

Industrial Gases: 2001

Summary

Issued October 2002

MQ325C(01)-5

Current
Industrial
Reports

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These data are also available on Internet through the U.S. Department of Commerce and STAT-USA by subscription. The Internet address is: www.stat-usa.gov/. Follow the prompts to register. Also, you may call 202-482-1986 or 1-800-STAT-USA, for further information.

SUMMARY OF FINDINGS. For 2001, acetylene gas was 3,623 million cubic feet, a decrease

of 14 percent from the 4,214 million cubic feet in 2000. Carbon dioxide liquid was 7,129 thousand short tons in 2001, a 4-percent decrease from the 7,446 thousand short tons in 2000. Argon gas decreased by 11 percent to 18,427 million cubic feet in 2001, from the 20,805 million cubic feet in 2000. Hydrogen gas shipments for 2001 were 480,330 million cubic feet, a 3-percent increase from the 464,133 million cubic feet for 2000. Nitrogen gas shipments for 2001 were 928,409 million cubic feet, a 1-percent decrease from the 939,197 million cubic feet in 2000.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Consumer Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call John Linehan, 301-763-4742.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-763-4673.

U S C E N S U S B U R E A U

Helping You Make Informed Decisions

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU



Table 1. Summary of Production of Principal Gases: 2001 and 2000
 [Million cubic feet, except as noted]

| Quarter and year | Acetylene (3251201) | Total (3251204) | Carbon dioxide [short tons] | | Solid (3251204031) | Argon high purity (325120D021) | Hydrogen, high and low purity (100 percent) (325120D pt.) | Nitrogen, high and low purity (100 percent) (3251207) | Oxygen, high and low purity (100 percent) (325120A) |
|---------------------|------------------------|--------------------|--------------------------------|------------------------|-----------------------|--------------------------------------|---|---|---|
| | | | Gas (3251204011) | Liquid (3251204021) | | | | | |
| 2001 | | | | | | | | | |
| Total..... | 3,623 | 12,784,778 | 5,276,647 | (S) | 379,562 | 18,427 | 480,330 | 928,409 | 578,564 |
| Fourth quarter..... | 881 | 3,149,930 | 1,175,463 | 1,878,709 | 95,758 | 4,713 | 123,861 | 236,786 | 142,109 |
| Third quarter..... | 765 | 3,226,785 | 1,214,721 | 1,903,024 | 109,040 | 4,564 | 127,153 | 231,047 | 147,184 |
| Second quarter..... | 980 | 3,198,326 | 1,399,957 | (S) | 92,336 | 4,551 | 121,959 | 231,971 | 146,016 |
| First quarter..... | 997 | 3,209,737 | 1,486,506 | (S) | 82,428 | 4,599 | 107,357 | 228,605 | 143,255 |
| 2000 | | | | | | | | | |
| Total..... | 4,214 | 14,543,637 | 6,730,917 | 7,446,149 | 366,571 | 20,805 | 464,133 | 939,197 | 665,604 |
| Fourth quarter..... | 1,055 | 3,457,007 | 1,594,119 | 1,771,124 | 91,764 | 4,990 | 122,524 | 232,706 | 149,705 |
| Third quarter..... | 1,003 | 3,840,080 | 1,759,231 | 1,986,683 | 94,166 | 5,116 | 116,711 | 231,231 | 165,737 |
| Second quarter..... | 1,048 | 3,669,984 | 1,691,395 | 1,882,326 | 96,263 | 5,206 | 114,711 | 236,712 | 175,625 |
| First quarter..... | 1,108 | 3,576,566 | 1,686,172 | 1,806,016 | 84,378 | 5,493 | 110,187 | 238,548 | 174,537 |

S Does not meet publication standards.

Table 2a. Primary Production of Specified Industrial Gases: 2001
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|---|-------------------|------------------|--------------------|---|
| TOTAL | | | | | |
| 3251201 | Acetylene..... | 3,623 | 2,006 | 113,459 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (S) | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | 2,741 | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 12,784,778 | 13,972,552 | 331,593 | 340,198 |
| 3251204011 | Gas, including amounts produced and liquefied... | 5,276,647 | 3,792,777 | (S) | (D) |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... | (S) | (S) | 266,301 | 58,566 |
| 3251204031 | Solid (dry ice)..... | 379,562 | 354,557 | 34,364 | (D) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... | 18,427 | 16,770 | 260,063 | (S) |
| 325120D pt. | Hydrogen..... | 480,330 | (D) | 1,022,749 | 113,458 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... | 7,958 | (S) | (S) | (X) |
| 325120D041 | Pipeline and onsite use..... | (D) | (D) | 875,157 | (X) |
| 325120D051 | Consumption in same plant..... | 181,061 | (X) | (X) | 113,458 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (D) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 928,409 | 839,556 | 1,959,223 | 15,898 |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... | 605,358 | 579,536 | 376,906 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... | 30,371 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (D) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... | 244,078 | 237,518 | (S) | (X) |
| 3251207061 | Consumption in same plant..... | 9,530 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... | 25,650 | (D) | (D) | (X) |
| 325120A | Oxygen..... | 578,564 | 494,676 | 1,533,017 | (D) |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... | 412,273 | 383,428 | (D) | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... | 33,725 | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... | 93,109 | 82,061 | (S) | (X) |
| 325120A061 | Consumption in this plant..... | (D) | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... | 20,130 | (D) | (D) | (X) |

Continued

Table 2a. Primary Production of Specified Industrial Gases: 2001
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|--|-------------------|------------------|--------------------|---|
| FOURTH QUARTER | | | | | |
| 3251201 | Acetylene..... | 881 | 448 | 25,705 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (D) | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | (D) | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 3,149,930 | 3,641,494 | 89,099 | 63,818 |
| 3251204011 | Gas, including amounts produced and liquefied... b/ | 1,175,463 b/ | 842,909 | (S) | (D) |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... b/ | 1,878,709 c/ | 2,707,632 b/ | 73,178 a/ | 12,020 |
| 3251204031 | Solid (dry ice)..... c/ | 95,758 c/ | 90,953 c/ | 8,784 | (D) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... a/ | 4,713 b/ | 3,996 c/ | 61,746 | (S) |
| 325120D pt. | Hydrogen..... | 123,861 | (D) | 182,407 | 27,622 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... c/ | 1,871 | (S) | (S) | (X) |
| 325120D041 | Pipeline and onsite use..... | (D) | (D) c/ | 148,997 | (X) |
| 325120D051 | Consumption in same plant..... a/ | 44,689 | (X) | (X) a/ | 27,622 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (D) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 236,786 | 208,059 | 474,786 | 3,151 |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... b/ | 156,852 b/ | 144,364 c/ | 92,316 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... a/ | 7,137 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (D) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... b/ | 59,668 b/ | 57,751 | (S) | (X) |
| 3251207061 | Consumption in same plant..... a/ | 2,560 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... b/ | 6,784 | (D) | (D) | (X) |
| 325120A | Oxygen..... | 142,109 | 118,692 | 380,844 | (D) |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... b/ | 100,948 b/ | 91,244 | (D) | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... b/ | 9,738 | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... a/ | 22,363 c/ | 20,741 | (S) | (X) |
| 325120A061 | Consumption in this plant..... | (D) | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... a/ | 4,381 | (D) | (D) | (X) |

Continued

Table 2a. Primary Production of Specified Industrial Gases: 2001
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|--|-------------------|------------------|--------------------|---|
| THIRD QUARTER | | | | | |
| 3251201 | Acetylene..... | 765 | 444 | 26,356 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (D) | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | (D) | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 3,226,785 | 3,784,203 | 84,232 | 73,915 |
| 3251204011 | Gas, including amounts produced and liquefied... a/ | 1,214,721 b/ | 939,501 | (S) a/ | (D) |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... b/ | 1,903,024 b/ | 2,743,886 | (S) c/ | 13,836 |
| 3251204031 | Solid (dry ice)..... c/ | 109,040 c/ | 100,816 c/ | 9,754 | (D) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... c/ | 4,564 b/ | 4,214 c/ | 65,743 | (S) |
| 325120D pt. | Hydrogen..... | 127,153 | (D) | 195,714 | 30,549 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... c/ | 1,896 | (S) | (D) | (X) |
| 325120D041 | Pipeline and onsite use..... | (D) | (D) c/ | 159,468 | (X) |
| 325120D051 | Consumption in same plant..... a/ | 44,547 | (X) | (X) a/ | 30,549 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (D) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 231,047 | 212,079 | 488,345 | 3,413 |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... b/ | 149,814 b/ | 145,599 c/ | 93,376 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... a/ | 7,331 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (D) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... c/ | 61,727 c/ | 60,517 | (D) | (X) |
| 3251207061 | Consumption in same plant..... a/ | 2,240 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... c/ | 6,264 | (D) | (D) | (X) |
| 325120A | Oxygen..... | 147,184 | 127,171 | 398,970 | (D) |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... b/ | 105,501 b/ | 98,423 | (D) | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... a/ | 8,754 | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... c/ | 23,267 c/ | 21,421 | (S) | (X) |
| 325120A061 | Consumption in this plant..... | (D) | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... c/ | 5,165 | (D) | (D) | (X) |

Continued

Table 2a. Primary Production of Specified Industrial Gases: 2001
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|---|-------------------|------------------|--------------------|---|
| SECOND QUARTER | | | | | |
| 3251201 | Acetylene..... | 980 | 568 | 31,299 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (S) | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | 736 | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 3,198,326 | 3,293,777 | 80,512 | 92,401 |
| 3251204011 | Gas, including amounts produced and liquefied... a/ | 1,399,957 b/ | 975,213 | (S) | (D) |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... | (S) | (S) c/ | 64,233 c/ | 16,113 |
| 3251204031 | Solid (dry ice)..... c/ | 92,336 c/ | 84,994 c/ | 8,236 | (D) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... | b/ 4,551 | b/ 4,256 | b/ 63,866 | (S) |
| 325120D pt. | Hydrogen..... | 121,959 | (D) | 172,964 | 29,912 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... b/ | 2,002 c/ | 2,214 | (S) | (X) |
| 325120D041 | Pipeline and onsite use..... | (D) | (D) c/ | 134,545 | (X) |
| 325120D051 | Consumption in same plant..... a/ | 52,564 | (X) | (X) a/ | 29,912 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (D) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 231,971 | 211,495 | 493,513 | 4,677 |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... b/ | 150,215 b/ | 145,347 c/ | 91,900 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... a/ | 8,042 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (D) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... c/ | 62,237 c/ | 60,984 | (S) | (X) |
| 3251207061 | Consumption in same plant..... a/ | 2,384 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... c/ | 6,115 | (D) | (D) | (X) |
| 325120A | Oxygen..... | 146,016 | 127,081 | 390,139 | (D) |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... b/ | 104,471 b/ | 98,352 | (D) | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... | (D) | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... c/ | 23,277 c/ | 21,051 | (S) | (X) |
| 325120A061 | Consumption in this plant..... | (D) | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... b/ | 5,532 | (D) | (D) | (X) |

Continued

Table 2a. Primary Production of Specified Industrial Gases: 2001
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|---|-------------------|------------------|--------------------|---|
| FIRST QUARTER | | | | | |
| 3251201 | Acetylene..... | 997 | 546 | 30,099 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (S) | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | c/ 744 | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 3,209,737 | 3,253,078 | 77,750 | 110,068 |
| 3251204011 | Gas, including amounts produced and liquefied... | a/ 1,486,506 | b/ 1,035,154 | (S) | (D) |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... | (S) | (S) | c/ 62,431 | c/ 16,597 |
| 3251204031 | Solid (dry ice)..... | c/ 82,428 | c/ 77,794 | c/ 7,590 | (D) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... | b/ 4,599 | b/ 4,304 | b/ 68,708 | (S) |
| 325120D pt. | Hydrogen..... | 107,357 | (D) | 471,664 | 25,375 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... | b/ 2,189 | c/ 2,234 | b/ 1,634 | (X) |
| 325120D041 | Pipeline and onsite use..... | (D) | (D) | a/ 432,147 | (X) |
| 325120D051 | Consumption in same plant..... | a/ 39,261 | (X) | (X) | a/ 25,375 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (D) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 228,605 | 207,923 | 502,579 | 4,657 |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... | b/ 148,477 | b/ 144,226 | c/ 99,314 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... | 7,861 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (D) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... | c/ 60,446 | c/ 58,266 | (S) | (X) |
| 3251207061 | Consumption in same plant..... | a/ 2,346 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... | b/ 6,487 | (D) | (D) | (X) |
| 325120A | Oxygen..... | 143,255 | 121,732 | 363,064 | (D) |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... | b/ 101,353 | a/ 95,409 | (D) | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... | (D) | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... | c/ 24,202 | c/ 18,848 | (S) | (X) |
| 325120A061 | Consumption in this plant..... | (D) | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... | a/ 5,052 | (D) | (D) | (X) |

D Withheld to avoid disclosing data for individual companies. pt. Part. S Does not meet publication standards.
 X Not applicable. Z Equals less than one.

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 2b. Primary Production of Specified Industrial Gases: 2000
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|---|-------------------|------------------|--------------------|---|
| TOTAL | | | | | |
| 3251201 | Acetylene..... | 4,214 | 2,519 | 129,868 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (D) | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | (D) | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 14,543,637 | 13,150,225 | 286,054 | 626,232 |
| 3251204011 | Gas, including amounts produced and liquefied... | 6,730,917 | 5,424,796 | (S) | (D) |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... | 7,446,149 | 7,376,898 | 213,220 | 127,795 |
| 3251204031 | Solid (dry ice)..... | 366,571 | 348,531 | 29,236 | (D) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... | 20,805 | 19,452 | 294,344 | 61 |
| 325120D pt. | Hydrogen..... | 464,133 | 298,839 | 1,839,953 | 151,204 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... | 7,812 | 7,797 | (D) | (X) |
| 325120D041 | Pipeline and onsite use..... | 265,063 | 270,035 | 1,687,775 | (X) |
| 325120D051 | Consumption in same plant..... | 167,886 | (X) | (X) | 151,204 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | 144,654 | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 939,197 | 862,939 | 2,035,613 | 16,995 |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... | 609,742 | 599,431 | 384,367 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... | 31,797 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (D) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... | 255,372 | (D) | (D) | (X) |
| 3251207061 | Consumption in same plant..... | 7,714 | (X) | (X) | 6,522 |
| 3251207071 | Other shipments or uses..... | 22,244 | 14,435 | 46,570 | (X) |
| 325120A | Oxygen..... | 665,604 | (D) | (D) | (D) |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... | 481,623 | (D) | 906,911 | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... | 40,253 | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... | 103,735 | 70,533 | 135,552 | (X) |
| 325120A061 | Consumption in this plant..... | (D) | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... | 18,510 | (D) | (D) | (X) |

Continued

Table 2b. Primary Production of Specified Industrial Gases: 2000
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|--|-------------------|------------------|--------------------|---|
| FOURTH QUARTER | | | | | |
| 3251201 | Acetylene..... | 1,055 | 564 | 29,830 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (S) | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | 806 | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 3,457,007 | 2,985,344 | 68,987 | 135,415 |
| 3251204011 | Gas, including amounts produced and liquefied... a/ | 1,594,119 b/ | 1,210,398 | (S) | (D) |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... b/ | 1,771,124 b/ | 1,686,990 c/ | 52,249 c/ | 21,295 |
| 3251204031 | Solid (dry ice)..... c/ | 91,764 c/ | 87,956 c/ | 7,505 | (D) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... b/ | 4,990 b/ | 4,623 c/ | 73,914 b/ | 10 |
| 325120D pt. | Hydrogen..... | 122,524 | 70,881 | 404,972 | 38,646 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... b/ | 1,760 c/ | 1,571 a/ | 1,059 | (X) |
| 325120D041 | Pipeline and onsite use..... b/ | 71,265 a/ | 64,169 b/ | 367,412 | (X) |
| 325120D051 | Consumption in same plant..... a/ | 43,944 | (X) | (X) a/ | 38,646 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (D) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 232,706 | 211,444 | 503,504 | 4,234 |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... a/ | 149,310 a/ | 146,316 c/ | 96,904 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... a/ | 7,845 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (D) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... c/ | 64,383 c/ | 59,747 | (S) | (X) |
| 3251207061 | Consumption in same plant..... a/ | 1,912 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... a/ | 5,443 | (D) | (D) | (X) |
| 325120A | Oxygen..... | 149,705 | 123,425 | 254,284 | 3,779 |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... b/ | 106,267 a/ | 98,815 | (D) | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... b/ | 8,040 | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... c/ | 25,677 c/ | 18,102 c/ | 35,335 | (X) |
| 325120A061 | Consumption in this plant..... | (D) | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... | 4,478 | (D) | (D) | (X) |

Continued

Table 2b. Primary Production of Specified Industrial Gases: 2000
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|--|-------------------|------------------|--------------------|---|
| THIRD QUARTER | | | | | |
| 3251201 | Acetylene..... | 1,003 | 532 | 29,031 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (S) | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | 784 | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 3,840,080 | 3,367,597 | 71,185 | 127,249 |
| 3251204011 | Gas, including amounts produced and liquefied... a/ | 1,759,231 b/ | 1,306,680 | (S) | (D) |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... c/ | 1,986,683 c/ | 1,972,858 c/ | 53,542 a/ | 29,222 |
| 3251204031 | Solid (dry ice)..... c/ | 94,166 c/ | 88,059 c/ | 7,510 | (D) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... c/ | 5,116 c/ | 4,702 c/ | 68,822 b/ | 10 |
| 325120D pt. | Hydrogen..... | 116,711 | 85,073 | 568,184 | 39,384 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... b/ | 2,005 c/ | 1,924 a/ | 1,386 | (X) |
| 325120D041 | Pipeline and onsite use..... c/ | 64,380 c/ | 77,744 c/ | 530,290 | (X) |
| 325120D051 | Consumption in same plant..... a/ | 44,305 | (X) | (X) a/ | 39,384 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (D) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 231,231 | 211,290 | 473,536 | (D) |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... b/ | 148,165 b/ | 146,432 c/ | 96,003 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... a/ | 8,070 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (D) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... c/ | 64,546 c/ | 59,354 | (S) | (X) |
| 3251207061 | Consumption in same plant..... a/ | 1,909 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... b/ | 5,766 | (D) | (D) | (X) |
| 325120A | Oxygen..... | 165,737 | 134,798 | 287,717 | (D) |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... b/ | 119,425 b/ | 110,583 | (D) | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... b/ | 10,454 | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... c/ | 25,637 c/ | 17,679 c/ | 34,279 | (X) |
| 325120A061 | Consumption in this plant..... | (D) | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... b/ | 4,885 | (D) | (D) | (X) |

Continued

Table 2b. Primary Production of Specified Industrial Gases: 2000
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|--|-------------------|------------------|--------------------|---|
| SECOND QUARTER | | | | | |
| 3251201 | Acetylene..... | 1,048 | 709 | 34,001 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... c/ | 226 | (D) | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | 822 | (D) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 3,669,984 | 3,358,331 | 72,840 | 143,150 |
| 3251204011 | Gas, including amounts produced and liquefied... a/ | 1,691,395 b/ | 1,368,700 c/ | 11,371 a/ | 103,550 |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... | 1,882,326 b/ | 1,901,386 c/ | 53,949 b/ | 39,600 |
| 3251204031 | Solid (dry ice)..... c/ | 96,263 c/ | 88,245 c/ | 7,520 | (Z) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... b/ | 5,206 b/ | 4,876 b/ | 72,521 a/ | 20 |
| 325120D pt. | Hydrogen..... | 114,711 | 75,274 | 454,409 | 35,731 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... c/ | 2,009 c/ | 2,253 a/ | 1,344 | (X) |
| 325120D041 | Pipeline and onsite use..... c/ | 65,507 c/ | 67,436 c/ | 415,604 | (X) |
| 325120D051 | Consumption in same plant..... a/ | 41,110 | (X) | (X) b/ | 35,731 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (D) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 236,712 | 217,023 | 478,783 | (D) |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... a/ | 154,131 a/ | 150,416 b/ | 95,302 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... a/ | 7,735 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... b/ | 64,600 | (D) | (D) | (X) |
| 3251207061 | Consumption in same plant..... a/ | 2,077 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... a/ | 5,323 | 4,564 b/ | 14,919 | (X) |
| 325120A | Oxygen..... | 175,625 | 143,478 | 304,324 | 5,317 |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... b/ | 128,354 a/ | 118,880 | (D) | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... | (D) | (X) | (X) | (S) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... b/ | 26,550 a/ | 17,999 a/ | 34,684 | (X) |
| 325120A061 | Consumption in this plant..... b/ | 590 | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... a/ | 4,616 | (D) | (D) | (X) |

Continued

Table 2b. Primary Production of Specified Industrial Gases: 2000
 [Quantity in million cubic feet, unless otherwise noted. Value in thousands of dollars]

| Product code | Product description | Quantity produced | Quantity shipped | Value of shipments | Quantity produced and consumed in plant |
|--|---|-------------------|------------------|--------------------|---|
| FIRST QUARTER | | | | | |
| 3251201 | Acetylene..... | 1,108 | 714 | 37,006 | (D) |
| 3251201011 | Produced for compression, including cylinder and pipeline..... | (D) | 133 | (D) | (X) |
| 3251201021 | Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant..... | (D) | (S) | (D) | (D) |
| 3251204 | Carbon dioxide [short tons]..... | 3,576,566 | 3,438,953 | 73,042 | 220,420 |
| 3251204011 | Gas, including amounts produced and liquefied... a/ | 1,686,172 | c/ 1,539,018 | (S) b/ | 182,742 |
| 3251204021 | Liquid, including amounts produced and used to make dry ice..... | 1,806,016 | c/ 1,815,664 | c/ 53,480 | (S) |
| 3251204031 | Solid (dry ice)..... | c/ 84,378 | (S) | (S) | (Z) |
| 325120D021 | Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant..... | a/ 5,493 | b/ 5,251 | b/ 79,087 | c/ 21 |
| 325120D pt. | Hydrogen..... | 110,187 | 67,611 | 412,388 | 37,443 |
| Gas produced for: | | | | | |
| 325120D031 | Merchant shipment..... | c/ 2,038 | (S) | (D) | (X) |
| 325120D041 | Pipeline and onsite use..... | b/ 63,911 | (S) c/ | 374,469 | (X) |
| 325120D051 | Consumption in same plant..... | a/ 38,527 | (X) | (X) b/ | 37,443 |
| Liquid produced for: | | | | | |
| 325120D061 | Merchant shipment..... | (D) | (D) | (S) | (X) |
| 325120D071 | Other shipments or uses..... | (D) | (D) | (D) | (X) |
| 3251207 | Nitrogen..... | 238,548 | 223,182 | 579,790 | 4,402 |
| Gas produced by: | | | | | |
| 3251207011 | Cryogenic onsite and pipeline..... | 158,136 | b/ 156,267 | b/ 96,158 | (X) |
| 3251207021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 3251207031 | Cryogenic processes..... | 8,147 | (X) | (X) | (D) |
| 3251207041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (D) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 3251207051 | Merchant shipment..... | b/ 61,843 | (D) | (D) | (X) |
| 3251207061 | Consumption in same plant..... | 1,816 | (X) | (X) | (D) |
| 3251207071 | Other shipments or uses..... | b/ 5,712 | (S) | (S) | (X) |
| 325120A | Oxygen..... | 174,537 | (D) | (D) | 5,178 |
| Gas produced by: | | | | | |
| 325120A011 | Cryogenic onsite and pipeline..... | a/ 127,577 | (D) c/ | 266,382 | (X) |
| 325120A021 | Noncryogenic processes by industrial gas-producing companies, including psa, vpsa, membrane, etc. | (D) | (D) | (D) | (X) |
| Captive uses for consumption in same plant (user-owned): | | | | | |
| 325120A031 | Cryogenic processes..... | (D) | (X) | (X) | (D) |
| 325120A041 | Noncryogenic processes, including psa, vpsa, membranes, etc. | (Z) | (X) | (X) | (Z) |
| Liquid produced for: | | | | | |
| 325120A051 | Merchant shipment..... | b/ 25,871 | a/ 16,753 | a/ 31,254 | (X) |
| 325120A061 | Consumption in this plant..... | b/ 641 | (X) | (X) | (D) |
| 325120A071 | Other shipments or uses..... | a/ 4,531 | (D) | (D) | (X) |

D Withheld to avoid disclosing data for individual companies. pt. Part. S Does not meet publication standards.
 X Not applicable. Z Equals less than one.

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 3. Production, Exports, Imports, and Apparent Consumption of Industrial Gases
 [Million cubic meters, unless otherwise noted]

| Product code | Product description | Manu- facturers' production | Exports of domestic merchan- dise 1/ | Percent exports to manufac- turers' net production | Imports for consump- tion 2/ | Apparent consump- tion 3/ | Percent imports to apparent consump- tion |
|--------------------------------------|--|-----------------------------------|---|--|------------------------------------|---------------------------------|---|
| 2001 | | | | | | | |
| 3251204 | Carbon dioxide, gas, liquid, and solid (metric tons)..... | 11,606,021 | 90,510 | 0.8 | 25,160 | 11,540,671 | 0.2 |
| 325120D021 | Argon..... | 522 | 302 | 57.9 | 21 | 241 | 8.7 |
| 325120D031, 041, 051, 061, 071 | Hydrogen..... | 13,603 | 399 | 2.9 | 118 | 13,322 | 0.9 |
| 3251207 | Nitrogen..... | 26,293 | 82 | 0.3 | 80 | 26,291 | 0.3 |
| 325120A | Oxygen..... | 16,385 | 117 | 0.7 | 13 | 16,281 | 0.1 |
| 2000 | | | | | | | |
| 3251204 | Carbon dioxide, gas, liquid, and solid (metric tons)..... | 13,202,714 | 127,577 | 1.0 | 15,163 | 13,090,300 | 0.1 |
| 325120D021 | Argon..... | 589 | 409 | 69.4 | 27 | 207 | 13 |
| 325120D031, 041, 051, 061, 071 | Hydrogen..... | 13,144 | 363 | 2.8 | 150 | 12,931 | 1.2 |
| 3251207 | Nitrogen..... | 26,598 | 126 | 0.5 | 44 | 26,516 | 0.2 |
| 325120A | Oxygen..... | 18,817 | 153 | 0.8 | 19 | 18,683 | 0.1 |

S Does not meet the publication standards.

1/Source: Census Bureau report EM 545. U.S. Exports.

2/Source: Census Bureau report IM 145, U.S. Imports for Consumption.

3/Apparent consumption is derived by subtracting exports from the total of net production plus imports.

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2001

| Product code | Product description | Export code 1/ | Import code 2/ |
|--------------------------------------|---|-----------------------|-----------------------|
| 3251204 | Carbon dioxide, gas, liquid, and solid (metric tons)..... | 2811.21.0000 | 2811.21.0000 |
| 325120D021 | Argon, high purity..... | 2804.21.2000 | 2804.21.2000 |
| 325120D031, 041, 051, 061, 071 | Hydrogen..... | 2804.10.0000 | 2804.10.0000 |
| 3251207 | Nitrogen..... | 2804.30.0000 | 2804.30.0000 |
| 325120A | Oxygen..... | 2804.40.0000 | 2804.40.0000 |

1/Source: 2001 edition, Harmonized System-based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, annotated (2001).

Appendix.

General CIR Survey Information, Explanation of General Terms and Historical Note

GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

- 21 Mining
- 22 Utilities
- 23 Construction
- 31-33 Manufacturing
- 42 Wholesale Trade
- 44-45 Retail Trade
- 48-49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing
- 54 Professional, Scientific, and Technical Services
- 55 Management of Companies and Enterprises
- 56 Administrative and Support and Waste Management and Remediation Services
- 61 Educational Services
- 62 Health Care and Social Assistance
- 71 Arts, Entertainment, and Recreation
- 72 Accommodation and Food Services
- 81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

EXPLANATION OF GENERAL TERMS

Capacity. The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

Consumption. Materials used in producing or processing a product or otherwise removing the product from the inventory.

Exports. Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

Gross shipments. The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

Interplant transfers. Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

Inventories. The quantity or value of finished goods, work in progress, and materials on hand.

Machinery in place. The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

Net receipts. Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

Production. The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

Quantities produced and consumed. Quantities of each type of product produced by a company for internal consumption within that same company.

Quantity and value of new orders. The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

Quantity and value of shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate

allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Stocks. Total quantity of ending finished inventory.

Unfilled orders (backlog). Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

HISTORICAL NOTE

Data on industrial gases have been collected by the Census Bureau since 1941. Prior to 1991, data were collected both monthly and annually. Beginning in 1991, as a result of budget reductions, the monthly series was canceled and replaced with a similar quarterly series. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library.