacturing Industries (3990)	9	1.38	1.10	0.88	0.29

## EV/EBITDA Valuation Multiple

We provide additional data relating to industry EV/EBITDA valuation multiples:

	#	Average	Median	Std. Dev.	Std. Err.
Food And Kindred Products (2000)	7	17.35	16.15	6.44	2.43
Sugar & Confectionery Products (2060)	5	14.96	14.31	8.57	3.83
Beverages (2080)	7	20.44	20.20	7.01	2.65
Bottled & Canned Soft Drinks & Carbonated Waters (2086)	9	9.30	8.97	7.94	2.65
Apparel & Other Finishd Prods Of Fabrics & Similar Matl (2300)	11	14.91	11.37	7.79	2.35
Men'S & Boys' Furnishgs, Work Clothg, & Allied Garments (2320)	6	11.56	10.89	6.94	2.83
Lumber & Wood Products (No Furniture) (2400)	5	13.75	9.87	9.71	4.34
Millwood, Veneer, Plywood, & Structural Wood Members (2430)	5	9.18	8.90	1.84	0.82
Household Furniture (2510)	8	11.53	10.13	5.41	1.91
Paper Mills (2621)	7	6.95	7.49	4.95	1.87
Newspapers: Publishing Or Publishing & Printing (2711)	8	9.10	7.87	6.06	2.14
Commercial Printing (2750)	5	9.33	8.55	3.37	1.51
Chemicals & Allied Products (2800)	11	10.68	11.06	5.47	1.65
Industrial Inorganic Chemicals (2810)	6	8.88	8.25	4.47	1.83
Plastic Materials, Synth Resins & Nonvulcan Elastomers (2821)	10	11.18	9.03	4.92	1.56
Pharmaceutical Preparations (2834)	79	9.86	8.92	10.24	1.15
In Vitro & In Vivo Diagnostic Substances (2835)	8	26.87	22.01	20.93	7.40
Biological Products, (No Disgnostic Substances) (2836)	13	21.42	12.68	26.77	7.43
Soap, Detergents, Cleang Preparations, Perfumes, Cosmetics (2840)	6	16.47	16.06	14.45	5.90
Industrial Organic Chemicals (2860)	12	9.18	8.34	4.66	1.35
Agricultural Chemicals (2870)	7	10.50	7.94	4.52	1.71
Miscellaneous Chemical Products (2890)	6	15.57	14.51	9.53	3.89
Petroleum Refining (2911)	18	5.43	5.54	2.21	0.52
Plastics Products, Nec (3089)	9	11.17	10.57	5.15	1.72
Steel Works, Blast Furnaces & Rolling & Finishing Mills (3310)	7	8.76	10.69	3.78	1.43
Steel Works, Blast Furnaces & Rolling Mills (Coke Ovens) (3312)	14	5.53	5.33	2.24	0.60
Rolling Drawing & Extruding Of Nonferrous Metals (3350)	5	8.90	8.84	1.09	0.49
Cutlery, Handtools & General Hardware (3420)	9	8.75	8.66	3.78	1.26
Miscellaneous Fabricated Metal Products (3490)	7	11.27	11.09	1.81	0.68
Engines & Turbines (3510)	5	19.93	19.67	11.39	5.09
Construction Machinery & Equip (3531)	6	11.00	10.15	2.66	1.09
Oil & Gas Field Machinery & Equipment (3533)	8	9.21	9.21	2.58	0.91
Special Industry Machinery, Nec (3559)	10	27.30	22.02	20.27	6.41
General Industrial Machinery & Equipment (3560)	6	10.89	10.79	3.48	1.42
Pumps & Pumping Equipment (3561)	7	15.92	16.18	4.48	1.69
Electronic Computers (3571)	6	20.77	22.14	7.95	3.24
Computer Communications Equipment (3576)	9	14.78	12.56	5.92	1.97
Computer Peripheral Equipment, Nec (3577)	6	18.95	17.65	9.93	4.06
Motors & Generators (3621)	5	10.84	13.62	5.60	2.50
Telephone & Telegraph Apparatus (3661)	9	19.65	18.24	11.77	3.92
Radio & Tv Broadcasting & Communications Equipment (3663)	15	14.39	13.05	6.36	1.64
Communications Equipment, Nec (3669)	8	12.83	11.44	10.79	3.81
Electronic Components & Accessories (3670)	8	20.47	9.46	21.10	7.46
Printed Circuit Boards (3672)	12	7.84	7.75	2.39	0.69
Semiconductors & Related Devices (3674)	60	17.64	14.16	14.40	1.86
Electronic Components, Nec (3679)	6	18.26	17.25	2.71	1.11
Miscellaneous Electrical Machinery, Equipment & Supplies (3690)	9	15.08	16.35	6.66	2.22
Motor Vehicles & Passenger Car Bodies (3711)	14	11.89	9.71	7.86	2.10
Motor Vehicle Parts & Accessories (3714)	29	8.03	8.09	3.32	0.62
Aircraft Parts & Auxiliary Equipment, Nec (3728)	6	13.24	11.18	5.25	2.14

(continued)

	#	Average	Median	Std. Dev.	Std. Err.
Ship & Boat Building & Repairing (3730)	5	9.67	10.04	3.80	1.70
Search, Detection, Navigation, Guidance, Aeronautical Sys (3812)	6	15.41	15.95	4.26	1.74
Industrial Instruments For Measurement, Display, And Control (3823)	10	21.84	22.81	11.97	3.78
Instruments For Meas & Testing Of Electricity & Elec Signals (3825)	7	10.87	11.57	3.58	1.35
Laboratory Analytical Instruments (3826)	5	20.26	20.32	1.12	0.50
Optical Instruments & Lenses (3827)	6	11.39	11.68	3.35	1.37
Measuring & Controlling Devices, Nec (3829)	8	16.08	16.21	4.24	1.50
Surgical & Medical Instruments & Apparatus (3841)	33	24.18	23.65	13.24	2.30
Orthopedic, Prosthetic & Surgical Appliances & Supplies (3842)	13	26.76	24.31	14.38	3.99
Electromedical & Electrotherapeutic Apparatus (3845)	9	18.51	18.55	14.30	4.77
Sporting & Athletic Goods, Nec (3949)	5	12.74	11.91	5.78	2.58
Miscellaneous Manufacturing Industries (3990)	8	10.07	10.09	2.07	0.73

## EV/EBIT Valuation Multiple

We provide additional data relating to industry EV/EBIT valuation multiples:

	#	Average	Median	Std. Dev.	Std. Err.
Food And Kindred Products (2000)	7	21.85	24.49	7.52	2.84
Beverages (2080)	6	26.18	27.23	3.64	1.49
Bottled & Canned Soft Drinks & Carbonated Waters (2086)	9	16.53	9.73	17.41	5.80
Apparel & Other Finishd Prods Of Fabrics & Similar Matl (2300)	10	15.53	13.70	7.21	2.28
Men'S & Boys' Furnishgs, Work Clothg, & Allied Garments (2320)	6	15.73	16.02	8.90	3.63
Lumber & Wood Products (No Furniture) (2400)	5	19.66	14.58	12.69	5.67
Household Furniture (2510)	7	14.80	16.20	5.59	2.11
Paper Mills (2621)	6	8.85	9.06	5.56	2.27
Newspapers: Publishing Or Publishing & Printing (2711)	5	16.75	19.79	11.04	4.94
Chemicals & Allied Products (2800)	12	14.88	15.52	7.27	2.10
Industrial Inorganic Chemicals (2810)	5	15.64	10.32	11.73	5.25
Plastic Materials, Synth Resins & Nonvulcan Elastomers (2821)	10	16.39	13.56	6.01	1.90
Pharmaceutical Preparations (2834)	79	16.94	11.11	20.00	2.25
In Vitro & In Vivo Diagnostic Substances (2835)	6	27.25	24.34	21.36	8.72
Biological Products, (No Disgnostic Substances) (2836)	13	46.44	15.24	67.00	18.58
Soap, Detergents, Cleang Preparations, Perfumes, Cosmetics (2840)	6	23.36	20.98	21.80	8.90
Perfumes, Cosmetics & Other Toilet Preparations (2844)	5	20.63	19.19	6.04	2.70
Industrial Organic Chemicals (2860)	11	14.68	10.82	9.86	2.97
Agricultural Chemicals (2870)	7	17.10	16.52	4.13	1.56
Miscellaneous Chemical Products (2890)	6	19.67	19.94	10.37	4.23
Petroleum Refining (2911)	15	7.56	7.11	3.02	0.78
Plastics Products, Nec (3089)	7	17.33	17.33	8.74	3.30
Steel Works, Blast Furnaces & Rolling & Finishing Mills (3310)	7	14.72	17.13	8.04	3.04
Steel Works, Blast Furnaces & Rolling Mills (Coke Ovens) (3312)	12	8.23	7.51	4.18	1.21
Rolling Drawing & Extruding Of Nonferrous Metals (3350)	6	11.50	11.23	4.12	1.68
Cutlery, Handtools & General Hardware (3420)	8	10.65	9.41	4.72	1.67
Miscellaneous Fabricated Metal Products (3490)	7	13.14	14.14	4.82	1.82
Construction Machinery & Equip (3531)	5	13.34	13.91	1.68	0.75
Oil & Gas Field Machinery & Equipment (3533)	6	13.50	12.39	6.79	2.77
Special Industry Machinery, Nec (3559)	7	20.01	17.21	10.26	3.88
General Industrial Machinery & Equipment (3560)	6	14.50	14.05	3.76	1.54
Pumps & Pumping Equipment (3561)	6	18.46	18.44	4.37	1.78
Electronic Computers (3571)	6	84.48	66.50	60.13	24.55
Computer Communications Equipment (3576)	8	18.34	16.61	7.80	2.76
Computer Peripheral Equipment, Nec (3577)	5	33.09	22.23	23.24	10.39
Motors & Generators (3621)	5	13.33	15.47	6.76	3.02
Household Audio & Video Equipment (3651)	5	85.34	40.52	84.69	37.87
Telephone & Telegraph Apparatus (3661)	6	24.12	22.83	7.93	3.24
Radio & Tv Broadcasting & Communications Equipment (3663)	13	27.67	18.36	18.98	5.26
Communications Equipment, Nec (3669)	7	20.68	16.41	20.22	7.64
Electronic Components & Accessories (3670)	8	41.42	11.93	54.31	19.20
Printed Circuit Boards (3672)	11	13.78	13.75	3.59	1.08
Semiconductors & Related Devices (3674)	51	25.71	20.40	19.00	2.66
Electronic Components, Nec (3679)	6	35.90	33.38	18.10	7.39
Miscellaneous Electrical Machinery, Equipment & Supplies (3690)	9	28.09	23.01	18.30	6.10
Motor Vehicles & Passenger Car Bodies (3711)	13	24.20	14.59	23.73	6.58
Motor Vehicle Parts & Accessories (3714)	28	14.37	12.78	8.34	1.58
Aircraft Parts & Auxiliary Equipment, Nec (3728)	6	17.30	16.41	6.04	2.47
Ship & Boat Building & Repairing (3730)	5	11.03	12.50	4.20	1.88
Search, Detection, Navagation, Guidance, Aeronautical Sys (3812)	6	18.44	18.86	5.91	2.41



(continued)

	#	Average	Median	Std. Dev.	Std. Err.
Industrial Instruments For Measurement, Display, And Control (3823)	9	26.78	29.21	15.43	5.14
Instruments For Meas & Testing Of Electricity & Elec Signals (3825)	6	17.00	17.84	6.95	2.84
Laboratory Analytical Instruments (3826)	9	33.48	25.63	12.78	4.26
Optical Instruments & Lenses (3827)	6	15.55	15.61	5.09	2.08
Measuring & Controlling Devices, Nec (3829)	7	24.18	18.45	12.13	4.59
Surgical & Medical Instruments & Apparatus (3841)	26	33.32	32.59	23.61	4.63
Orthopedic, Prosthetic & Surgical Appliances & Supplies (3842)	10	34.32	26.96	25.02	7.91
Electromedical & Electrotherapeutic Apparatus (3845)	8	23.98	24.84	18.11	6.40
Sporting & Athletic Goods, Nec (3949)	6	19.71	19.63	9.92	4.05
Miscellaneous Manufacturing Industries (3990)	7	20.54	16.41	11.57	4.37

## EV/Total Assets Valuation Multiple

We provide additional data relating to industry EV/Total Assets valuation multiples:

	#	Average	Median	Std. Dev.	Std. Err.
Food And Kindred Products (2000)	10	1.33	1.31	0.50	0.16
Canned, Frozen & Preservd Fruit, Veg & Food Specialties (2030)	6	1.85	0.85	1.80	0.74
Grain Mill Products (2040)	5	1.54	1.54	0.42	0.19
Beverages (2080)	10	2.49	2.51	1.59	0.50
Bottled & Canned Soft Drinks & Carbonated Waters (2086)	11	2.25	1.40	2.27	0.69
Cigarettes (2111)	5	2.35	2.00	1.12	0.50
Apparel & Other Finishd Prods Of Fabrics & Similar Matl (2300)	11	1.41	1.04	0.78	0.23
Men'S & Boys' Furnishgs, Work Clothg, & Allied Garments (2320)	6	2.12	1.70	1.29	0.53
Household Furniture (2510)	9	1.07	1.05	0.82	0.27
Paper Mills (2621)	7	0.75	0.74	0.46	0.18
Paperboard Containers & Boxes (2650)	5	1.05	0.97	0.52	0.23
Newspapers: Publishing Or Publishing & Printing (2711)	8	0.64	0.65	0.32	0.11
Chemicals & Allied Products (2800)	10	1.24	1.22	0.46	0.15
Industrial Inorganic Chemicals (2810)	9	0.67	0.72	0.40	0.13
Plastic Materials, Synth Resins & Nonvulcan Elastomers (2821)	9	0.91	0.91	0.17	0.06
Medicinal Chemicals & Botanical Products (2833)	12	1.52	0.87	1.31	0.38
Pharmaceutical Preparations (2834)	389	2.00	1.60	1.53	0.08
In Vitro & In Vivo Diagnostic Substances (2835)	19	2.02	1.29	1.69	0.39
Biological Products, (No Disgnostic Substances) (2836)	102	2.12	1.81	1.57	0.16
Soap, Detergents, Cleang Preparations, Perfumes, Cosmetics (2840)	6	2.42	2.50	0.81	0.33
Perfumes, Cosmetics & Other Toilet Preparations (2844)	10	2.70	1.69	2.29	0.72
Industrial Organic Chemicals (2860)	20	1.64	0.93	1.49	0.33
Agricultural Chemicals (2870)	11	1.12	0.94	0.49	0.15
Miscellaneous Chemical Products (2890)	7	1.44	1.05	1.36	0.51
Petroleum Refining (2911)	19	0.80	0.77	0.22	0.05
Plastics Products, Nec (3089)	12	1.20	0.92	0.89	0.26
Footwear, (No Rubber) (3140)	5	1.06	1.02	0.18	0.08
Steel Works, Blast Furnaces & Rolling & Finishing Mills (3310)	7	0.80	0.66	0.39	0.15
Steel Works, Blast Furnaces & Rolling Mills (Coke Ovens) (3312)	14	0.66	0.61	0.34	0.09
Rolling Drawing & Extruding Of Nonferrous Metals (3350)	6	1.08	1.10	0.19	0.08
Cutlery, Handtools & General Hardware (3420)	10	1.12	0.90	0.68	0.22
Metal Forgings & Stampings (3460)	5	0.97	0.87	0.41	0.18
Ordnanace & Accessories, (No Vehicles/Guided Missiles) (3480)	6	2.28	1.78	1.74	0.71
Miscellaneous Fabricated Metal Products (3490)	10	1.17	1.18	0.47	0.15
Engines & Turbines (3510)	5	1.09	1.16	0.22	0.10
Farm Machinery & Equipment (3523)	6	1.18	1.03	0.51	0.21
Construction Machinery & Equip (3531)	8	1.00	0.95	0.39	0.14
Oil & Gas Field Machinery & Equipment (3533)	12	0.95	0.74	0.55	0.16
Special Industry Machinery, Nec (3559)	13	1.16	0.80	0.83	0.23
General Industrial Machinery & Equipment (3560)	7	1.63	1.16	1.13	0.43
Pumps & Pumping Equipment (3561)	8	1.96	1.63	1.49	0.53
Electronic Computers (3571)	9	1.80	1.66	1.09	0.36
Computer Storage Devices (3572)	5	1.51	1.49	0.46	0.21
Computer Communications Equipment (3576)	11	1.31	1.12	0.61	0.18
Computer Peripheral Equipment, Nec (3577)	12	2.09	1.78	1.29	0.37
Electrical Industrial Apparatus (3620)	8	1.61	1.52	0.88	0.31
Motors & Generators (3621)	5	1.63	1.82	0.77	0.34
Electric Lighting & Wiring Equipment (3640)	6	0.91	0.94	0.49	0.20
Household Audio & Video Equipment (3651)	8	1.17	1.17	0.78	0.28
Telephone & Telegraph Apparatus (3661)	16	1.04	0.85	0.66	0.16

(continued)

	#	Average	Median	Std. Dev.	Std. Err.
Radio & Tv Broadcasting & Communications Equipment (3663)	28	1.00	0.88	0.56	0.11
Communications Equipment, Nec (3669)	12	1.58	1.57	0.84	0.24
Electronic Components & Accessories (3670)	8	1.74	1.14	1.41	0.50
Printed Circuit Boards (3672)	15	0.81	0.68	0.41	0.11
Semiconductors & Related Devices (3674)	87	1.63	1.36	1.14	0.12
Electronic Components, Nec (3679)	10	1.00	1.01	0.65	0.21
Miscellaneous Electrical Machinery, Equipment & Supplies (3690)	11	0.92	1.02	0.40	0.12
Motor Vehicles & Passenger Car Bodies (3711)	18	0.90	0.89	0.57	0.14
Motor Vehicle Parts & Accessories (3714)	33	0.81	0.70	0.47	0.08
Aircraft Parts & Auxiliary Equipment, Nec (3728)	6	1.17	1.18	0.22	0.09
Search, Detection, Navigation, Guidance, Aeronautical Sys (3812)	7	2.26	2.21	0.50	0.19
Industrial Instruments For Measurement, Display, And Control (3823)	13	1.55	1.45	0.78	0.22
Instruments For Meas & Testing Of Electricity & Elec Signals (3825)	10	1.00	0.90	0.41	0.13
Laboratory Analytical Instruments (3826)	20	2.82	1.79	2.11	0.47
Optical Instruments & Lenses (3827)	6	1.63	1.58	0.78	0.32
Measuring & Controlling Devices, Nec (3829)	9	1.36	1.40	0.62	0.21
Surgical & Medical Instruments & Apparatus (3841)	86	3.12	2.62	2.25	0.24
Orthopedic, Prosthetic & Surgical Appliances & Supplies (3842)	23	2.35	1.52	2.10	0.44
Electromedical & Electrotherapeutic Apparatus (3845)	24	2.09	1.74	1.33	0.27
Photographic Equipment & Supplies (3861)	5	1.12	1.05	0.19	0.08
Games, Toys & Children'S Vehicles (No Dolls & Bicycles) (3944)	5	1.76	2.02	1.11	0.49
Sporting & Athletic Goods, Nec (3949)	6	1.07	1.11	0.40	0.16
Miscellaneous Manufacturing Industries (3990)	9	1.16	1.05	0.45	0.15

## EV/Tangible Assets Valuation Multiple

We provide additional data relating to industry EV/Tangible Assets valuation multiples:

	#	Average	Median	Std. Dev.	Std. Err.
Food And Kindred Products (2000)	8	3.25	3.38	0.85	0.30
Canned, Frozen & Preservd Fruit, Veg & Food Specialties (2030)	6	2.86	2.58	2.18	0.89
Grain Mill Products (2040)	5	3.27	3.41	1.40	0.62
Beverages (2080)	10	4.41	3.82	3.03	0.96
Malt Beverages (2082)	5	3.22	2.41	2.48	1.11
Bottled & Canned Soft Drinks & Carbonated Waters (2086)	10	2.42	2.14	2.02	0.64
Cigarettes (2111)	5	3.89	4.07	1.37	0.61
Apparel & Other Finishd Prods Of Fabrics & Similar Matl (2300)	11	2.02	1.88	1.02	0.31
Men'S & Boys' Furnishgs, Work Clothg, & Allied Garments (2320)	6	3.27	2.12	2.38	0.97
Millwood, Veneer, Plywood, & Structural Wood Members (2430)	5	2.28	2.21	0.95	0.43
Household Furniture (2510)	9	1.45	1.25	1.25	0.42
Paper Mills (2621)	7	0.95	0.91	0.66	0.25
Paperboard Containers & Boxes (2650)	5	1.44	1.32	0.69	0.31
Newspapers: Publishing Or Publishing & Printing (2711)	9	1.34	1.27	0.79	0.26
Chemicals & Allied Products (2800)	10	1.75	1.52	0.86	0.27
Industrial Inorganic Chemicals (2810)	10	1.09	0.74	0.93	0.29
Plastic Materials, Synth Resins & Nonvulcan Elastomers (2821)	11	1.70	1.31	0.82	0.25
Medicinal Chemicals & Botanical Products (2833)	13	2.29	1.09	2.31	0.64
Pharmaceutical Preparations (2834)	393	2.44	1.98	1.85	0.09
In Vitro & In Vivo Diagnostic Substances (2835)	19	2.61	1.83	2.27	0.52
Biological Products, (No Disgnostic Substances) (2836)	102	2.37	2.02	1.79	0.18
Soap, Detergents, Cleang Preparations, Perfumes, Cosmetics (2840)	5	4.44	4.28	2.25	1.00
Perfumes, Cosmetics & Other Toilet Preparations (2844)	10	4.20	3.79	2.40	0.76
Industrial Organic Chemicals (2860)	20	1.83	1.02	1.58	0.35
Agricultural Chemicals (2870)	10	1.18	1.28	0.42	0.13
Miscellaneous Chemical Products (2890)	7	1.92	1.30	1.67	0.63
Petroleum Refining (2911)	19	0.85	0.92	0.23	0.05
Fabricated Rubber Products, Nec (3060)	5	3.21	3.34	1.96	0.87
Plastics Products, Nec (3089)	12	1.68	1.32	1.31	0.38
Footwear, (No Rubber) (3140)	6	1.82	1.73	0.73	0.30
Cement, Hydraulic (3241)	5	1.00	0.69	0.78	0.35
Steel Works, Blast Furnaces & Rolling & Finishing Mills (3310)	6	0.80	0.70	0.40	0.16
Steel Works, Blast Furnaces & Rolling Mills (Coke Ovens) (3312)	14	0.72	0.62	0.41	0.11
Rolling Drawing & Extruding Of Nonferrous Metals (3350)	6	1.36	1.27	0.35	0.14
Cutlery, Handtools & General Hardware (3420)	10	1.50	1.17	0.93	0.29
Metal Forgings & Stampings (3460)	5	1.35	1.37	0.75	0.34
Ordnance & Accessories, (No Vehicles/Guided Missiles) (3480)	6	2.44	1.81	1.70	0.69
Miscellaneous Fabricated Metal Products (3490)	10	2.15	2.37	1.28	0.41
Engines & Turbines (3510)	6	1.08	1.21	0.44	0.18
Farm Machinery & Equipment (3523)	6	1.42	1.21	0.63	0.26
Construction Machinery & Equip (3531)	7	1.13	0.98	0.48	0.18
Oil & Gas Field Machinery & Equipment (3533)	11	1.05	0.99	0.31	0.09
Special Industry Machinery, Nec (3559)	13	1.51	0.99	1.13	0.31
General Industrial Machinery & Equipment (3560)	7	3.19	2.55	2.49	0.94
Pumps & Pumping Equipment (3561)	8	3.32	2.00	2.78	0.98
Electronic Computers (3571)	8	2.11	1.90	1.24	0.44
Computer Storage Devices (3572)	5	1.82	1.68	0.31	0.14
Computer Communications Equipment (3576)	12	2.22	1.60	1.25	0.36
Computer Peripheral Equipment, Nec (3577)	12	2.81	2.49	1.75	0.51
Refrigeration & Service Industry Machinery (3580)	5	3.32	2.83	1.47	0.66

(continued)

	#	Average	Median	Std. Dev.	Std. Err.
Misc Industrial & Commercial Machinery & Equipment (3590)	5	2.70	2.99	0.77	0.34
Electrical Industrial Apparatus (3620)	8	2.11	2.25	1.08	0.38
Motors & Generators (3621)	5	3.21	2.60	2.42	1.08
Electric Lighting & Wiring Equipment (3640)	6	1.40	1.06	0.97	0.39
Household Audio & Video Equipment (3651)	8	1.70	1.64	1.22	0.43
Telephone & Telegraph Apparatus (3661)	16	1.48	1.25	0.91	0.23
Radio & Tv Broadcasting & Communications Equipment (3663)	30	1.44	1.30	0.87	0.16
Communications Equipment, Nec (3669)	12	2.40	2.21	1.74	0.50
Electronic Components & Accessories (3670)	8	2.48	1.25	2.29	0.81
Printed Circuit Boards (3672)	14	0.85	0.73	0.45	0.12
Semiconductors & Related Devices (3674)	90	2.55	1.78	2.13	0.22
Electronic Components, Nec (3679)	12	1.76	1.42	1.61	0.46
Miscellaneous Electrical Machinery, Equipment & Supplies (3690)	11	1.61	1.37	1.16	0.35
Motor Vehicles & Passenger Car Bodies (3711)	18	1.09	0.96	0.85	0.20
Motor Vehicle Parts & Accessories (3714)	32	0.95	0.81	0.58	0.10
Aircraft Parts & Auxiliary Equipment, Nec (3728)	6	1.42	1.42	0.37	0.15
Ship & Boat Building & Repairing (3730)	5	3.26	2.64	1.19	0.53
Search, Detection, Navigation, Guidance, Aeronautical Sys (3812)	7	3.68	3.19	1.38	0.52
Industrial Instruments For Measurement, Display, And Control (3823)	13	2.88	2.10	2.25	0.62
Instruments For Meas & Testing Of Electricity & Elec Signals (3825)	11	1.73	1.29	1.07	0.32
Laboratory Analytical Instruments (3826)	20	4.15	4.31	2.28	0.51
Optical Instruments & Lenses (3827)	5	1.52	1.77	0.56	0.25
Measuring & Controlling Devices, Nec (3829)	9	2.48	2.27	1.88	0.63
Surgical & Medical Instruments & Apparatus (3841)	88	4.12	3.79	2.82	0.30
Orthopedic, Prosthetic & Surgical Appliances & Supplies (3842)	24	3.62	2.86	2.88	0.59
Electromedical & Electrotherapeutic Apparatus (3845)	24	2.69	2.43	1.71	0.35
Photographic Equipment & Supplies (3861)	6	1.18	1.22	0.73	0.30
Games, Toys & Children'S Vehicles (No Dolls & Bicycles) (3944)	5	2.83	3.47	1.37	0.61
Sporting & Athletic Goods, Nec (3949)	6	1.57	1.68	0.73	0.30
Miscellaneous Manufacturing Industries (3990)	10	2.29	1.77	1.68	0.53

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### *Background to Valuation Multiples*

The multiples method in corporate and business valuation is categorised as a market-based valuation approach. Establishing an indicative estimation of firm value using the multiples method involves applying a synthetic market valuation multiple (e.g. EV/Revenue or EV/EBITDA), to an associated value driver of the firm being valued (e.g. the target firm's Revenue or EBITDA). As a consequence of the role of financial structuring in private equity, the IPEV Guidelines recommends the use of Enterprise Value multiples in the determination of Fair Value: “... multiples should be used to derive an Enterprise Value for the Underlying Business.”

The EV/Revenue multiple (the “Revenue Multiple”) is generally useful for valuing firms with negative earnings. The multiple is less susceptible to accounting distortions and is not readily or easily available for manipulation by firm management. The traditional Revenue Multiple approach in valuation is typically useful for valuing cyclical businesses and firms operating in mature industries.

The EV/EBITDA multiple (the “EBITDA Multiple”) is one of the most widely used valuation multiples, and probably the most commonly used enterprise value multiple. The EBITDA Multiple is frequently employed as an alternative to the Price/Earnings ratio (the “P/E” ratio), because EBITDA is regularly applied as an indicator of company financial performance and is generally viewed as an alternative to recorded earnings. EBITDA strips out the effects of a company's cost of debt, tax, depreciation and amortisation; consequently, EBITDA is useful for evaluating firms with different capital structures, tax rates and depreciation policies.

The EV/EBIT multiple (the “EBIT Multiple”) is similar to the EBITDA Multiple, although it includes the non-cash accounting effects of firm depreciation and amortisation. EBIT commonly assesses the earnings generated by a company from normal operations and is often used as a proxy for firm operating profit. EBIT represents a company's capacity to generate earnings from normal operations, by excluding the effects of taxation, interest expense, and capital structure.

The EV/Total Assets multiple (the “Total Asset Multiple”) is commonly utilised for industries which are asset-intensive; although, like the Revenue Multiple, the Total Asset Multiple is also useful for valuing firms with negative earnings. Using the Total Asset Multiple is particularly advantageous where a business is predominantly asset-driven, and where return-on-assets (ROA) is largely consistent, as this allows base assets to serve as a proxy and appropriate indicator of future cash flows.

The EV/Tangible Assets multiple (the “Tangible Asset Multiple”) is similar to the Total Asset Multiple; however, the Tangible Asset Multiple excludes recorded goodwill and other intangible assets from the denominator in its calculation. Tangible assets include customary fixed assets such as machinery, land and buildings; and also current assets, such as firm inventory. Utilising the Tangible Asset Multiple instead of the Total Asset Multiple can help remedy some of the drawbacks associated with the Total Asset Multiple, namely, the inclusion of goodwill and other identifiable intangible assets on the balance sheet.

## DATA OVERVIEW

### SIC Industries (SIC Code):

Food And Kindred Products (2000), Meat Packing Plants (2011), Sausages & Other Prepared Meat Products (2013), Poultry Slaughtering And Processing (2015), Dairy Products (2020), Ice Cream & Frozen Desserts (2024), Canned, Frozen & Preservd Fruit, Veg & Food Specialties (2030), Canned, Fruits, Veg, Preserves, Jams & Jellies (2033), Grain Mill Products (2040), Bakery Products (2050), Cookies & Crackers (2052), Sugar & Confectionery Products (2060), Fats & Oils (2070), Beverages (2080), Malt Beverages (2082), Bottled & Canned Soft Drinks & Carbonated Waters (2086), Miscellaneous Food Preparations & Kindred Products (2090), Tobacco Products (2100), Cigarettes (2111), Textile Mill Products (2200), Broadwoven Fabric Mills, Cotton (2211), Broadwoven Fabric Mills, Man Made Fiber & Silk (2221), Carpets & Rugs (2273), Apparel & Other Finishd Prods Of Fabrics & Similar Matl (2300), Men'S & Boys' Furnishgs, Work Clothg, & Allied Garments (2320), Women'S, Misses', And Juniors Outerwear (2330), Women'S, Misses', Children'S & Infants' Undergarments (2340), Lumber & Wood Products (No Furniture) (2400), Sawmills & Planting Mills, General (2421), Millwood, Veneer, Plywood, & Structural Wood Members (2430), Mobile Homes (2451), Household Furniture (2510), Wood Household Furniture, (No Upholstered) (2511), Office Furniture (2520), Office Furniture (No Wood) (2522), Public Bldg & Related Furniture (2531), Miscellaneous Furniture & Fixtures (2590), Pulp Mills (2611), Paper Mills (2621), Paperboard Mills (2631), Paperboard Containers & Boxes (2650), Converted Paper & Paperboard Prods (No Contaners/Boxes) (2670), Newspapers: Publishing Or Publishing & Printing (2711), Periodicals: Publishing Or Publishing & Printing (2721), Books: Publishing Or Publishing & Printing (2731), Miscellaneous Publishing (2741), Commercial Printing (2750), Manifold Business Forms (2761), Greeting Cards (2771), Blankbooks, Looseleaf Binders & Bookbindg & Relatd Work (2780), Service Industries For The Printing Trade (2790), Chemicals & Allied Products (2800), Industrial Inorganic Chemicals (2810), Plastic Material, Synth Resin/Rubber, Cellulos (No Glass) (2820), Plastic Materials, Synth Resins & Nonvulcan Elastomers (2821), Medicinal Chemicals & Botanical Products (2833), Pharmaceutical Preparations (2834), In Vitro & In Vivo Diagnostic Substances (2835), Biological Products, (No Disgnostic Substances) (2836), Soap, Detergents, Cleang Preparations, Perfumes, Cosmetics (2840), Specialty Cleaning, Polishing And Sanitation Preparations (2842), Perfumes, Cosmetics & Other Toilet Preparations (2844), Paints, Varnishes, Lacquers, Enamels & Allied Prods (2851), Industrial Organic Chemicals (2860), Agricultural Chemicals (2870), Miscellaneous Chemical Products (2890), Adhesives & Sealants (2891), Petroleum Refining (2911), Miscellaneous Products Of Petroleum & Coal (2990), Tires & Inner Tubes (3011), Rubber & Plastics Footwear (3021), Gaskets, Packg & Sealg Devices & Rubber & Plastics Hose (3050), Fabricated Rubber Products, Nec (3060), Miscellaneous Plastics Products (3080), Unsupported Plastics Film & Sheet (3081), Plastics Foam Products (3086), Plastics Products, Nec (3089), Leather & Leather Products (3100), Footwear, (No Rubber) (3140), Flat Glass (3211), Glass & Glassware, Pressed Or Blown (3220), Glass Containers (3221), Glass Products, Made Of Purchased Glass (3231), Cement, Hydraulic (3241), Structural Clay Products (3250), Pottery & Related Products (3260), Concrete, Gypsum & Plaster Products (3270), Concrete Products, Except Block & Brick (3272), Cut Stone & Stone Products (3281), Abrasive, Asbestos & Misc Nonmetallic Mineral Prods (3290), Steel Works, Blast Furnaces & Rolling & Finishing Mills (3310), Steel Works, Blast Furnaces & Rolling Mills (Coke Ovens) (3312), Steel Pipe & Tubes (3317), Primary Smelting & Refining Of Nonferrous Metals (3330), Primary Production Of Aluminum (3334), Secondary Smelting & Refining Of Nonferrous Metals (3341), Rolling Drawing & Extruding Of Nonferrous Metals (3350), Drawing & Insulating Of Nonferrous Wire (3357), Nonferrous Foundries (Castings) (3360), Miscellaneous Primary Metal Products (3390), Metal Cans (3411), Metal Shipping Barrels, Drums, Kegs & Pails (3412), Cutlery, Handtools & General Hardware (3420), Heating Equip, Except Elec & Warm Air; & Plumbing Fixtures (3430), Heating Equipment, Except Electric & Warm Air Furnaces (3433), Fabricated Structural Metal Products (3440), Metal Doors, Sash, Frames, Moldings & Trim (3442), Fabricated Plate Work (Boiler Shops) (3443), Prefabricated Metal Buildings & Components (3448), Bolts, Nuts, Screws, Rivets & Washers (3452), Metal Forgings & Stampings (3460), Coating, Engraving & Allied Services (3470), Ordnance & Accessories, (No Vehicles/Guided Missiles) (3480), Miscellaneous Fabricated Metal Products (3490), Engines & Turbines (3510), Farm Machinery & Equipment (3523), Lawn & Garden Tractors & Home Lawn & Gardens Equip (3524), Construction, Mining & Materials Handling Machinery & Equip (3530), Construction Machinery & Equip (3531), Oil & Gas Field Machinery & Equipment (3533), Industrial Trucks, Tractors, Trailors & Stackers (3537), Metalworkg Machinery & Equipment (3540), Machine Tools, Metal Cutting Types (3541), Special Industry Machinery (No Metalworking Machinery) (3550), Printing Trades Machinery & Equipment (3555), Special Industry Machinery, Nec (3559), General Industrial Machinery & Equipment (3560), Pumps & Pumping Equipment (3561), Ball & Roller Bearings (3562), Industrial & Commercial Fans & Blowers & Air Purifing Equip (3564), General Industrial Machinery & Equipment, Nec (3569), Computer & Office Equipment (3570), Electronic Computers (3571), Computer Storage Devices (3572), Computer Communications Equipment (3576), Computer Peripheral Equipment, Nec (3577), Calculating & Accounting Machines (No Electronic Computers) (3578), Office Machines, Nec (3579), Refrigeration & Service Industry Machinery (3580), Air-Cond & Warm Air Heatg Equip & Comm & Indl Refrig Equip (3585), Misc Industrial & Commercial Machinery & Equipment (3590), Electronic & Other Electrical Equipment (No Computer Equip) (3600), Power, Distribution & Specialty Transformers (3612), Switchgear & Switchboard Apparatus (3613), Electrical Industrial Apparatus (3620), Motors & Generators (3621), Household Appliances (3630), Electric Housewares & Fans (3634), Electric Lighting & Wiring Equipment (3640), Household Audio & Video Equipment (3651), Telephone & Telegraph Apparatus (3661), Radio & Tv Broadcasting & Communications Equipment (3663), Communications Equipment, Nec (3669), Electronic Components & Accessories (3670), Printed Circuit Boards (3672), Semiconductors & Related Devices (3674), Electronic Coils, Transformers & Other Inductors (3677), Electronic Connectors (3678), Electronic Components, Nec (3679), Miscellaneous Electrical Machinery, Equipment & Supplies (3690), Magnetic & Optical Recording Media (3695), Motor Vehicles & Passenger Car Bodies (3711), Truck & Bus Bodies (3713), Motor Vehicle Parts & Accessories (3714), Truck Trailers (3715), Motor Homes (3716), Aircraft & Parts (3720), Aircraft (3721), Aircraft Engines & Engine Parts (3724), Aircraft Parts & Auxiliary Equipment, Nec (3728), Ship & Boat Building & Repairing (3730), Railroad Equipment (3743), Motorcycles, Bicycles & Parts (3751), Guided Missiles & Space



Vehicles & Parts (3760), Miscellaneous Transportation Equipment (3790), Search, Detection, Navigation, Guidance, Aeronautical Sys (3812), Laboratory Apparatus & Furniture (3821), Auto Controls For Regulating Residential & Comml Environments (3822), Industrial Instruments For Measurement, Display, And Control (3823), Totalizing Fluid Meters & Counting Devices (3824), Instruments For Meas & Testing Of Electricity & Elec Signals (3825), Laboratory Analytical Instruments (3826), Optical Instruments & Lenses (3827), Measuring & Controlling Devices, Nec (3829), Surgical & Medical Instruments & Apparatus (3841), Orthopedic, Prosthetic & Surgical Appliances & Supplies (3842), Dental Equipment & Supplies (3843), X-Ray Apparatus & Tubes & Related Irradiation Apparatus (3844), Electromedical & Electrotherapeutic Apparatus (3845), Ophthalmic Goods (3851), Photographic Equipment & Supplies (3861), Watches, Clocks, Clockwork Operated Devices/Parts (3873), Jewelry, Silverware & Plated Ware (3910), Dolls & Stuffed Toys (3942), Games, Toys & Children'S Vehicles (No Dolls & Bicycles) (3944), Sporting & Athletic Goods, Nec (3949), Miscellaneous Manufacturing Industries (3990)

#### Companies (Ticker):

Agilent Technologies Inc (A), Alcoa Corp (AA), Applied Optoelectronics Inc (AAOI), Aaon Inc (AAON), Apple Inc (AAPL), Axon Enterprise Inc (AAXN), Abb Ltd (ABB), AbbVie Inc (ABBV), Abeona Therapeutics Inc (ABEO), Ambev Sa (ABEV), Ability Inc (ABIL), ARCA biopharma Inc (ABIO), Abiomed Inc (ABMD), Abbott Laboratories (ABT), Arbutus Biopharma Corp (ABUS), Arcosa Inc (ACA), Acadia Pharmaceuticals Inc (ACAD), Aurora Cannabis Inc (ACB), ACCO BRANDS Corp (ACCO), Acer Therapeutics Inc (ACER), Aluminum Corp Of China Ltd (ACH), Achillion Pharmaceuticals Inc (ACHN), Achieve Life Sciences Inc (ACHV), Acacia Communications Inc (ACIA), AC Immune SA (ACIU), Axcelis Technologies Inc (ACLS), ACM Research Inc (ACMR), Acorda Therapeutics Inc (ACOR), Aclaris Therapeutics Inc (ACRS), Acelrx Pharmaceuticals Inc (ACRX), Acasti Pharma Inc (ACST), Acme United Corp (ACU), Adaptimmune Therapeutics PLC (ADAP), Advanced Emissions Solutions Inc (ADES), Analog Devices Inc (ADI), Adial Pharmaceuticals Inc (ADIL), Archer-Daniels-Midland Co (ADM), Adma Biologics Inc (ADMA), Adamis Pharmaceuticals Corp (ADMP), Adamas Pharmaceuticals Inc (ADMS), Adient plc (ADNT), Adaptive Biotechnologies Corp (ADPT), Aduro Biotech Inc (ADRO), Adtran Inc (ADTN), Adverum Biotechnologies Inc (ADVM), Advaxis Inc (ADXS), Aehr Test Systems (AEHR), Advanced Energy Industries Inc (AEIS), Aethlon Medical Inc (AEMD), Aerie Pharmaceuticals Inc (AERI), Aeterna Zentaris Inc (AEZS), Armstrong Flooring Inc (AFI), Affimed NV (AFMD), Agco Corp (AGCO), AgeX Therapeutics Inc (AGE), Agenus Inc (AGEN), Agios Pharmaceuticals Inc (AGIO), Aeglea BioTherapeutics Inc (AGLE), Allergan plc (AGN), Agile Therapeutics Inc (AGRX), PlayAGS Inc (AGS), Applied Genetic Technologies Corp (AGTC), A H Belo Corp (AHC), Allied Healthcare Products Inc (AHPI), Altra Industrial Motion Corp (AIMC), Aimmune Therapeutics Inc (AIMT), Albany International Corp (AIN), Aar Corp (AIR), Airgain Inc (AIRG), Air Industries Group (AIRI), Aerojet Rocketdyne Holdings Inc (AJRD), Akebia Therapeutics Inc (AKBA), Akcea Therapeutics Inc (AKCA), Akers Biosciences Inc (AKER), Andina Bottling Co Inc (AKO.B), Aker Therapeutics Inc (AKRO), Akorn Inc (AKRX), Ak Steel Holding Corp (AKS), Akoustis Technologies Inc (AKTS), Akari Therapeutics Plc (AKTX), Albemarle Corp (ALB), Albireo Pharma Inc (ALBO), Alcon Inc (ALC), Alder Biopharmaceuticals Inc (ALDR), Aldeyra Therapeutics Inc (ALDX), Alector Inc (ALEC), Alamo Group Inc (ALG), Align Technology Inc (ALGN), Alimera Sciences Inc (ALIM), Alkermes plc (ALKS), Allakos Inc (ALLK), Allogene Therapeutics Inc (ALLO), Allot Ltd (ALLT), Allena Pharmaceuticals Inc (ALNA), Alnylam Pharmaceuticals Inc (ALNY), AstroNova Inc (ALOT), Alpine Immune Sciences Inc (ALPN), Aileron Therapeutics Inc (ALRN), Allison Transmission Holdings Inc (ALSN), Altimimmune Inc (ALT), Autoliv Inc (ALV), Alexion Pharmaceuticals Inc (ALXN), Amag Pharmaceuticals Inc (AMAG), Applied Materials Inc (AMAT), Ambarella Inc (AMBA), Amcor plc (AMCR), Advanced Micro Devices Inc (AMD), Ametek Inc (AME), Amgen Inc (AMGN), Amkor Technology Inc (AMKR), Allied Motion Technologies Inc (AMOT), Ampio Pharmaceuticals Inc (AMPE), Amphastar Pharmaceuticals Inc (AMPH), AMERI Holdings Inc (AMRH), Amarin Corp Plc (AMRN), Amyris Inc (AMRS), Amneal Pharmaceuticals Inc (AMRX), American Superconductor Corp (AMSC), Aemetis Inc (AMTX), American Woodmark Corp (AMWD), Anaptysbio Inc (ANAB), Anchiano Therapeutics Ltd (ANCN), Arista Networks Inc (ANET), Amira Nature Foods Ltd (ANFI), Angiodynamics Inc (ANGO), Anika Therapeutics Inc (ANIK), Ani Pharmaceuticals Inc (ANIP), American Outdoor Brands Corp (AOBC), Smith A O Corp (AOS), ALPHA & OMEGA SEMICONDUCTOR Ltd (AOSL), Ampco Pittsburgh Corp (AP), Air Products & Chemicals Inc (APD), Apollo Endosurgery Inc (APEN), Apex Global Brands Inc (APEX), Amphenol Corp (APH), Aphria Inc (APHA), Apellis Pharmaceuticals Inc (APLS), Applied Therapeutics Inc (APLT), Aptorum Group Ltd (APM), Apogee Enterprises Inc (APOG), Collect Biotechnology Ltd (APOP), Alpha Pro Tech Ltd (APT), Aptose Biosciences Inc (APTO), Aptiv PLC (APTV), Aptinyx Inc (APTX), Aptevo Therapeutics Inc (APVO), Asia Pacific Wire & Cable Corp Ltd (APWC), Apergy Corp (APY), Apyx Medical Corp (APYX), Aquantia Corp (AQ), Aqua Metals Inc (AQMS), Aquestive Therapeutics Inc (AQST), Evoqua Water Technologies Corp (AQUA), Aravive Inc (ARAV), Accuray Inc (ARAY), Arcturus Therapeutics Ltd (ARCT), Ardagh Group SA (ARD), Ardis Pharmaceuticals Inc (ARDS), Ardelyx Inc (ARDX), Argenx Se (ARGX), Arlo Technologies Inc (ARLO), Armata Pharmaceuticals Inc (ARMP), Arena Pharmaceuticals Inc (ARNA), Arconic Inc (ARNC), Aerprio Pharmaceuticals Inc (ARPO), Arqle Inc (ARQL), Arts Way Manufacturing Co Inc (ARTW), Arotech Corp (ARTX), Arvinas Inc (ARVN), Arrowhead Pharmaceuticals Inc (ARWR), AdvanSix Inc (ASIX), ASLAN Pharmaceuticals Ltd (ASLN), Assembly Biosciences Inc (ASMB), Asml Holding Nv (ASML), Ascendis Pharma A (ASND), Assertio Therapeutics Inc (ASRT), ASTROTECH Corp (ASTC), Astec Industries Inc (ASTE), Asv Holdings Inc (ASV), ASE Technology Holding Co Ltd (ASX), Amtech Systems Inc (ASYS), Alphatec Holdings Inc (ATEC), A10 Networks Inc (ATEN), Alteryx Therapeutics Ltd (ATHE), Athersys Inc (ATHX), Allegheny Technologies Inc (ATI), Atkore International Group Inc (ATKR), Actinium Pharmaceuticals Inc (ATNM), Athenex Inc (ATNX), Atomera Inc (ATOM), Atossa Genetics Inc (ATOS), Aptargroup Inc (ATR), Atara Biotherapeutics Inc (ATRA), AtriCure Inc (ATRC), Atrion Corp (ATRI), Astronics Corp (ATRO), Antares Pharma Inc (ATRS), Actuant Corp (ATU), Avenue Therapeutics Inc (ATXI), Audiocodes Ltd (AUDC), Au Optronics Corp (AUO), Aurinia Pharmaceuticals Inc (AUPH), Autolus Therapeutics plc (AUTL), AeroVironment Inc (AVAV), American Vanguard Corp (AVD), Avelo Pharmaceuticals Plc (AVDL), Avedro Inc (AVDR), Aveo Pharmaceuticals Inc (AVEO), Broadcom Inc (AVGO), Avinger Inc (AVGR), Avanos Medical Inc (AVNS), Aviat

Networks Inc (AVNW), Avon Products Inc (AVP), AVROBIO Inc (AVRO), Avantor Inc (AVTR), AVX Corp (AVX), Avery Dennison Corp (AVY), Avaya Holdings Corp (AVYA), Armstrong World Industries Inc (AWI), Accelerate Diagnostics Inc (AXDX), Axogen Inc (AXGN), Axovant Gene Therapies Ltd (AXGT), American Axle & Manufacturing Holdings Inc (AXL), Axcella Health Inc (AXLA), Axonics Modulation Technologies Inc (AXNX), Amrep Corp (AXR), Axsome Therapeutics Inc (AXSM), Axalta Coating Systems Ltd (AXTA), Axt Inc (AXTI), Acuity Brands Inc (AYI), Aytu Bioscience Inc (AYTU), Astrazeneca Plc (AZN), AzurRx BioPharma Inc (AZRX), Azz Inc (AZZ), Barnes Group Inc (B), Boeing Co (BA), Baxter International Inc (BAX), BLACKBERRY Ltd (BB), BridgeBio Pharma Inc (BBIO), Brunswick Corp (BC), BioCardia Inc (BCDA), Atreca Inc (BCEL), Brainstorm Cell Therapeutics Inc (BCLI), Balchem Corp (BCPC), Biocryst Pharmaceuticals Inc (BCRX), BICYCLE THERAPEUTICS plc (BCYC), Belden Inc (BDC), Blonder Tongue Laboratories Inc (BDR), Biodelivery Sciences International Inc (BDSI), Becton Dickinson & Co (BDX), Bloom Energy Corp (BE), Bel Fuse Inc (BELFA), Berry Global Group Inc (BERY), Brown Forman Corp (BF.B), Bunge LTD (BG), Briggs & Stratton Corp (BGG), BeiGene Ltd (BGNE), B&G Foods Inc (BGS), Blue Hat Interactive Entertainment Technology (BHAT), Bausch Health Companies Inc (BHC), Benchmark Electronics Inc (BHE), Baker Hughes a GE Co (BHGE), Biohaven Pharmaceutical Holding Co Ltd (BHVN), Biogen Inc (BIIB), NF Energy Saving Corp (BIMI), Bio-Rad Laboratories Inc (BIO), Biolase Inc (BIOL), Bioceres Crop Solutions Corp (BIOX), BK Technologies Corp (BKTI), Bio Key International Inc (BKYI), Blue Bird Corp (BLBD), Bellicum Pharmaceuticals Inc (BLCM), Ballard Power Systems Inc (BLDP), Biolife Solutions Inc (BLFS), BALL Corp (BLL), Bellerophon Therapeutics Inc (BLPH), BioLineRx Ltd (BLRX), bluebird bio Inc (BLUE), Badger Meter Inc (BMI), Biomerica Inc (BMRA), Biomarin Pharmaceutical Inc (BMRN), Bristol Myers Squibb Co (BMY), Bionano Genomics Inc (BNGO), Bonso Electronics International Inc (BNSO), Benitec Biopharma LTD (BNTC), Audentes Therapeutics Inc (BOLD), DMC Global Inc (BOOM), Bos Better Online Solutions Ltd (BOSC), Boxlight Corp (BOXL), Bp Plc (BP), Blueprint Medicines Corp (BPMC), Bio-Path Holdings Inc (BPTH), Brady Corp (BRC), Craft Brew Alliance Inc (BREW), Brf Sa (BRFS), Bridgford Foods Corp (BRID), Bruker Corp (BRKR), Brooks Automation Inc (BRKS), Bassett Furniture Industries Inc (BSET), BioSig Technologies Inc (BSGM), Biospecifics Technologies Corp (BSTC), Boston Scientific Corp (BSX), BioXcel Therapeutics Inc (BTAI), British American Tobacco plc (BTI), Ballantyne Strong Inc (BTN), Anheuser-Busch InBev SA (BUD), BiondVax Pharmaceuticals Ltd (BVXV), Babcock & Wilcox Enterprises Inc (BW), Borgwarner Inc (BWA), Brainsway Ltd (BWAY), Broadwind Energy Inc (BWEN), BWX Technologies Inc (BWXT), Beyond Meat Inc (BYND), BeyondSpring Inc (BYSI), China Automotive Systems Inc (CAAS), Cae Inc (CAE), Conagra Brands Inc (CAG), Canon Inc (CAJ), Caleres Inc (CAL), Calithera Biosciences Inc (CALA), CalAmp Corp (CAMP), Camtek Ltd (CAMT), Can-Fite BioPharma Ltd (CANF), Capricor Therapeutics Inc (CAPR), Cara Therapeutics Inc (CARA), Casa Systems Inc (CASA), CASI Pharmaceuticals Inc (CASI), Caterpillar Inc (CAT), Catabasis Pharmaceuticals Inc (CATB), CBAK Energy Technology Inc (CBAT), CymaBay Therapeutics Inc (CBAY), Catalyst Biosciences Inc (CBIO), Cambrex Corp (CBM), Cellular Biomedicine Group Inc (CBMG), China Biologic Products Holdings Inc (CBPO), Continental Building Products Inc (CBPX), Cabot Corp (CBT), Chemours Co (CC), China Ceramics Co Ltd (CCCL), COCA-COLA EUROPEAN PARTNERS plc (CCEP), Chase Corp (CCF), Crown Holdings Inc (CCK), Cabot Microelectronics Corp (CCMP), Compania Cerveceras Unidas Sa (CCU), ChemoCentryx Inc (CCXI), Avid Bioservices Inc (CDMO), Cidara Therapeutics Inc (CDTX), ChromaDex Corp (CDXC), Codexis Inc (CDXS), Celanese Corp (CE), Ceco Environmental Corp (CECE), Celgene Corp (CELG), Celsius Holdings Inc (CELH), Chembio Diagnostics Inc (CEMI), Century Aluminum Co (CENX), Cerecor Inc (CERC), Cerus Corp (CERS), Centrex Inc (CETX), Ceva Inc (CEVA), CF Industries Holdings Inc (CF), Conformis Inc (CFMS), CONTRAFECT Corp (CFRX), Colfax CORP (CFX), China Green Agriculture Inc (CGA), Canopy Growth Corp (CGC), Compugen Ltd (CGEN), Cognex Corp (CGNX), Church & Dwight Co Inc (CHD), Check-Cap Ltd (CHEK), CHF Solutions Inc (CHFS), Chiasma Inc (CHMA), Coherus BioSciences Inc (CHRS), Ciena Corp (CIEN), Circor International Inc (CIR), CompX International Inc (CIX), China Jo-Jo Drugstores Inc (CJJD), Checkpoint Therapeutics Inc (CKPT), Colgate Palmolive Co (CL), Clarus Corp (CLAR), Celldex Therapeutics Inc (CLDX), Clearfield Inc (CLFD), CollPlant Biotechnologies Ltd (CLGN), Clearsign Combustion Corp (CLIR), Collectis SA (CLLS), Calumet Specialty Products Partners LP (CLMT), Collectar Biosciences Inc (CLRB), Clearone Inc (CLRO), Celestica Inc (CLS), Clearside Biomedical Inc (CLSD), Celsion CORP (CLSN), Clovis Oncology Inc (CLVS), Clearwater Paper Corp (CLW), Clorox Co (CLX), Calyxt Inc (CLXT), Cambium Networks Corp (CMBM), COMMERCIAL METALS Co (CMC), Columbus McKinnon Corp (CMCO), Cantel Medical Corp (CMD), Cummins Inc (CMI), Cimpress Nv (CMPR), Chimerix Inc (CMRX), Core Molding Technologies Inc (CMT), Comtech Telecommunications Corp (CMTL), Conatus Pharmaceuticals Inc (CNAT), Concert Pharmaceuticals Inc (CNCE), CNH Industrial NV (CNHI), Conmed Corp (CNMD), Cornerstone Building Brands Inc (CNR), Constellation Pharmaceuticals Inc (CNST), Cocrystal Pharma Inc (COCP), Coda Octopus Group Inc (CODA), Compass Diversified Holdings (CODI), Co-Diagnostics Inc (CODX), Coherent Inc (COHR), Cohu Inc (COHU), Coca-Cola Consolidated Inc (COKE), Collegium Pharmaceutical Inc (COLL), Columbia Sportswear Co (COLM), CommScope Holding Company Inc (COMM), Cooper Companies Inc (COO), Conocophillips (COP), Corcept Therapeutics Inc (CORT), Correvio Pharma Corp (CORV), Cott Corp (COT), Coty Inc (COTY), Cementos Pacasmayo Saa (CPAC), Campbell Soup Co (CPB), China Pharma Holdings Inc (CPHI), Cumberland Pharmaceuticals Inc (CPIX), Capri Holdings Ltd (CPRI), Catalyst Pharmaceuticals Inc (CPRX), Cooper-Standard Holdings Inc (CPS), Cps Technologies Corp (CPSH), CAPSTONE TURBINE Corp (CPST), Crane Co (CR), Cray Inc (CRAY), Corbus Pharmaceuticals Holdings Inc (CRBP), Cree Inc (CREE), Crh Public Ltd Co (CRH), CRH Medical Corp (CRHM), Carters Inc (CRI), Curis Inc (CRIS), CorMedix Inc (CRMD), Ceragon Networks Ltd (CRNT), Crinetics Pharmaceuticals Inc (CRNX), Cronos Group Inc (CRON), Crocs Inc (CROX), Carbo Ceramics Inc (CRR), Carpenter Technology Corp (CRS), CRISPR Therapeutics AG (CRSP), Cortexyme Inc (CRTX), Cirrus Logic Inc (CRUS), Corvus Pharmaceuticals Inc (CRVS), Crown Crafts Inc (CRWS), Cryolife Inc (CRY), Champions Oncology Inc (CSBR), Cisco Systems Inc (CSCO), Cardiovascular Systems Inc (CSII), Canadian Solar Inc (CSIQ), Carlisle Companies Inc (CSL), Ciss Industries Inc (CSS), Caesarstone Ltd (CSTE), Constellium SE (CSTM), Csw Industrials Inc (CSWI), Cintas Corp (CTAS), Cooper Tire & Rubber Co (CTB), Charles & Colvard Ltd (CTHR), Cti Industries Corp (CTIB), Cti Biopharma Corp (CTIC), Catalent Inc (CTLT), CytomX Therapeutics Inc (CTMX), Centric Brands Inc (CTRC), Cts Corp (CTS), Cytosorbents

Corp (CTSO), CannTrust Holdings Inc (CTST), Citius Pharmaceuticals Inc (CTXR), Cubic Corp (CUB), Cue Biopharma Inc (CUE), Culp Inc (CULP), Continental Materials Corp (CUO), Neuralstem Inc (CUR), Cutera Inc (CUTR), Cavco Industries Inc (CVCO), Commercial Vehicle Group Inc (CVGI), Cvr Energy Inc (CVI), Cel Sci Corp (CVM), Chicago Rivet & Machine Co (CVR), Corindus Vascular Robotics Inc (CVRS), Cpi Aerostructures Inc (CVU), Cvd Equipment Corp (CVV), Chevron Corp (CVX), Curtiss Wright Corp (CW), CohBar Inc (CWBR), Cemex Sab De Cv (CX), China XD Plastics Co Ltd (CXDC), Cypress Semiconductor Corp (CY), Celyad Sa (CYAD), Cyanotech Corp (CYAN), Cyberoptics Corp (CYBE), Cyclacel Pharmaceuticals Inc (CYCC), Cycleron Therapeutics Inc (CYCN), China Yuchai International Ltd (CYD), Cryoport Inc (CYRX), Cytokinetics Inc (CYTK), Cosan Ltd (CZZ), Data I/O Corp (DAIO), Daktronics Inc (DAKT), Dana Inc (DAN), Darling Ingredients Inc (DAR), Dare Bioscience Inc (DARE), DIEBOLD NIXDORF Inc (DBD), DBV Technologies SA (DBVT), Donaldson Co Inc (DCI), Ducommun Inc (DCO), Deciphera Pharmaceuticals Inc (DCPH), DuPont de Nemours Inc (DD), Deere & Co (DE), Deckers Outdoor Corp (DECK), Dell Technologies Inc (DELL), Diageo Plc (DEO), Dermira Inc (DERM), Dean Foods Co (DF), Diffusion Pharmaceuticals Inc (DDFN), Digi International Inc (DGII), Digital Ally Inc (DGLY), Danaher Corp (DHR), Diodes Inc (DIOD), Daily Journal Corp (DJCO), Delek US Holdings Inc (DK), Delphi Technologies PLC (DLPH), Deluxe Corp (DLX), DiaMedica Therapeutics Inc (DMAC), DelMar Pharmaceuticals Inc (DMPI), Denali Therapeutics Inc (DNLI), NOW Inc (DNOW), Dogness (International) Corp (DOGZ), BRP Inc (DOOO), Masonite International Corp (DOOR), Dorman Products Inc (DORM), DOVER Corp (DOV), Dova Pharmaceuticals Inc (DOVA), Dow Inc (DOW), DPW Holdings Inc (DPW), Daqo New Energy Corp (DQ), Digirad Corp (DRAD), DarioHealth Corp (DRIO), Dicerna Pharmaceuticals Inc (DRNA), Dril-Quip Inc (DRQ), Durect Corp (DRRX), Dsp Group Inc (DSPG), Document Security Systems Inc (DSS), Deswell Industries Inc (DSWL), Precision Biosciences Inc (DTIL), Dynavax Technologies Corp (DVAX), Dexcom Inc (DXCM), Dunxin Financial Holdings Ltd (DXF), Dixie Group Inc (DXYN), Dyadic International Inc (DYAI), Dasan Zhong Solutions Inc (DZSI), Graftech International Ltd (EAF), Auris Medical Holding Ltd (EARS), Eastside Distilling Inc (EAST), Ennis Inc (EBF), Emergent BioSolutions Inc (EBS), Ecolab Inc (ECL), electroCore Inc (ECOR), Edap Tms Sa (EDAP), Editas Medicine Inc (EDIT), Edison Nation Inc (EDNT), Edesa Biotech Inc (EDSA), Energy Focus Inc (EFOI), Eagle Pharmaceuticals Inc (EGRX), Eidus Therapeutics Inc (EIDX), Eiger BioPharmaceuticals Inc (EIGR), Ekso Bionics Holdings Inc (EKSO), Estee Lauder Companies Inc (EL), Elanco Animal Health Inc (ELAN), elf Beauty Inc (ELF), Endologix Inc (ELGX), Electromed Inc (ELMD), Electro Sensors Inc (ELSE), Eltek Ltd (ELTK), Callaway Golf Co (ELY), Emagin Corp (EMAN), Emcore Corp (EMKR), Eastern Co (EML), Eastman Chemical Co (EMN), Emerson Electric Co (EMR), Endo International plc (ENDP), Enliven Therapeutics Ltd (ENLV), Enochian Biosciences Inc (ENOB), Enphase Energy Inc (ENPH), Energizer Holdings Inc (ENR), Enanta Pharmaceuticals Inc (ENTA), Entegris Inc (ENTG), Entera Bio Ltd (ENTX), Evolus Inc (EOLS), EDGEWELL PERSONAL CARE Co (EPC), ESSA Pharma Inc (EPIX), Epizyme Inc (EPZM), Equillum Inc (EQ), Equinor Asa (EQNR), Ericsson Lm Telephone Co (ERIC), Energy Recovery Inc (ERII), Embraer Sa (ERJ), Escalade Inc (ESCA), Esco Technologies Inc (ESE), Element Solutions Inc (ESI), Elbit Systems Ltd (ESLT), Espey Mfg & Electronics Corp (ESP), Esperion Therapeutics Inc (ESPR), Establishment Labs Holdings Inc (ESTA), Ethan Allen Interiors Inc (ETH), Eaton Corp plc (ETN), Eton Pharmaceuticals Inc (ETON), Entasis Therapeutics Holdings Inc (ETTX), Enviva Partners LP (EVA), Evofem Biosciences Inc (EVFM), Evogene Ltd (EVGN), Evelo Biosciences Inc (EVLO), Evoke Pharma Inc (EVOK), Envision Solar International Inc (EVSI), Edwards Lifesciences Corp (EW), Exfo Inc (EXFO), Eagle Materials Inc (EXP), Extreme Networks Inc (EXTR), National Vision Holdings Inc (EYE), Eyegate Pharmaceuticals Inc (EYEG), Eyenovia Inc (EYEN), Second Sight Medical Products Inc (EYES), EyePoint Pharmaceuticals Inc (EYPT), Ford Motor Co (F), Farmmi Inc (FAMI), Farmer Brothers Co (FARM), Faro Technologies Inc (FARO), Fate Therapeutics Inc (FATE), Fortress Biotech Inc (FBIO), Fiat Chrysler Automobiles NV (FCAU), Fuelcell Energy Inc (FCEL), Fibrocell Science Inc (FCSC), Frequency Electronics Inc (FEIM), Franklin Electric Co Inc (FELE), Fennec Pharmaceuticals Inc (FENC), Forum Energy Technologies Inc (FET), FireEye Inc (FEYE), FutureFuel Corp (FF), Fuwei Films (Holdings) Co Ltd (FFHL), F5 Networks Inc (FFIV), Fibrogen Inc (FGEN), Fitbit Inc (FIT), Homology Medicines Inc (FIXX), National Beverage Corp (FIZZ), Fluidigm Corp (FLDM), Flex Ltd (FLEX), Flir Systems Inc (FLIR), Flowers Foods Inc (FLO), SPX FLOW Inc (FLOW), Flowserve Corp (FLS), Flexion Therapeutics Inc (FLXN), Flexsteel Industries Inc (FLXS), Fmc Corp (FMC), Mexican Economic Development Inc (FMX), Fabrinet (FN), Funko Inc (FNKO), Finisar Corp (FNSR), Ferro Corp (FOE), Amicus Therapeutics Inc (FOLD), Foamix Pharmaceuticals Ltd (FOMX), Fonar Corp (FONR), Forward Industries Inc (FORD), Fuling Global Inc (FORK), Formfactor Inc (FORM), Fossil Group Inc (FOSL), Fox Factory Holding Corp (FOXF), Five Prime Therapeutics Inc (FPRX), Friedman Industries Inc (FRD), Freshpet Inc (FRPT), Forterra Inc (FRTA), Forescout Technologies Inc (FSCT), Flexible Solutions International Inc (FSI), First Solar Inc (FSLR), Federal Signal Corp (FSS), Fuel Tech Inc (FTEK), Future FinTech Group Inc (FTFT), TechnipFMC plc (FTI), Flotek Industries Inc (FTK), Fortinet Inc (FTNT), Forty Seven Inc (FTSV), Fortive Corp (FTV), Fuller H B Co (FUL), Fulcrum Therapeutics Inc (FULC), Arcimoto Inc (FUV), Forward Pharma A (FWP), Galectin Therapeutics Inc (GALT), Global Blood Therapeutics Inc (GBT), Greenbrier Companies Inc (GBX), Gannett Co Inc (GCI), GCP Applied Technologies Inc (GCP), General Dynamics Corp (GD), Gardner Denver Holdings Inc (GDI), General Electric Co (GE), Greif Inc (GEF), Gemphire Therapeutics Inc (GEMP), Gencor Industries Inc (GENC), Genetic Technologies Ltd (GENE), Geospace Technologies Corp (GEOS), Geron Corp (GERN), Guess Inc (GES), Gevo Inc (GEVO), Griffon Corp (GFF), Gerdau Sa (GGB), Graco Inc (GGG), Graham Corp (GHM), Guardian Health Sciences Inc (GHSI), Gulf Island Fabrication Inc (GIFI), G Iii Apparel Group Ltd (GIII), Gildan Activewear Inc (GIL), Gilead Sciences Inc (GILD), Gilat Satellite Networks Ltd (GILT), General Mills Inc (GIS), GLAUKOS Corp (GKOS), Galmed Pharmaceuticals Ltd (GLMD), Galapagos Nv (GLPG), Glatfelter P H Co (GLT), Corning Inc (GLW), Glycomimetics Inc (GLYC), General Motors Co (GM), Genmab A (GMAB), Gamida Cell Ltd (GMDA), Globus Medical Inc (GMED), Genocera Biosciences Inc (GNCA), Genfit SA (GNFT), GenMark Diagnostics Inc (GNMK), Aevi Genomic Medicine Inc (GNMX), Genprex Inc (GNPX), Generac Holdings Inc (GNRC), Gentex Corp (GNTX), Acushnet Holdings Corp (GOLF), Canada Goose Holdings Inc (GOOS), Gossamer Bio Inc (GOSS), Graphic Packaging Holding Co (GPK), Green Plains Partners LP (GPP), Green Plains Inc (GPPE), GoPro Inc (GPRO), W R Grace & Co (GRA), Gorman Rupp Co (GRC), Grifols SA (GRFS), Garmin Ltd (GRMN), Gritstone

Oncology Inc (GRTS), Gsi Technology Inc (GSIT), Glaxosmithkline Plc (GSK), Ferroglobe PLC (GSM), Goodyear Tire & Rubber Co (GT), Gates Industrial Corp plc (GTES), G1 Therapeutics Inc (GTHX), Chart Industries Inc (GTLIS), Garrett Motion Inc (GTX), Gulf Resources Inc (GURE), Gw Pharmaceuticals Plc (GWPH), Haemonetics Corp (HAE), Hain Celestial Group Inc (HAIN), Restoration Robotics Inc (HAIR), Halozyne Therapeutics Inc (HALO), Harpoon Therapeutics Inc (HARP), Hasbro Inc (HAS), Haynes International Inc (HAYN), Hamilton Beach Brands Holding Co (HBB), Harvard Bioscience Inc (HBIO), Hc2 Holdings Inc (HCHC), Hutchison China MediTech Ltd (HCM), Turtle Beach Corp (HEAR), Hemispherx Biopharma Inc (HEB), Hebron Technology Co Ltd (HEBT), Heico Corp (HEI), Helen Of Troy Ltd (HELE), Hepion Pharmaceuticals Inc (HEPA), Hess Corp (HES), HollyFrontier Corp (HFC), Hillenbrand Inc (HI), Highway Holdings Ltd (HIHO), Huntington Ingalls Industries Inc (HII), Himax Technologies Inc (HIMX), Hancock Jaffe Laboratories Inc (HJLI), Helios Technologies Inc (HLIO), Harmonic Inc (HLIT), Honda Motor Co Ltd (HMC), Houghton Mifflin Harcourt Co (HMHC), Huami Corp (HMI), Hni Corp (HNI), Hooker Furniture Corp (HOFT), Harley-Davidson Inc (HOG), Hollysys Automation Technologies Ltd (HOLI), Hologic Inc (HOLX), Honeywell International Inc (HON), HOOKIPA Pharma Inc (HOOK), Hoth Therapeutics Inc (HOTH), Hewlett Packard Enterprise Co (HPE), Highpower International Inc (HPJ), Hp Inc (HPQ), Hill-Rom Holdings Inc (HRC), Hormel Foods Corp (HRL), Harrow Health Inc (HROW), Heron Therapeutics Inc (HRTX), Harsco Corp (HSC), Heliux Medical Technologies Inc (HSDT), Histogenics Corp (HSGX), Heska Corp (HSKA), Hershey Co (HSY), Heat Biologics Inc (HTBX), Htg Molecular Diagnostics Inc (HTGM), Hubbell Inc (HUBB), Huntsman CORP (HUN), Hurco Companies Inc (HURC), Hexcel Corp (HXL), Hyster-Yale Materials Handling Inc (HY), Hydrogenics Corp (HYGS), Horizon Global Corp (HZN), Horizon Therapeutics Public Ltd Co (HZNP), Integra Lifesciences Holdings Corp (IART), Industrias Bachoco SAB de CV (IBA), iBio Inc (IBIO), International Business Machines Corp (IBM), Icad Inc (ICAD), Immucell Corp (ICCC), Ichor Holdings Ltd (ICHR), Israel Chemicals Ltd (ICL), Iconix Brand Group Inc (ICON), Intercept Pharmaceuticals Inc (ICPT), Icu Medical Inc (ICUI), Idera Pharmaceuticals Inc (IDRA), Id Systems Inc (IDSY), Interpace Diagnostics Group Inc (IDXG), Idexx Laboratories Inc (IDXX), IDEAYA Biosciences Inc (IDYA), Iec Electronics Corp (IEC), Icahn Enterprises Lp (IEP), Idex Corp (IEX), International Flavors & Fragrances Inc (IFF), InflaRx NV (IFRX), Insteel Industries Inc (IIN), Intricon Corp (IIN), Ii-Vi Inc (IIVI), Ikonics Corp (IKNX), Illumina Inc (ILMN), Imax Corp (IMAX), ImmunoGen Inc (IMGN), Intermolecular Inc (IMI), IMMUTEP Ltd (IMMP), Immersion Corp (IMMR), Immunomedics Inc (IMMU), Imperial Oil Ltd (IMO), Chipmos Technologies Inc (IMOS), Immuron Ltd (IMRN), Integrated Media Technology Ltd (IMTE), Immunic Inc (IMUX), IMV Inc (IMV), Infinity Pharmaceuticals Inc (INFI), INFINERA Corp (INFN), InfuSystem Holdings Inc (INFU), Inogen Inc (INGN), Ingredion Inc (INGR), Immune Bio Inc (INMB), Innovate Biopharmaceuticals Inc (INNT), Inovio Pharmaceuticals Inc (INO), Intelligent Systems Corp (INS), Inseego Corp (INSG), INSMED Inc (INSM), Inspire Medical Systems Inc (INSP), Intel Corp (INTC), Intest Corp (INTT), Innoviva Inc (INVA), Identiv Inc (INVE), Innerworkings Inc (INWK), Ionis Pharmaceuticals Inc (IONS), Innospec Inc (IOSP), ADESTO TECHNOLOGIES Corp (IOTS), Iovance Biotherapeutics Inc (IOVA), International Paper Co (IP), Inter Parfums Inc (IPAR), Ipg Photonics Corp (IPGP), INPHI Corp (IPHI), Ideal Power Inc (IPWR), Ingersoll-Rand plc (IR), Irobot Corp (IRBT), Iridium Communications Inc (IRDM), Iridex Corp (IRIX), Iradimed Corp (IRMD), iRhythm Technologies Inc (IRTC), Ironwood Pharmaceuticals Inc (IRWD), Issuer Direct Corp (ISDR), IVERIC bio Inc (ISEE), Image Sensing Systems Inc (ISNS), Isoray Inc (ISR), Intuitive Surgical Inc (ISRG), Intra-Cellular Therapies Inc (ITCI), Integer Holdings Corp (ITGR), Iteer Inc (ITI), Itamar Medical Ltd (ITMR), It Tech Packaging Inc (ITP), Itron Inc (ITRI), Iterum Therapeutics plc (ITRM), iTT Inc (ITT), Illinois Tool Works Inc (ITW), Intevac Inc (IVAC), Invacare Corp (IVC), Jaguar Health Inc (JAGX), Jakks Pacific Inc (JAKK), Jason Industries Inc (JASN), Jazz Pharmaceuticals plc (JAZZ), Jabil Inc (JBL), Sanfilippo John B & Son Inc (JBSS), John Bean Technologies CORP (JBT), Communications Systems Inc (JCS), Jefferies Financial Group Inc (JEF), JELD-WEN Holding Inc (JELD), James Hardie Industries plc (JHX), Jjill Inc (JILL), J&J Snack Foods Corp (JJSF), JinkoSolar Holding Co Ltd (JKS), Jounce Therapeutics Inc (JNCE), Johnson & Johnson (JNJ), Juniper Networks Inc (JNPR), Johnson Outdoors Inc (JOUT), Jerash Holdings (US) Inc (JRSH), John Wiley & Sons Inc (JW.A), Kellogg Co (K), Kadant Inc (KAI), Kala Pharmaceuticals Inc (KALA), Kaiser Aluminum Corp (KALU), KalVista Pharmaceuticals Inc (KALV), Kimball International Inc (KBAL), Kadmon Holdings Inc (KDMN), Keurig Dr Pepper Inc (KDP), Kimball Electronics Inc (KE), Kemet Corp (KEM), Kewaunee Scientific Corp (KEQU), Keysight Technologies Inc (KEYS), Kraft Heinz Co (KHC), Orthopediatrics Corp (KIDS), Kindred Biosciences Inc (KIN), Kelso Technologies Inc (KIQ), Kla Corp (KLAC), Kaleido Biosciences Inc (KLDO), Kulicke & Soffa Industries Inc (KLIC), Kimberly Clark Corp (KMB), Kamada Ltd (KMDA), Kempfarm Inc (KMPH), Kennametal Inc (KMT), Knowles Corp (KN), Kandi Technologies Group Inc (KNDI), Knoll Inc (KNL), Kiniksa Pharmaceuticals Ltd (KNSA), Coca Cola Co (KO), Kodiak Sciences Inc (KOD), Eastman Kodak Co (KODK), Coca Cola Femsa Sab De Cv (KOF), Cesca Therapeutics Inc (KOOL), Koppers Holdings Inc (KOP), Kopin Corp (KOPN), Koss Corp (KOSS), Karyopharm Therapeutics Inc (KPTI), Kraton Corp (KRA), Komit Digital Ltd (KRNT), Kronos Worldwide Inc (KRO), Karuna Therapeutics Inc (KRTX), Krystal Biotech Inc (KRYX), Kontoor Brands Inc (KTB), Key Tronic Corp (KTCC), Kratos Defense & Security Solutions Inc (KTOS), Kitov Pharma Ltd (KTOV), Kura Oncology Inc (KURA), KvH Industries Inc (KVHI), Quaker Chemical Corp (KWR), Kezar Life Sciences Inc (KZR), Lakeland Industries Inc (LAKE), Lancaster Colony Corp (LANC), Nlight Inc (LASR), Libbey Inc (LBY), Lannett Co Inc (LCI), Lci Industries (LCII), Lifetime Brands Inc (LCUT), Lydall Inc (LDL), Lear Corp (LEA), Lincoln Electric Holdings Inc (LECO), SemiLEDs Corp (LEDS), Lee Enterprises Inc (LEE), Leggett & Platt Inc (LEG), Legacy Housing Corp (LEGH), Levi Strauss & Co (LEVI), Littelfuse Inc (LFUS), Lifevantage Corp (LFVN), Lgl Group Inc (LGL), Ligand Pharmaceuticals Inc (LGND), L3Harris Technologies Inc (LHX), aTYR PHARMA INC (LIFE), Lennox International Inc (LII), Linde Plc (LIN), Liqtech International Inc (LIQT), Lumentum Holdings Inc (LITE), LivaNova PLC (LIVN), La Jolla Pharmaceutical Co (LJPC), LSC Communications Inc (LKSD), Lianluo Smart Ltd (LLIT), Lilly Eli & Co (LLY), Lemaitre Vascular Inc (LMAT), Luminex Corp (LMNX), Lockheed Martin Corp (LMT), Landec Corp (LNDC), Lindsay Corp (LNN), Lantheus Holdings Inc (LNTH), LogicBio Therapeutics Inc (LOGC), Logitech International Sa (LOGI), Loma Negra Compania Industrial Argentina Sociedad Anonima (LOMA), Loral Space & Communications Inc (LORL), Lipocine Inc (LPCN), LG Display Co Ltd (LPL), Lightpath Technologies Inc (LPTH), Leap Therapeutics Inc (LPTX), Louisiana-Pacific Corp (LPX),

Liquidia Technologies Inc (LQDA), LRAD Corp (LRAD), Lam Research Corp (LRCX), Lattice Semiconductor Corp (LSCC), Livent Corp (LTHM), Lantronix Inc (LTRX), lululemon athletica inc (LULU), Lamb Weston Holdings Inc (LW), Lifeway Foods Inc (LWAY), Luxfer Holdings Plc (LXFR), Lexicon Pharmaceuticals Inc (LXRX), Lsb Industries Inc (LXU), LyondellBasell Industries NV (LYB), Lsi Industries Inc (LYTS), La-Z-Boy Inc (LZB), Merrimack Pharmaceuticals Inc (MACK), Magal Security Systems Ltd (MAGS), Masco Corp (MAS), Masimo Corp (MASI), Mattel Inc (MAT), Matthews International Corp (MATW), Maxar Technologies Inc (MAXR), Marrone Bio Innovations Inc (MBII), Mustang Bio Inc (MBIO), Microbot Medical Inc (MBOT), Moleculin Biotech Inc (MBRX), Malibu Boats Inc (MBUU), MasterCraft Boat Holdings Inc (MCFT), Microchip Technology Inc (MCHP), Seres Therapeutics Inc (MCRB), Milacron Holdings Corp (MCRN), Medicines Co (MDCO), Madrigal Pharmaceuticals Inc (MDGL), Medigus Ltd (MDGS), Mondelez International Inc (MDLZ), Meredith Corp (MDP), Mcdermott International Inc (MDR), Medtronic plc (MDT), MediWound Ltd (MDWD), Mayville Engineering Company Inc (MEC), Medifast Inc (MED), Methode Electronics Inc (MEI), MEI Pharma Inc (MEIP), Methanex Corp (MEOH), Mercer International Inc (MERC), Mesoblast Ltd (MESO), Magna International Inc (MGA), Macrogenics Inc (MGNX), Magenta Therapeutics Inc (MGTA), MeiraGTx Holdings plc (MGTX), Mohawk Industries Inc (MHK), Micron Solutions Inc (MICR), MICT Inc (MICT), Middleby Corp (MIDD), Mobile Mini Inc (MINI), Mirum Pharmaceuticals Inc (MIRM), Milestone Pharmaceuticals Inc (MIST), Mitek Systems Inc (MITK), Stealth BioTherapeutics Corp (MITO), McCormick & Co Inc (MKC), Mks Instruments Inc (MKSI), Mesa Laboratories Inc (MLAB), Miller Herman Inc (MLHR), Mueller Industries Inc (MLI), Millendo Therapeutics Inc (MLND), Melinta Therapeutics Inc (MLNT), Mellanox Technologies Ltd (MLNX), Miller Industries Inc (MLR), Milestone Scientific Inc (MLSS), 3M Co (MMM), Merit Medical Systems Inc (MMSI), Mcclatchy Co (MNI), Mallinckrodt plc (MNK), Mannkind Corp (MNKD), Menlo Therapeutics Inc (MNLO), Medicinova Inc (MNOV), Monster Beverage Corp (MNST), Momenta Pharmaceuticals Inc (MNTA), Manitex International Inc (MNTX), Altria Group Inc (MO), Modine Manufacturing Co (MOD), Moog Inc (MOG.A), MorphoSys AG (MOR), Morphic Holding Inc (MORF), Mosaic Co (MOS), MoSys Inc (MOSY), Motus GI Holdings Inc (MOTS), Movado Group Inc (MOV), Motorcar Parts America Inc (MPAA), Marathon Petroleum Corp (MPC), Monolithic Power Systems Inc (MPWR), Marine Products Corp (MPX), Everspin Technologies Inc (MRAM), Mercury Systems Inc (MRCY), Mereo Biopharma Group plc (MREO), Mri Interventions Inc (MRIC), Merck & Co Inc (MRK), Marker Therapeutics Inc (MRKR), Moderna Inc (MRNA), Marinus Pharmaceuticals Inc (MRNS), Mersana Therapeutics Inc (MRSN), Mirati Therapeutics Inc (MRTX), Merus NV (MRUS), Marvell Technology Group Ltd (MRVL), MSA Safety Inc (MSA), Motorola Solutions Inc (MSI), Emerson Radio Corp (MSN), Misonix Inc (MSON), ArcelorMittal (MT), Mettler Toledo International Inc (MTD), Molecular Templates Inc (MTEM), Mannatech Inc (MTEX), Motif Bio plc (MTFB), Mechel PAO (MTL), Matinas BioPharma Holdings Inc (MTNB), Meritor Inc (MTOR), Midatech Pharma Plc (MTP), MATERION Corp (MTRN), Mts Systems Corp (MTSC), MACOM Technology Solutions Holdings Inc (MTSI), Mer Telemanagement Solutions Ltd (MTSL), Manitowoc Co Inc (MTW), Minerals Technologies Inc (MTX), Micron Technology Inc (MU), Microvision Inc (MVIS), Mueller Water Products Inc (MWA), Mohawk Group Holdings Inc (MWK), MAGNACHIP SEMICONDUCTOR Corp (MX), Maxim Integrated Products Inc (MXIM), Maxlinear Inc (MXL), Myers Industries Inc (MYE), Myriad Genetics Inc (MYGN), Mylan NV (MYL), Myomo Inc (MYO), MyoKardia Inc (MYOK), Myos Rens Technology Inc (MYOS), Myovant Sciences Ltd (MYOV), My Size Inc (MYSZ), Urban Tea Inc (MYT), Natural Alternatives International Inc (NAII), NAKED BRAND GROUP Ltd (NAKD), Nanometrics Inc (NANO), NanoVibronix Inc (NAOV), Natures Sunshine Products Inc (NATR), Navistar International Corp (NAV), Navidea Biopharmaceuticals Inc (NAVb), New Age Beverages Corp (NBEV), Neurocrine Biosciences Inc (NBIX), Nabriva Therapeutics plc (NBRV), NeuBase Therapeutics Inc (NBSE), NovaBay Pharmaceuticals Inc (NBY), Nacco Industries Inc (NC), NuCana plc (NCNA), Ncr Corp (NCR), ENDRA Life Sciences Inc (NDRA), Nordson Corp (NDSN), Neogen Corp (NEOG), Neonode Inc (NEON), Neos Therapeutics Inc (NEOS), Nephros Inc (NEPH), Neptune Wellness Solutions Inc (NEPT), Minerva Neurosciences Inc (NERV), Newmarket Corp (NEU), New Media Investment Group Inc (NEWM), Ngm Biopharmaceuticals Inc (NGM), Ingevity Corp (NGVT), NICE Ltd (NICE), NIO Inc (NIO), Niu Technologies (NIU), NantKwest Inc (NK), NIKE Inc (NKE), Nektar Therapeutics (NKTR), NI Industries Inc (NL), Newlink Genetics Corp (NLNK), Nautilus Inc (NLS), Nemaura Medical Inc (NMRD), Nn Inc (NNBR), Nano Dimension Ltd (NNDM), Northrop Grumman Corp (NOC), Nokia Corp (NOK), Nomad Foods Ltd (NOMD), National Oilwell Varco Inc (NOV), Novan Inc (NOVN), Novanta Inc (NOVT), Neenah Inc (NP), National Presto Industries Inc (NPK), Enpro Industries Inc (NPO), Neophotonics Corp (NPTN), Newport Resources Inc (NR), InspireMD Inc (NSPR), Napco Security Technologies Inc (NSSC), NanoString Technologies Inc (NSTG), Nortech Systems Inc (NSYS), NetApp Inc (NTAP), Intec Pharma Ltd (NTEC), Neon Therapeutics Inc (NTGN), Netgear Inc (NTGR), Northern Technologies International Corp (NTIC), Intellia Therapeutics Inc (NTLA), Nam Tai Property Inc (NTP), Nutrien Ltd (NTR), Natus Medical Inc (NTUS), Natuzzi S P A (NTZ), Nucor Corp (NUE), NeuroMetrix Inc (NURO), Nuvasive Inc (NUVA), Novavax Inc (NVAX), Neovasc Inc (NVCN), NovoCure Ltd (NVCR), Nvidia Corp (NVDA), Nve Corp (NVEC), Nova Lifestyle Inc (NVFY), Invivo Therapeutics Holdings Corp (NVIV), Novelion Therapeutics Inc (NVLN), Nova Measuring Instruments Ltd (NVMI), Novo Nordisk A S (NVO), Nevro Corp (NVRO), Novartis Ag (NVS), nVent Electric plc (NVT), Nuvectra Corp (NVTR), Novus Therapeutics Inc (NVUS), Newell Brands Inc (NWL), Northwest Pipe Co (NWPX), News Corp (NWSA), Quanex Building Products CORP (NX), NXP Semiconductors NV (NXPI), NextCure Inc (NXTC), Nymox Pharmaceutical Corp (NYMX), New York Times Co (NYT), Ocean Bio Chem Inc (OBCI), Obalon Therapeutics Inc (OBLN), ObsEva SA (OBSV), Owens Corning (OC), Optical Cable Corp (OCC), Ocular Therapeutix Inc (OCUL), OncoCyte Corp (OCX), Oil-Dri Corp of America (ODC), Odonate Therapeutics Inc (ODT), Orion Engineered Carbons SA (OEC), Orion Energy Systems Inc (OESX), Orthofix Medical Inc (OFIX), Omega Flex Inc (OFLX), Oragenics Inc (OGEN), Organigram Holdings Inc (OGI), Owens Illinois Inc (OI), O2Micro International Ltd (OIM), Oil States International Inc (OIS), Universal Display Corp (OLED), OLIN Corp (OLN), OMNICELL Inc (OMCL), Omeros Corp (OMER), Omnova Solutions Inc (OMN), On Semiconductor Corp (ON), Spark Therapeutics Inc (ONCE), ONCOSEC MEDICAL Inc (ONCS), Oncternal Therapeutics Inc (ONCT), Oncolytics Biotech Inc (ONCY), Onconova Therapeutics Inc (ONTX), Organovo Holdings Inc (ONVO), Opko Health Inc (OPK), Opiant Pharmaceuticals Inc (OPNT), OptiNose Inc (OPTN), Organogenesis Holdings Inc (ORGO), Orgenesis Inc

(ORGS), Oramed Pharmaceuticals Inc (ORMP), Orchard Therapeutics plc (ORTX), Norbord Inc (OSB), Osi Systems Inc (OSIS), Oshkosh Corp (OSK), Osmotica Pharmaceuticals plc (OSMT), Ossen Innovation Co Ltd (OSN), One Stop Systems Inc (OSS), Orasure Technologies Inc (OSUR), Otonomy Inc (OTIC), On Track Innovations Ltd (OTIV), Outlook Therapeutics Inc (OTLK), Ovid Therapeutics Inc (OVID), Oxford Immunotec Global PLC (OXFD), Oxford Industries Inc (OXM), Pacific Biosciences Of California Inc (PACB), Phibro Animal Health Corp (PAHC), Palo Alto Networks Inc (PANW), Par Technology Corp (PAR), Patrick Industries Inc (PATK), PAVmed Inc (PAVM), PBF Energy Inc (PBF), Prestige Consumer Healthcare Inc (PBH), Pitney Bowes Inc (PBI), Puma Biotechnology Inc (PBYI), Paccar Inc (PCAR), Pacira BioSciences Inc (PCRX), Pc Tel Inc (PCTI), Pro Dex Inc (PDEX), Pdl Biopharma Inc (PDLI), PDS Biotechnology Corp (PDSB), Pacific Ethanol Inc (PEIX), Penumbra Inc (PEN), Pepsico Inc (PEP), TDH Holdings Inc (PETZ), Pfizer Inc (PFE), Profire Energy Inc (PFIE), P&F Industries Inc (PFIN), Pfenex Inc (PFNX), PROCTER & GAMBLE Co (PG), Progenics Pharmaceuticals Inc (PGNX), PGT Innovations Inc (PGTI), Parker Hannifin Corp (PH), Koninklijke Philips Nv (PHG), Phio Pharmaceuticals Corp (PHIO), Impinj Inc (PI), Polaris Inc (PII), Park Aerospace Corp (PKE), Packaging Corp Of America (PKG), Perkinelmer Inc (PKI), Park Ohio Holdings Corp (PKOH), Posco (PKX), Photonics Inc (PLAB), Planet Green Holdings Corp (PLAG), China Xiangtai Food Co Ltd (PLIN), Douglas Dynamics Inc (PLOW), Pulse Biosciences Inc (PLSE), Plantronics Inc (PLT), Plug Power Inc (PLUG), Protalix BioTherapeutics Inc (PLX), PLx Pharma Inc (PLXP), Plexus Corp (PLXS), Philip Morris International Inc (PM), PENTAIR plc (PNR), Pointer Telocation Ltd (PNTR), Predictive Oncology Inc (POAI), Insulet Corp (PODD), Polyone Corp (POL), Polar Power Inc (POLA), Post Holdings Inc (POST), Power Integrations Inc (POWI), Powell Industries Inc (POWL), Pilgrims Pride Corp (PPC), Ppg Industries Inc (PPG), Perma-Pipe International Holdings Inc (PIIH), Pioneer Power Solutions Inc (PPSI), PQ Group Holdings Inc (PQG), Perceptron Inc (PRCP), PERRIGO Co plc (PRGO), Proto Labs Inc (PRLB), Principia Biopharma Inc (PRNB), ProPhase Labs Inc (PRPH), Precipio Inc (PRPO), ProQR Therapeutics NV (PRQR), Prothena Corp plc (PRTA), Paratek Pharmaceuticals Inc (PRTK), Proteon Therapeutics Inc (PRTO), Provention Bio Inc (PRVB), Prevail Therapeutics Inc (PRVL), Pearson Plc (PSO), Pure Storage Inc (PSTG), Pluristem Therapeutics Inc (PSTI), Plus Therapeutics Inc (PSTV), Phillips 66 (PSX), Ptc Therapeutics Inc (PTCT), Polarityte Inc (PTE), Protagonist Therapeutics Inc (PTGX), Proteostasis Therapeutics Inc (PTI), Portola Pharmaceuticals Inc (PTLA), Palatin Technologies Inc (PTN), Pulmatrix Inc (PULM), Pvh Corp (PVH), Pixelworks Inc (PXLW), Qualstar Corp (QBAK), Qualcomm Inc (QCOM), Quidel Corp (QDEL), Qiagen Nv (QGEN), Qorvo Inc (QRVO), Quotient Ltd (QTNT), Quanterix Corp (QTRX), Quad/Graphics Inc (QUAD), QUICKLOGIC Corp (QUIK), uniQure NV (QURE), Ferrari NV (RACE), FreightCar America Inc (RAIL), Ultragenyx Pharmaceutical Inc (RARE), Ra Pharmaceuticals Inc (RARX), Raven Industries Inc (RAVN), Regal Beloit Corp (RBC), Rubicon Technology Inc (RBCN), Rocket Pharmaceuticals Inc (RCKT), Rocky Brands Inc (RCKY), Arcus Biosciences Inc (RCUS), Radcom Ltd (RDCM), RedHill Biopharma Ltd (RDHL), Radius Health Inc (RDUS), Dr Reddys Laboratories Ltd (RDY), Reed'S Inc (REED), Renewable Energy Group Inc (REGI), Regeneron Pharmaceuticals Inc (REGN), Rekor Systems Inc (REKR), Reliv International Inc (RELV), Relx Plc (RELX), Recro Pharma Inc (REPH), Replimmune Group Inc (REPL), Resonant Inc (RESN), Reata Pharmaceuticals Inc (RETA), ReTo Eco-Solutions Inc (RETO), Revlon Inc (REV), REV Group Inc (REVG), REX AMERICAN RESOURCES Corp (REX), Rexahn Pharmaceuticals Inc (REXN), R F Industries Ltd (RFIL), Resolute Forest Products Inc (RFP), Repligen Corp (RGEN), Regulus Therapeutics Inc (RGLS), REGENXBIO Inc (RGNX), Sturm Ruger & Co Inc (RGR), RiceBran Technologies (RIBT), Rigel Pharmaceuticals Inc (RIGL), Riot Blockchain Inc (RIOT), Arcadia Biosciences Inc (RKDA), Ralph Lauren Corp (RL), Rambus Inc (RMBS), Rocky Mountain Chocolate Factory Inc (RMCF), Resmed Inc (RMD), Ra Medical Systems Inc (RMED), Rockwell Medical Inc (RMTI), Gibraltar Industries Inc (ROCK), Rogers Corp (ROG), Rockwell Automation Inc (ROK), RBC Bearings INC (ROLL), Roper Technologies Inc (ROP), Castle Brands Inc (ROX), Rpm International Inc (RPM), RR Donnelley & Sons Co (RRD), Rudolph Technologies Inc (RTEC), RTI Surgical Holdings Inc (RTIX), Raytheon Co (RTN), Retrophin Inc (RTRX), Ritter Pharmaceuticals Inc (RTTR), Rubius Therapeutics Inc (RUBY), Sunrun Inc (RUN), Revolution Lighting Technologies Inc (RVLT), Revance Therapeutics Inc (RVNC), Retractable Technologies Inc (RVP), ReWalk Robotics Ltd (RWLK), Rexnord Corp (RXN), Rayonier Advanced Materials Inc (RYAM), Rhythm Pharmaceuticals Inc (RYTM), Sanderson Farms Inc (SAFM), Sage Therapeutics Inc (SAGE), Boston Beer Co Inc (SAM), Sanmina Corp (SANM), EchoStar CORP (SATS), Cassava Sciences Inc (SAVA), Strongbridge Biopharma plc (SBBP), Spring Bank Pharmaceuticals Inc (SBPH), Scholastic Corp (SCHL), Socket Mobile Inc (SCKT), Stepan Co (SCL), Superconductor Technologies Inc (SCON), scPharmaceuticals Inc (SCPH), Steelcase Inc (SCS), Starrett L S Co (SCX), Scynexis Inc (SCYX), Standard Diversified Inc (SDI), Superior Drilling Products Inc (SDPI), Seachange International Inc (SEAC), Solaredge Technologies Inc (SEDG), Sealed Air Corp (SEE), Seelos Therapeutics Inc (SEEL), Selecta Biosciences Inc (SELB), Seneca Foods Corp (SENEA), Senseonics Holdings Inc (SENS), Synthesis Energy Systems Inc (SES), Sesen Bio Inc (SESN), Superior Group Of Companies Inc (SGC), Seattle Genetics Inc (SGEN), SMART Global Holdings Inc (SGH), Sigma Labs Inc (SGLB), Sigmatron International Inc (SGMA), Sangamo Therapeutics Inc (SGMO), SGOCO Group Ltd (SGOC), Sinopec Shanghai Petrochemical Co Ltd (SHI), Shiloh Industries Inc (SHLO), Steven Madden Ltd (SHOO), SI-BONE Inc (SIBN), National Steel Co (SID), Sientra Inc (SIEN), Sifco Industries Inc (SIF), Siga Technologies Inc (SIGA), Silicom Ltd (SILC), Silk Road Medical Inc (SILK), Group Simec Sa De Cv (SIM), Silicon Motion Technology CORP (SIMO), Sintx Technologies Inc (SINT), J M SMUCKER Co (SJM), Skechers Usa Inc (SKX), Skyline Champion Corp (SKY), Silicon Laboratories Inc (SLAB), Solid Biosciences Inc (SLDB), Sol-Gel Technologies Ltd (SLGL), Silgan Holdings Inc (SLGN), Stabilis Energy Inc (SLNG), Soleno Therapeutics Inc (SLNO), Salaris Pharmaceuticals Inc (SLRX), SELLAS Life Sciences Group Inc (SLS), Scotts Miracle-Gro Co (SMG), Schmitt Industries Inc (SMIT), Summit Therapeutics plc (SMMT), Standard Motor Products Inc (SMP), Simply Good Foods Co (SMPL), Semtech Corp (SMTX), Smtc Corp (SMTX), SNAP-ON Inc (SNA), Sleep Number Corp (SNBR), Syndax Pharmaceuticals Inc (SNDX), Sony Corp (SNE), SenesTech Inc (SNES), Soligenix Inc (SNGX), Smith & Nephew Plc (SNN), Sienna Biopharmaceuticals Inc (SNNA), Sonoma Pharmaceuticals Inc (SNOA), China Petroleum & Chemical Corp (SNP), Sunesis Pharmaceuticals Inc (SNSS), Sanofi (SNY), Solaris Oilfield Infrastructure Inc (SOI), ReneSola Ltd (SOL), Electrameccanica Vehicles Corp (SOLO), Soliton Inc (SOLY), Sonoco Products Co (SON), Sonim Technologies Inc

(SONM), Sonos Inc (SONO), SORL Auto Parts Inc (SORL), Spartan Motors Inc (SPAR), Spectrum Brands Holdings Inc (SPB), SuperCom Ltd (SPCB), Sophiris Bio Inc (SPHS), SPI Energy Co Ltd (SPI), Steel Partners Holdings Lp (SPLP), SeaSpine Holdings Corp (SPNE), Spectrum Pharmaceuticals Inc (SPPI), Spirit AeroSystems Holdings Inc (SPR), Spero Therapeutics Inc (SPRO), Sunpower Corp (SPWR), Spx Corp (SPXC), Sequential Brands Group Inc (SQBG), Sequans Communications (SQNS), Surmodics Inc (SRDX), Stoneridge Inc (SRI), Sarepta Therapeutics Inc (SRPT), Sierra Oncology Inc (SRRA), Scholar Rock Holding Corp (SRRK), Sensus Healthcare Inc (SRTS), Simpson Manufacturing Co Inc (SSD), STRATA Skin Sciences Inc (SSKN), Stratasys Ltd (SSYS), Sensata Technologies Holding plc (ST), Staar Surgical Co (STAA), STERIS plc (STE), Neuronetics Inc (STIM), Steel Dynamics Inc (STLD), Stmicroelectronics Nv (STM), Stemline Therapeutics Inc (STML), Stoke Therapeutics Inc (STOK), Sutro Biopharma Inc (STRO), Strattec Security Corp (STRT), Seagate Technology plc (STX), Constellation Brands Inc (STZ), Suncor Energy Inc (SU), Summer Infant Inc (SUMR), Sunworks Inc (SUNW), Superior Industries International Inc (SUP), Supernus Pharmaceuticals Inc (SUPN), Surface Oncology Inc (SURF), Savara Inc (SVRA), Servotronics Inc (SVT), ShockWave Medical Inc (SWAV), Sierra Wireless Inc (SWIR), Stanley Black & Decker Inc (SWK), Skyworks Solutions Inc (SWKS), Schweitzer Mauduit International Inc (SWM), SunCoke Energy Inc (SXC), Standex International Corp (SXI), Sensitive Technologies Corp (SXT), China SXT Pharmaceuticals Inc (SXTC), Synlogic Inc (SYBX), Stryker Corp (SYK), Synthetic Biologics Inc (SYN), Synalloy Corp (SYNL), Sypris Solutions Inc (SYPR), Syros Pharmaceuticals Inc (SYRS), Transact Technologies Inc (TACT), Tantech Holdings Ltd (TANH), Molson Coors Brewing Co (TAP), Taro Pharmaceutical Industries Ltd (TARO), Tat Technologies Ltd (TATT), Taylor Devices Inc (TAYD), Translate Bio Inc (TBIO), Toughbuilt Industries Inc (TBLT), Theravance Biopharma Inc (TBPH), Technical Communications Corp (TCCO), Tricida Inc (TCDA), Tactile Systems Technology Inc (TCMD), Tracon Pharmaceuticals Inc (TCO), Tcr2 Therapeutics Inc (TCRR), Teradata Corp (TDC), TransDigm Group INC (TDG), Teledyne Technologies Inc (TDY), BIO-TECHNE Corp (TECH), Tenneco Inc (TEN), Teradyne Inc (TER), Teva Pharmaceutical Industries Ltd (TEVA), Terex Corp (TEX), Teleflex Inc (TFX), Tredgar Corp (TG), Tecogen Inc (TGEN), Triumph Group Inc (TGI), Tecnoglass Inc (TGLS), Tg Therapeutics Inc (TGTX), Thor Industries Inc (THO), Synthorx Inc (THOR), Thermon Group Holdings Inc (THR), GENTHERM Inc (THRM), TreeHouse Foods Inc (THS), Interface Inc (TILE), Timken Co (TKR), Taiwan Liposome Company Ltd (TLC), Tandy Leather Factory Inc (TLF), Teligent Inc (TLGT), Tilray Inc (TLRY), Tiziana Life Sciences plc (TLSA), Toyota Motor Corp (TM), Titan Medical Inc (TMDI), TransMedics Group Inc (TMDX), Thermo Fisher Scientific Inc (TMO), TimkenSteel Corp (TMST), Telenav Inc (TNAV), Tennant Co (TNC), Tandem Diabetes Care Inc (TNDM), Tonix Pharmaceuticals Holding Corp (TNXP), Tocagen Inc (TOCA), resTORbio Inc (TORC), Tower International Inc (TOWR), Turning Point Brands Inc (TPB), Tribune Publishing Co (TPCO), Tpi Composites Inc (TPIC), Tapestry Inc (TPR), Turning Point Therapeutics Inc (TPTX), Tempur Sealy International Inc (TPX), Tootsie Roll Industries Inc (TR), Trecora Resources (TREC), Trex Co Inc (TREX), Thomson Reuters Corp (TRI), Trinity Biotech Plc (TRIB), Trillium Therapeutics Inc (TRIL), Trimble Inc (TRMB), Trinity Industries Inc (TRN), Transcat Inc (TRNS), Taronis Technologies Inc (TRNX), Trovogene Inc (TROV), Tronox Holdings plc (TROX), Therapix Biosciences Ltd (TRPX), Trimas Corp (TRS), Trio-Tech International (TRT), Trevi Therapeutics Inc (TRVI), Trevena Inc (TRVN), Transenterix Inc (TRXC), Trinseo SA (TSE), Tower Semiconductor Ltd (TSEM), Tesla Inc (TSLA), Taiwan Semiconductor Manufacturing Co Ltd (TSM), Tyson Foods Inc (TSN), Toro Co (TTC), Tata Motors Ltd (TMM), Ttm Technologies Inc (TTMI), Titan Pharmaceuticals Inc (TTNP), T2 Biosystems Inc (TTOO), Tetrphase Pharmaceuticals Inc (TTPH), Tupperware Brands Corp (TUP), Titan International Inc (TWI), Twin Disc Inc (TWIN), Hostess Brands Inc (TWNK), Twist Bioscience Corp (TWST), TherapeuticsMD Inc (TXMD), Texas Instruments Inc (TXN), Textron Inc (TXT), Tyme Technologies Inc (TYME), Under Armour Inc (UAA), United States Antimony Corp (UAMY), Cvr Partners Lp (UAN), AgEagle Aerial Systems Inc (UAVS), Unity Biotechnology Inc (UBX), Ultra Clean Holdings Inc (UCTT), Universal Electronics Inc (UEIC), Unique Fabricating Inc (UFAB), Unifi Inc (UFI), Universal Forest Products Inc (UFPI), Ufp Technologies Inc (UFPT), Domtar CORP (UFS), United Guardian Inc (UG), Unilever Plc (UL), Ultralife Corp (ULBI), United Microelectronics Corp (UMC), Unum Therapeutics Inc (UMRX), Unilever N V (UN), UroGen Pharma Ltd (URGN), Urovant Sciences Ltd (UROV), Universal Stainless & Alloy Products Inc (USAP), Usa Technologies Inc (USAT), Us Concrete Inc (USCR), Usana Health Sciences Inc (USNA), UNITED THERAPEUTICS Corp (UTHR), Utah Medical Products Inc (UTMD), Utstarcom Holdings Corp (UTSI), United Technologies Corp (UTX), Vapotherm Inc (VAPO), Varian Medical Systems Inc (VAR), VBI Vaccines Inc (VBIV), Vascular Biogenics Ltd (VBLT), Visteon Corp (VC), Vericel Corp (VCEL), Vaccinex Inc (VCNX), Vocera Communications Inc (VCRA), Veeco Instruments Inc (VECO), Vedanta Ltd (VEDL), Veru Inc (VERU), V F Corp (VFC), Vector Group Ltd (VGR), Valhi Inc (VHI), Viavi Solutions Inc (VIAV), Vical Inc (VICL), Vicor Corp (VICR), Viomi Technology Co Ltd (VIOT), Virco Mfg Corporation (VIRC), Vislink Technologies Inc (VISL), Viveve Medical Inc (VIVE), Meridian Bioscience Inc (VIVO), voxeljet AG (VJET), Viking Therapeutics Inc (VKTX), Valero Energy Corp (VLO), Valeritas Holdings Inc (VLRX), Valmont Industries Inc (VMI), Vanda Pharmaceuticals Inc (VNDA), Veoneer Inc (VNE), Volitionrx Ltd (VNRX), Venator Materials PLC (VNTR), Vishay Precision Group Inc (VPG), Vera Bradley Inc (VRA), ViewRay Inc (VRAY), Verrica Pharmaceuticals Inc (VRCA), Varex Imaging Corp (VREX), Vermillion Inc (VRML), Verona Pharma plc (VRNA), Verso Corp (VRS), Vertex Pharmaceuticals Inc (VRTX), Viasat Inc (VSAT), Vishay Intertechnology Inc (VSH), Vivint Solar Inc (VSLR), Versum Materials Inc (VSM), Verastem Inc (VSTM), Vista Outdoor Inc (VSTO), VistaGen Therapeutics Inc (VTGN), Vertex Energy Inc (VTNR), vTv Therapeutics Inc (VTVT), Vuzix Corp (VUZI), Vivus Inc (VVUS), Valvoline Inc (VVV), Vaxart Inc (VXRT), Voyager Therapeutics Inc (VYGR), Westinghouse Air Brake Technologies Corp (WAB), Waters Corp (WAT), Energen Corp (WATT), WABCO Holdings Inc (WBC), Welbilt Inc (WBT), Western Digital Corp (WDC), Wd 40 Co (WDFC), Winnebago Industries Inc (WGO), Cactus Inc (WHD), Whirlpool Corp (WHR), Encore Wire Corp (WIRE), Summit Wireless Technologies Inc (WISA), Workhorse Group Inc (WKHS), Westlake Chemical Corp (WLK), Westlake Chemical Partners LP (WLKP), Wright Medical Group NV (WMGI), Advanced Drainage Systems Inc (WMS), WABASH NATIONAL Corp (WNC), Worthington Industries Inc (WOR), Westport Fuel Systems Inc (WPRT), WestRock Co (WRK), Wrap Technologies Inc (WRTC), West Pharmaceutical Services Inc (WST), Westell Technologies Inc (WSTL), Watts Water Technologies Inc (WTS), Wireless Telecom Group Inc (WTT),

Wave Life Sciences Ltd (WVE), Willamette Valley Vineyards Inc (WVVI), Woodward Inc (WWD), Wolverine World Wide Inc (WWW), United States Steel Corp (X), Beyond Air Inc (XAIR), Xenetic Biosciences Inc (XBIO), XBiotech Inc (XBIT), Exicure Inc (XCUR), Xenon Pharmaceuticals Inc (XENE), Intersect ENT Inc (XENT), Xeris Pharmaceuticals Inc (XERS), X4 Pharmaceuticals Inc (XFOR), Xilinx Inc (XLNX), Acceleron Pharma Inc (XLRN), Xencor Inc (XNCR), Exxon Mobil Corp (XOM), XOMA Corp (XOMA), ExOne Co (XONE), XPEL Inc (XPEL), Xperi Corp (XPER), DENTSPLY SIRONA Inc (XRAY), Xtant Medical Holdings Inc (XTNT), 22nd Century Group Inc (XXII), Xylem Inc (XYL), cbdMD Inc (YCBD), YETI Holdings Inc (YETI), Y-mAbs Therapeutics Inc (YMAB), Ypf Sociedad Anonima (YPF), Yield10 Bioscience Inc (YTEN), Liquid Media Group Ltd (YVR), Zimmer Biomet Holdings Inc (ZBH), Zebra Technologies Corp (ZBRA), Zealand Pharma A (ZEAL), Zafgen Inc (ZFGN), Zogenix Inc (ZGNX), Ziopharm Oncology Inc (ZIOP), ZK International Group Co Ltd (ZKIN), Zai Lab Ltd (ZLAB), Zomedica Pharmaceuticals Corp (ZOM), Zosano Pharma Corp (ZSAN), Zoetis Inc (ZTS), Zymeworks Inc (ZYME), Zynerva Pharmaceuticals Inc (ZYNE), Zynex Inc (ZYXI)