

PRODUCTION: DOWN BUT NOT OUT

Output of chemicals and products declined with few exceptions as U.S. manufacturing faltered

IN 2001, U.S. OUTPUT OF GOODS slipped and chemical production faltered as well. Lackluster demand from end-use markets and competition from imports caused many production cuts. And, in some cases, high energy and raw material costs forced plant shutdowns.

Chemical production declined by 0.7% compared with the year before, according to the Federal Reserve Board's index of production for chemicals and products. However, the total manufacturing segment did poorly—output declined 4.5%.

The production index for the subcategory of chemicals and synthetic materials—basic industrial chemicals plus polymers—took it on the chin. It dropped 9.8%, indicating the severity of the impact of last year's slowdown on commodity chemicals and plastics makers.

Only two of 12 chemical categories posted production gains, according to Federal Reserve figures. One category showed no

production change. Losses were widespread.

With production of basic inorganic chemicals sliding 6.5%, it comes as no surprise that, of 16 high-volume inorganic chemicals for which the Bureau of the Census provided data, production of 13 declined—four by double-digit percentages.



EXXONMOBIL PHOTO

Only three registered production increases—sodium sulfate, up 11.8%; aluminum sulfate, up 6.8%; and hydrogen, up 4.8%.

Production of industrial organic chemicals fell 14.4% in 2001, according to the Federal Reserve. Output of specific or-

ganic chemicals tracked by the National Petroleum Refiners Association declined for 12 of 13 commodity organic chemicals. Two-thirds experienced double-digit percentage declines. The only organic chemical to show an increase was aniline, up 2.2%. Urea—data for which comes from the Bureau of the Census—declined 7.6%.

Synthetic materials posted a 7.5% decline in production, according to the Federal Reserve. Output of plastic materials dipped 3.6%, and synthetic fiber output plummeted 16.7%.

The American Plastics Council, which more closely tracks resin production, reported a 5.6% decline in output for 2001. The thermoplastic category as a whole fell

5.5% with output at 67.1 billion lb. However, four of nine classes of resins experienced double-digit production declines. Polyamine output dropped 18.9%—more than any other resin. Only one resin, polypropylene—up 0.6%—experienced

PRODUCTION

Most chemical sectors followed total manufacturing downward trend

| INDUSTRIAL PRODUCTION INDEXES, 1992=100 | PRODUCTION | | | | | | | | | | | ANNUAL CHANGE | |
|--|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2000-01 | 1991-01 |
| Total index | 97.0 | 100.0 | 103.4 | 109.1 | 114.4 | 119.6 | 127.9 | 134.5 | 139.4 | 145.7 | 140.1 | -3.8% | 3.7% |
| Manufacturing, total | 96.2 | 100.0 | 103.7 | 110.0 | 115.8 | 121.5 | 131.1 | 138.8 | 144.7 | 151.6 | 144.8 | -4.5 | 4.2 |
| Nondurable manufacturing | 97.0 | 100.0 | 101.5 | 104.8 | 106.5 | 107.4 | 112.0 | 113.4 | 113.7 | 114.8 | 111.4 | -3.0 | 1.4 |
| Chemicals & products | 96.4 | 100.0 | 100.9 | 103.7 | 106.0 | 108.8 | 115.9 | 118.3 | 119.1 | 122.0 | 121.1 | -0.7 | 2.3 |
| Chemicals & synthetic materials | 97.0 | 100.0 | 98.5 | 102.1 | 103.3 | 103.2 | 110.6 | 109.3 | 109.8 | 112.3 | 101.3 | -9.8 | 0.4 |
| Basic chemicals | 97.7 | 100.0 | 95.1 | 88.7 | 90.9 | 92.6 | 99.6 | 101.7 | 102.8 | 115.7 | 108.2 | -6.5 | 1.0 |
| Alkalies & chlorine | 98.9 | 100.0 | 89.9 | 71.3 | 76.2 | 80.2 | 74.5 | 74.1 | 77.3 | 78.5 | 70.7 | -9.9 | -3.3 |
| Inorganic pigments | 88.8 | 100.0 | 99.3 | 102.4 | 95.0 | 100.0 | 108.4 | 103.7 | 94.8 | 95.6 | 88.5 | -7.4 | 0.0 |
| Inorganic chemicals ^a | 97.4 | 100.0 | 92.5 | 86.1 | 90.0 | 92.2 | 98.2 | 100.0 | 104.5 | 122.5 | 114.9 | -6.2 | 1.7 |
| Industrial organic chemicals | 99.9 | 100.0 | 98.7 | 104.9 | 106.0 | 106.7 | 114.7 | 106.3 | 107.0 | 105.0 | 89.9 | -14.4 | -1.0 |
| Synthetic materials ^b | 92.9 | 100.0 | 101.0 | 109.0 | 109.7 | 107.4 | 114.2 | 118.8 | 118.5 | 117.2 | 108.4 | -7.5 | 1.6 |
| Plastic materials | 90.4 | 100.0 | 98.0 | 111.9 | 113.0 | 109.3 | 120.2 | 129.8 | 125.3 | 121.9 | 117.5 | -3.6 | 2.7 |
| Synthetic fibers | 97.0 | 100.0 | 104.3 | 103.0 | 104.1 | 104.4 | 98.6 | 99.3 | 104.2 | 106.2 | 88.5 | -16.7 | -0.9 |
| Chemical products | 95.8 | 100.0 | 102.6 | 105.1 | 108.4 | 113.5 | 120.6 | 125.7 | 127.3 | 131.6 | 138.8 | 5.5 | 3.8 |
| Drugs & medicines | 93.2 | 100.0 | 99.6 | 103.4 | 107.0 | 114.2 | 121.2 | 131.4 | 136.0 | 144.3 | 160.2 | 11.0 | 5.6 |
| Soaps & toiletries | 98.7 | 100.0 | 106.8 | 106.1 | 111.7 | 115.3 | 122.9 | 121.6 | 117.4 | 116.6 | 116.6 | 0.0 | 1.7 |
| Paints | 98.6 | 100.0 | 105.6 | 113.3 | 109.8 | 109.4 | 110.4 | 110.9 | 110.0 | 107.6 | 103.4 | -3.9 | 0.5 |
| Agricultural chemicals | 97.6 | 100.0 | 100.8 | 100.5 | 100.3 | 102.4 | 106.7 | 110.0 | 104.8 | 97.8 | 92.8 | -5.1 | -0.5 |
| Rubber & plastic products | 90.7 | 100.0 | 106.9 | 116.5 | 119.7 | 123.3 | 130.9 | 135.7 | 142.5 | 144.9 | 136.8 | -5.6 | 4.2 |

a Not elsewhere classified. b Includes synthetic rubber. SOURCE: Federal Reserve Board

an actual increase in production.

Data from the Fiber Economics Bureau indicate that overall cellulose and noncellulosic fiber output fell 15.0%. That figure is closely in line with the 16.7% drop registered in the Federal Reserve's index.

Production of the cellulose acetate and rayon fell by nearly one-third. A large part of the decline was due to the Acordis shutdown of its rayon fiber plant in Mobile, Ala. The company blamed high raw material and energy costs and an inability to raise prices.

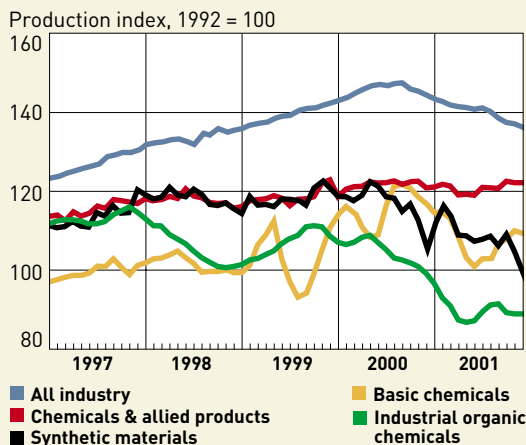
U.S. demand for textile fibers suffered as domestic textile mill production slipped for the sixth year in a row and apparel production fell for the second year in a row. According to the Federal Reserve, the textile mill products production index has fallen 21.3% since 1994. In the past year alone, the index slipped 12.3%. The apparel production index is off 14.4% since 1997, and dropped 8.6% between 2000 and 2001.

Noncellulosic fiber output dropped last year, in keeping with the shortfall in textile output. The Fiber Economics Bureau reports a 14.4% drop-off in noncellulosic fiber production. Polyester slipped more than any other, down 19%. Olefin declined by 8.3%—less than any other.

While the Federal Reserve's synthetic materials production index includes rubber, specific figures come from the International Institute of Synthetic Rubber Producers (IISRP). The institute reports

PRODUCTION

U.S. chemical output steadied during 2001



NOTE: Seasonally adjusted. SOURCE: Federal Reserve Board

that synthetic rubber shipments fell 9.5%.

After a surge in tire production in 2000 as consumers bought new cars and also rushed to replace defective Firestone tires, U.S. production fell 13.3%, according to the Federal Reserve's tire production index. About 84% of styrene-butadiene rubber went into tire production last year, reports IISRP. Styrene-butadiene shipments declined by 10.5%.

But rubber shipments slowed for reasons other than a drop in tire production: Only 2.5% of ethylene-propylene shipments found their way into tire production, according to IISRP. However, ethylene-propylene shipments fell 11.2%—even more dramatically than styrene-butadiene.

The Federal Reserve's chemical products category registered a 5.5% rise in output. Production of drugs and medicines accounted entirely for the positive performance of the overall category. Production within another subcategory—soaps and toiletries—was unchanged from the year before. Paint production, however, slipped 3.9%.

The Department of Commerce reports a falloff of only 1.2% in paint shipments. Product coatings shipments actually rose 8.4%. But special-purpose coatings slipped 13.7%. Shipments of architectural coatings, the largest of the three categories, declined 4.3%.

In the final chemical category that the Federal Reserve tracks, agricultural chemicals, production declined 5.1%. An effort to control

fertilizer runoff into streams and rivers may account in part for the decline. Low commodity prices and crops genetically engineered to resist insect attacks likely caused farmers to cut pesticide use.

And even though the Department of Agriculture noted a modest 1.3% increase in the number of acres planted last year, fertilizer production slipped, according to the Fertilizer Institute. Record import levels account in part for some of the discrepancies between the number of acres planted and U.S. fertilizer production. U.S. production in seven of 11 fertilizer categories fell by double-digit percentages. Every category except for potassium chloride declined.

ORGANIC CHEMICALS

Only aniline production rose; most others showed double-digit declines

| MILLIONS OF LB UNLESS OTHERWISE NOTED | PRODUCTION | | | | | | | | | | | ANNUAL CHANGE | |
|---------------------------------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|---------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2000-01 | 1991-01 |
| Acrylonitrile | 2,676 | 2,829 | 2,489 | 3,026 | 3,207 | 3,373 | 3,291 | 3,120 | 3,120 | 3,419 | 2,961 | -13.4% | 1.0% |
| Aniline ^a | 961 | 1,009 | 991 | 1,263 | 1,391 | 1,079 | 1,339 | 1,545 | 1,586 | 1,866 | 1,907 | 2.2 | 7.1 |
| Benzene, ^{b,c} mg | 1,569 | 1,636 | 1,677 | 2,074 | 2,168 | 2,116 | 2,342 | 2,237 | 2,401 | 2,419 | 1,921 | -20.6 | 2.0 |
| 1,3-Butadiene ^d | 3,054 | 3,232 | 3,117 | 3,376 | 3,682 | 3,845 | 4,107 | 4,066 | 4,282 | 4,429 | 3,794 | -14.3 | 2.2 |
| Cumene | 4,168 | 466 | 4,393 | 5,217 | 5,625 | 5,879 | 6,119 | 6,713 | 6,970 | 8,247 | 6,961 | -15.6 | 5.3 |
| Ethylbenzene ^a | 8,871 | 11,108 | 9,336 | 10,758 | 13,656 | 10,359 | 11,975 | 12,661 | 13,106 | 13,156 | 10,233 | -22.2 | 1.4 |
| Ethylene | 39,955 | 40,924 | 40,019 | 44,602 | 46,966 | 49,097 | 51,078 | 52,061 | 55,777 | 55,364 | 49,633 | -10.4 | 2.2 |
| Ethylene dichloride ^a | 13,713 | 15,150 | 17,947 | 16,762 | 17,263 | 11,336 | 26,294 | 24,560 | 22,836 | 21,850 | 20,583 | -5.8 | 4.1 |
| Ethylene oxide | 5,248 | 5,829 | 5,330 | 7,238 | 7,621 | 7,239 | 8,241 | 8,140 | 8,884 | 8,526 | 7,370 | -13.6 | 3.5 |
| 2-Ethylhexanol ^a | 657 | 692 | 695 | 732 | 743 | 760 | 768 | 811 | 878 | 822 | 735 | -10.6 | 1.1 |
| Propylene ^e | 21,549 | 23,421 | 21,470 | 23,943 | 25,691 | 25,111 | 27,533 | 28,690 | 29,105 | 31,873 | 29,042 | -8.9 | 3.0 |
| Styrene | 8,114 | 9,000 | 9,594 | 11,294 | 11,386 | 11,874 | 11,366 | 11,390 | 11,898 | 11,916 | 9,290 | -22.0 | 1.4 |
| Urea ^f | 16,266 | 17,532 | 16,572 | 15,904 | 16,240 | 17,096 | 16,608 | 17,730 | 17,814 | 15,242 | 14,076 | -7.6 | -1.4 |
| Vinyl acetate | 2,732 | 2,657 | 2,773 | 3,036 | 2,893 | 2,914 | 2,935 | 2,939 | 3,037 | 3,300 | 2,784 | -15.6 | 0.2 |

NOTE: As of Oct. 1, 1996, the International Trade Commission no longer collects or publishes annual synthetic organic chemicals data. ^a Reporting method changed in 1996; data may not be comparable with preceding years. ^b Tar distillers and coke-oven operators not included. ^c Specification grades. ^d Rubber grade. ^e All grades. ^f Data from 1995 on are from the Bureau of the Census. **mg**—millions of gallons. SOURCES: National Petroleum Refiners Association, Bureau of the Census

PRODUCTION

INORGANIC CHEMICALS

Only hydrogen, aluminum sulfate, and sodium sulfate production rose in 2001

| THOUSANDS OF TONS UNLESS OTHERWISE NOTED | PRODUCTION | | | | | | | | | | | ANNUAL CHANGE | |
|--|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|---------------|---------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 ^a | 2000-01 | 1991-01 |
| Aluminum sulfate ^b | 1,185 | 1,047 | 1,050 | 1,140 | 1,144 | 1,197 | 1,161 | 1,166 | 1,196 | 1,091 | 1,165 | 6.8% | -0.2% |
| Ammonia ^{c,d} | 17,169 | 17,924 | 17,195 | 17,869 | 17,403 | 17,923 | 17,891 | 18,475 | 17,337 | 16,806 | 13,046 | -22.4 | -2.7 |
| Ammonium nitrate ^e | 7,819 | 7,981 | 8,280 | 8,568 | 8,489 | 8,498 | 8,604 | 9,079 | 7,630 | 7,498 | 7,101 | -5.3 | -1.0 |
| Ammonium sulfate ^f | 2,243 | 2,391 | 2,432 | 2,584 | 2,647 | 2,662 | 2,702 | 2,787 | 2,599 | 2,868 | 2,556 | -10.9 | 1.3 |
| Chlorine ^g | 11,572 | 11,757 | 12,079 | 12,187 | 12,395 | 12,460 | 12,922 | 12,841 | 13,353 | 13,131 | 12,019 | -8.5 | 0.4 |
| Hydrochloric acid ^h | 3,301 | 3,610 | 3,492 | 3,754 | 3,904 | 4,116 | 4,570 | 4,659 | 4,499 | 4,718 | 4,422 | -6.3 | 3.0 |
| Hydrogen, bcf, 100% ^{i,j} | 153 | 162 | 213 | 331 | 352 | 386 | 526 | 552 | 454 | 481 | 504 | 4.8 | 12.7 |
| Nitric acid, 100% ^k | 7,927 | 8,136 | 8,254 | 8,714 | 8,840 | 9,205 | 9,433 | 9,285 | 8,945 | 8,479 | 7,823 | -7.7 | -0.1 |
| Nitrogen gas, bcf, 100% ^l | 770 | 818 | 796 | 870 | 844 | 816 | 809 | 871 | 858 | 933 | 908 | -2.7 | 1.7 |
| Oxygen, bcf, 100% ^l | 470 | 515 | 547 | 605 | 630 | 682 | 743 | 676 | 685 | 661 | 582 | -12.0 | 2.2 |
| Phosphoric acid, P ₂ O ₅ | 12,109 | 12,826 | 11,515 | 12,792 | 13,134 | 13,210 | 13,159 | 13,891 | 13,708 | 13,143 | 11,605 | -11.7 | -0.4 |
| Sodium chlorate | 449 | 555 | 539 | 559 | 617 | 662 | 626 | 779 | 818 | 939 | 906 | -3.5 | 7.3 |
| Sodium hydroxide | 11,713 | 12,244 | 12,466 | 12,539 | 11,408 | 11,563 | 10,973 | 13,113 | 13,199 | 11,518 | 10,687 | -7.2 | -0.9 |
| Sodium sulfate ^m | 794 | 609 | 592 | 652 | 711 | 664 | 706 | 629 | 660 | 509 | 569 | 11.8 | -3.3 |
| Sulfuric acid ⁿ | 43,466 | 44,524 | 39,839 | 44,813 | 47,519 | 47,770 | 47,929 | 48,512 | 44,756 | 44,032 | 40,054 | -9.0 | -0.8 |
| Titanium dioxide ^o | 1,095 | 1,253 | 1,279 | 1,380 | 1,382 | 1,352 | 1,466 | 1,459 | 1,493 | 1,547 | 1,463 | -5.4 | 2.9 |

a Preliminary data. **b** Commercial, 17% Al₂O₃; includes municipalities. **c** Synthetic anhydrous. **d** Excludes by-product ammonia liquor and ammonium sulfate. **e** Original solution. **f** Synthetic and noncoking by-product. **g** Includes quantities liquefied for use, storage, or shipment. **h** Includes anhydrous hydrochloric acid production. **i** High- and low-purity gas. **j** Liquid and gas; excludes amounts vented and used as fuel and amounts produced in petroleum refineries for captive use. **k** Includes unspecified amounts produced but not withdrawn from the system. **l** Excludes amounts produced and consumed in making synthetic ammonia or ammonia derivatives. **m** Anhydrous, high and low purity, and Glauber's salt. **n** Gross (new and fortified). **o** Composite and pure. **bcf** = billions of cubic feet.
SOURCES: Department of Commerce, Bureau of the Census

MINERALS

Another poor year for mineral production, but sodium chloride was up significantly

| THOUSANDS OF TONS | PRODUCTION | | | | | | | | | | | ANNUAL CHANGE | |
|---|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|---------------|---------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 ^a | 2000-01 | 1991-01 |
| Bromine, consumption ^b | 187 | 188 | 195 | 215 | 240 | 250 | 272 | 254 | 264 | 243 | 225 | -7.4% | 1.9% |
| Lime ^c | 17,270 | 17,857 | 18,412 | 19,184 | 20,396 | 21,168 | 21,719 | 22,160 | 21,719 | 21,609 | 20,617 | -4.6 | 1.8 |
| Lithium, consumption ^{d,e} | 2.9 | 2.5 | 2.5 | 2.8 | 2.9 | 3.0 | 3.1 | 3.1 | 3.1 | 3.0 | 2.0 | -33.3 | -3.6 |
| Phosphate rock | 53,016 | 51,770 | 39,132 | 45,313 | 47,959 | 50,054 | 50,605 | 48,731 | 44,761 | 42,557 | 37,706 | -11.4 | -3.4 |
| Exports | 5,602 | 4,104 | 3,528 | 3,087 | 3,043 | 1,731 | 369 | 417 | 300 | 330 | 55 | -83.3 | -37.0 |
| Potash (K ₂ O equivalent) ^f | 1,928 | 1,879 | 1,665 | 1,544 | 1,632 | 1,532 | 1,544 | 1,433 | 1,323 | 1,433 | 1,323 | -7.7 | -3.7 |
| Imports | 4,990 | 4,683 | 4,807 | 5,292 | 5,314 | 5,446 | 6,053 | 5,270 | 4,298 | 5,072 | 4,961 | -2.2 | -0.1 |
| Apparent consumption ^g | 6,186 | 5,898 | 5,987 | 6,406 | 6,417 | 6,494 | 7,166 | 6,174 | 5,623 | 6,174 | 5,954 | -3.6 | -0.4 |
| Sodium carbonate ^h | 10,093 | 10,340 | 9,878 | 10,275 | 11,135 | 11,246 | 11,797 | 11,135 | 11,246 | 11,246 | 11,356 | 1.0 | 1.2 |
| Sodium chloride | 40,021 | 39,690 | 43,218 | 44,210 | 46,415 | 46,526 | 45,644 | 45,423 | 49,052 | 50,274 | 49,723 | -1.1 | 2.2 |
| Imports | 6,824 | 5,942 | 6,472 | 10,617 | 7,817 | 11,687 | 10,099 | 9,779 | 9,779 | 9,878 | 11,025 | 11.6 | 4.9 |
| Apparent consumption ^g | 44,431 | 43,218 | 47,849 | 53,582 | 52,038 | 57,992 | 54,023 | 53,890 | 57,771 | 56,889 | 59,756 | 5.0 | 3.0 |
| Sulfur ⁱ | 11,928 | 11,753 | 12,183 | 12,678 | 13,010 | 13,021 | 13,252 | 12,822 | 12,480 | 11,367 | 10,144 | -10.8 | -1.6 |
| Recovered elemental & Frasch | 10,488 | 10,326 | 10,606 | 11,157 | 11,466 | 11,444 | 11,543 | 11,047 | 11,025 | 10,231 | 9,041 | -11.6 | -1.5 |
| Other production | 1,440 | 1,427 | 1,577 | 1,521 | 1,544 | 1,577 | 1,709 | 1,775 | 1,455 | 1,136 | 1,103 | -2.9 | -2.6 |
| Apparent consumption ^g | 14,865 | 14,717 | 13,892 | 14,443 | 15,766 | 14,994 | 15,325 | 15,545 | 14,774 | 13,781 | 11,466 | -16.8 | -2.6 |

a Preliminary data. **b** Elemental bromine sold as such or used in preparation of bromine compounds by primary producers. **c** Sold or used by producers for commercial or captive use. Produced from limestone and dolomite; does not include amount regenerated by paper industry; excludes Puerto Rican production. **d** Estimated. **e** Lithium content bases. **f** Includes muriate and sulfate of potash, potassium magnesium sulfate, and parent salts; excludes other chemical compounds containing potassium. **g** Calculated from shipments plus imports and minus exports. **h** Natural only. **i** Sulfur content basis. **SOURCE:** U.S. Geological Survey

PLASTICS

Polypropylene alone eked out a production gain in 2001

| MILLIONS OF LB ^a | PRODUCTION | | | | | | | | | | | ANNUAL CHANGE | |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2000-01 | 1991-01 |
| THERMOPLASTIC RESINS | | | | | | | | | | | | | |
| Polyethylene | | | | | | | | | | | | | |
| Low density ^b | 7,236 | 7,273 | 7,226 | 4,578 | 7,643 | 7,784 | 7,691 | 7,578 | 7,700 | 7,575 | 6,940 | -8.4% | -0.4% |
| Linear low density ^b | 4,346 | 4,644 | 4,841 | 5,022 | 5,243 | 6,361 | 6,888 | 7,227 | 8,107 | 7,951 | 7,630 | -4.0 | 5.8 |
| High density ^c | 9,213 | 9,808 | 9,941 | 11,117 | 11,211 | 12,373 | 12,557 | 12,924 | 13,864 | 13,968 | 12,479 | -10.7 | 3.1 |
| Polypropylene^d | 8,330 | 8,421 | 8,629 | 9,539 | 10,890 | 11,991 | 13,320 | 13,825 | 15,493 | 15,739 | 15,837 | 0.6 | 6.6 |
| Styrene polymers | | | | | | | | | | | | | |
| Polystyrene | 4,954 | 5,096 | 5,383 | 5,848 | 5,656 | 6,065 | 6,380 | 6,237 | 6,471 | 6,844 | 6,106 | -10.8 | 2.1 |
| Styrene-acrylonitrile ^e | 109 | 113 | 105 | 138 | 130 | 121 | 96 | 122 | 123 | 128 | 127 | -0.8 | 1.5 |
| Acrylonitrile-butadiene-styrene & other styrene polymers ^{e,f} | 2,287 | 2,610 | 2,924 | 3,230 | 2,908 | 2,969 | 2,997 | 3,191 | 3,099 | 3,120 | 2,725 | -12.7 | 1.8 |
| Polyamine, nylon type | 576 | 668 | 768 | 943 | 1,020 | 1,103 | 1,222 | 1,285 | 1,349 | 1,281 | 1,039 | -18.9 | 6.1 |
| Polyvinyl chloride & copolymers | 9,164 | 9,989 | 10,257 | 11,712 | 12,295 | 13,220 | 14,084 | 14,502 | 14,912 | 14,442 | 14,257 | -1.3 | 4.5 |
| TOTAL | 46,215 | 48,622 | 50,074 | 52,127 | 56,996 | 61,987 | 65,235 | 66,891 | 71,118 | 71,048 | 67,140 | -5.5% | 3.8% |
| THERMOSETTING RESINS^g | | | | | | | | | | | | | |
| Epoxy ^h | 497 | 457 | 512 | 601 | 632 | 662 | 654 | 639 | 657 | 693 | 610 | -12.0% | 2.1% |
| GRAND TOTAL | 46,712 | 49,079 | 50,586 | 52,728 | 57,628 | 62,649 | 65,889 | 67,530 | 71,775 | 71,741 | 67,750 | -5.6% | 3.8% |

NOTE: Totals are for those products listed and exclude some small-volume plastics. **a** Dry-weight basis unless otherwise specified. **b** Density 0.940 and below. **c** Density above 0.940. **d** Data include Canada from 1995. **e** Data include Canada from 1994. **f** Includes styrene-butadiene copolymers and other styrene-based polymers. **g** Excludes urea, melamine, phenolic, and other tar acid resins because data are no longer available. **h** Unmodified. **SOURCE:** American Plastics Council

PAINTS AND COATINGS

Only product coatings shipments grew last year

| MILLIONS OF GAL | SHIPMENTS | | | | | | | | | | | ANNUAL CHANGE | |
|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|-------------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2000-01 | 1991-01 |
| Architectural | 538 | 576 | 608 | 645 | 621 | 640 | 656 | 632 | 660 | 646 | 618 | -4.3% | 1.4% |
| Product ^a | 320 | 312 | 357 | 373 | 376 | 399 | 425 | 428 | 440 | 453 | 491 | 8.4 | 4.4 |
| Special purpose | 180 | 173 | 179 | 194 | 195 | 209 | 182 | 173 | 174 | 182 | 157 | -13.7 | -1.4 |
| TOTAL | 1,038 | 1,061 | 1,144 | 1,212 | 1,192 | 1,248 | 1,263 | 1,233 | 1,274 | 1,281 | 1,266 | -1.2% | 2.0% |

a For original equipment manufacturers. **SOURCE:** Department of Commerce

SYNTHETIC RUBBER

Polybutadiene, nitrile, and polychloroprene all slipped less than the average 9.5% for the group

| THOUSANDS OF METRIC TONS | SHIPMENTS | | | | | | | | | | | ANNUAL CHANGE | |
|--------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|-------------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2000-01 | 1991-01 |
| Styrene-butadiene rubber | 727 | 796 | 817 | 851 | 878 | 907 | 932 | 908 | 910 | 874 | 782 | -10.5% | 0.7% |
| Polybutadiene | 416 | 465 | 473 | 505 | 523 | 535 | 564 | 561 | 588 | 605 | 562 | -7.1 | 3.1 |
| Ethylene-propylene | 192 | 207 | 227 | 262 | 270 | 289 | 309 | 320 | 339 | 349 | 310 | -11.2 | 4.9 |
| Nitrile, solid | 71 | 74 | 78 | 84 | 83 | 85 | 85 | 87 | 88 | 89 | 83 | -6.7 | 1.6 |
| Polychloroprene | 70 | 72 | 70 | 76 | 70 | 70 | 73 | 69 | 66 | 64 | 58 | -9.4 | -1.9 |
| Other ^a | 362 | 381 | 400 | 408 | 427 | 437 | 449 | 447 | 478 | 484 | 435 | -10.1 | 1.9 |
| TOTAL | 1,838 | 1,995 | 2,065 | 2,186 | 2,251 | 2,323 | 2,412 | 2,392 | 2,469 | 2,465 | 2,230 | -9.5% | 2.0% |

NOTE: Data include Canada. **a** Includes butyl styrene-butadiene rubber latex, nitrile latex, polyisoprene, and miscellaneous others. **SOURCE:** International Institute of Synthetic Rubber Producers

PRODUCTION

SYNTHETIC FIBERS

Production dropped in every category, but cellulose fibers were hardest hit

| MILLIONS OF LB | PRODUCTION | | | | | | | | | | | ANNUAL CHANGE | |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|--------------|---------------|-------------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2000-01 | 1991-01 |
| NONCELLULOSIC FIBERS | | | | | | | | | | | | | |
| Acrylic ^a | 454 | 439 | 433 | 442 | 432 | 465 | 461 | 346 | 316 | 339 | 302 | -10.9% | -4.0% |
| Nylon | 2,535 | 2,556 | 2,659 | 2,740 | 2,703 | 2,799 | 2,836 | 2,686 | 2,683 | 2,606 | 2,199 | -15.6 | -1.4 |
| Olefin | 1,839 | 1,970 | 2,114 | 2,388 | 2,391 | 2,414 | 2,681 | 2,924 | 3,075 | 3,221 | 2,953 | -8.3 | 4.8 |
| Polyester | 3,411 | 3,576 | 3,557 | 3,858 | 3,887 | 3,827 | 4,090 | 3,897 | 3,827 | 3,804 | 3,082 | -19.0 | -1.0 |
| TOTAL | 8,239 | 8,541 | 8,763 | 9,428 | 9,413 | 9,505 | 10,068 | 9,853 | 9,901 | 9,970 | 8,536 | -14.4% | 0.4% |
| CELLULOSIC FIBERS | | | | | | | | | | | | | |
| Acetate ^b & rayon | 486 | 495 | 505 | 500 | 498 | 475 | 459 | 365 | 295 | 349 | 235 | -32.7% | -7.0% |
| GRAND TOTAL | 8,725 | 9,036 | 9,268 | 9,928 | 9,911 | 9,980 | 10,527 | 10,218 | 10,196 | 10,319 | 8,771 | -15.0% | 0.1% |

a Includes modacrylic. b Includes diacetate and triacetate; excludes production for cigarette filters. SOURCE: Fiber Economics Bureau

AEROSOLS

Output increased only in food products and miscellaneous categories

| MILLIONS OF UNITS | PRODUCTION | | | | | | | | | | | ANNUAL CHANGE | |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|-------------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2000-01 | 1991-01 |
| Personal products | 905 | 990 | 930 | 973 | 1,007 | 1,017 | 979 | 941 | 952 | 930 | 893 | -4.0% | -0.1% |
| Household products | 690 | 695 | 738 | 751 | 725 | 852 | 784 | 785 | 802 | 802 | 788 | -1.7 | 1.3 |
| Automotive & industrial products | 450 | 455 | 420 | 438 | 420 | 417 | 450 | 433 | 444 | 446 | 404 | -9.4 | -1.1 |
| Paints & finishes | 350 | 380 | 390 | 410 | 374 | 454 | 465 | 468 | 446 | 440 | 403 | -8.4 | 1.4 |
| Insecticides | 200 | 200 | 207 | 200 | 184 | 205 | 187 | 185 | 208 | 201 | 199 | -1.0 | -0.1 |
| Food products | 192 | 190 | 205 | 215 | 252 | 228 | 256 | 298 | 323 | 335 | 360 | 7.5 | 6.5 |
| Animal products | 8 | 8 | 6 | 7 | 7 | 7 | 7 | 2 | 2 | 3 | 2 | -33.3 | -12.9 |
| Miscellaneous | 19 | 71 | 44 | 79 | 34 | 32 | 32 | 23 | 25 | 43 | 46 | 7.0 | 9.2 |
| TOTAL | 2,814 | 2,989 | 2,940 | 3,073 | 3,003 | 3,212 | 3,160 | 3,135 | 3,202 | 3,200 | 3,095 | -3.3% | 1.0% |

NOTE: Data include Puerto Rican production. SOURCE: Consumer Specialty Products Association

FERTILIZER PRODUCTION

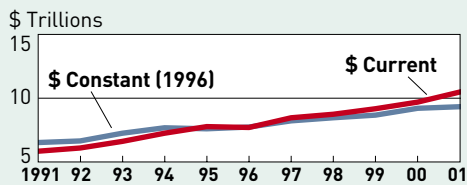
Nitrogen and phosphate products declined, but potash managed an increase

| THOUSANDS OF TONS | PRODUCTION | | | | | | | | | | | ANNUAL CHANGE | |
|--|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|---------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2000-01 | 1991-01 |
| NITROGEN PRODUCTS | | | | | | | | | | | | | |
| Ammonia | 13,790 | 13,309 | 12,588 | 14,475 | 15,670 | 16,814 | 16,550 | 16,517 | 15,037 | 13,889 | 11,575 | -16.7% | -1.7% |
| Ammonium nitrate | 2,551 | 2,487 | 2,584 | 2,744 | 2,732 | 3,060 | 3,345 | 3,588 | 3,307 | 2,814 | 2,380 | -15.4 | -0.7 |
| Ammonium sulfate | 2,195 | 2,342 | 2,382 | 2,554 | 2,579 | 2,605 | 2,671 | 2,743 | 2,839 | 2,789 | 2,505 | -10.2 | 1.3 |
| Urea | 4,241 | 4,164 | 3,863 | 4,614 | 5,177 | 5,551 | 5,275 | 5,530 | 5,453 | 4,792 | 4,211 | -12.1 | -0.1 |
| Nitrogen solutions | na | na | na | 6,113 | 8,844 | 9,557 | 9,834 | 11,143 | 10,217 | 10,523 | 9,463 | -10.1 | — |
| PHOSPHATE PRODUCTS | | | | | | | | | | | | | |
| Diammonium phosphate | 13,573 | 14,119 | 12,964 | 14,641 | 15,989 | 15,484 | 15,641 | 15,643 | 15,590 | 12,450 | 11,024 | -11.5% | -2.1% |
| Monoammonium phosphate | 2,227 | 2,342 | 2,693 | 2,869 | 2,715 | 3,488 | 3,589 | 4,089 | 3,999 | 4,789 | 4,426 | -7.6 | 7.1 |
| Concentrated superphosphate | 1,914 | 2,074 | 1,555 | 1,757 | 1,631 | 1,667 | 1,423 | 1,298 | 1,187 | 1,241 | 1,192 | -3.9 | -4.6 |
| Phosphate rock | 44,877 | 45,941 | 34,800 | 39,172 | 43,992 | 45,080 | 42,928 | 44,110 | 39,802 | 38,410 | 32,142 | -16.3 | -3.3 |
| Phosphoric acid (P ₂ O ₅) | 10,934 | 11,354 | 10,503 | 11,979 | 12,420 | 42,378 | 12,222 | 12,650 | 12,324 | 11,333 | 10,381 | -8.4 | -0.5 |
| POTASH PRODUCTS | | | | | | | | | | | | | |
| Potassium chloride | 2,387 | 2,337 | 1,927 | 1,845 | 1,840 | 1,734 | 1,874 | 1,590 | 1,680 | 1,495 | 1,496 | 0.1% | -4.6% |

NOTE: Figures are based on Fertilizer Institute surveys and may not represent the entire industry. na = not available. SOURCE: Fertilizer Institute

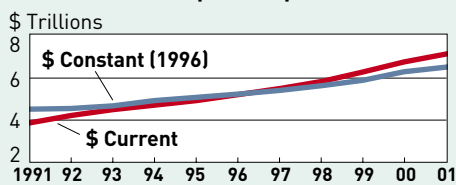
MACROECONOMICS

Gross domestic product



SOURCE: Department of Commerce

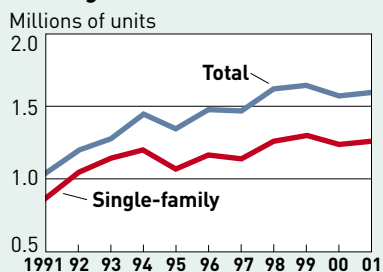
Personal consumption expenditures



SOURCE: Department of Commerce

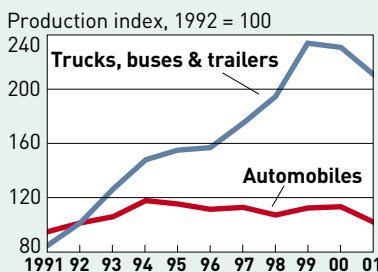
END USES

Housing starts



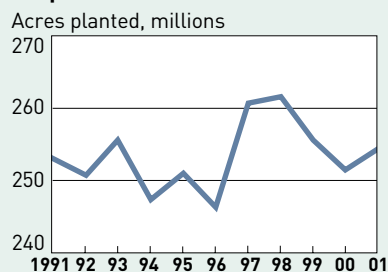
SOURCE: Department of Commerce

Motor vehicles



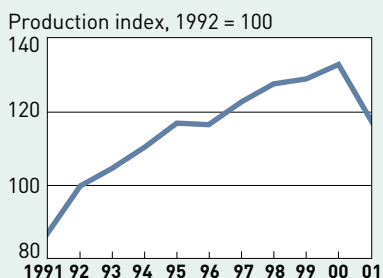
SOURCE: Federal Reserve Board

Crops



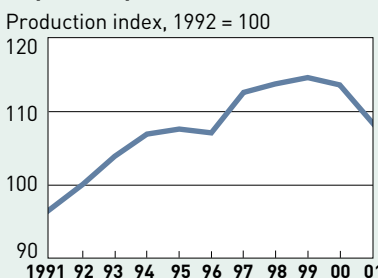
NOTE: For eight major crops. SOURCE: USDA

Tires



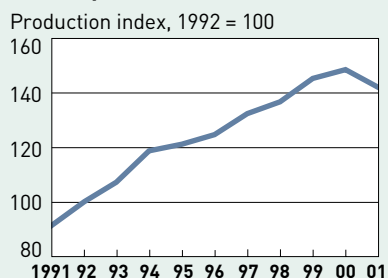
SOURCE: Federal Reserve Board

Paper and products



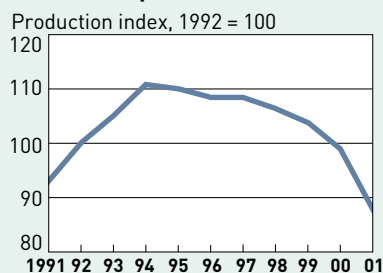
SOURCE: Federal Reserve Board

Plastic products



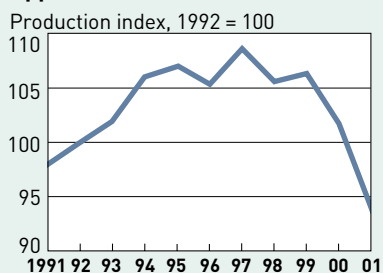
SOURCE: Federal Reserve Board

Textile mill products



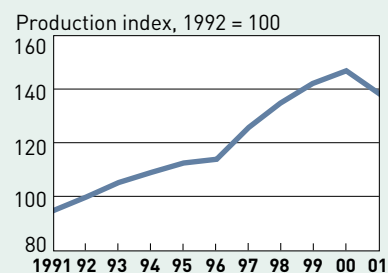
SOURCE: Federal Reserve Board

Apparel



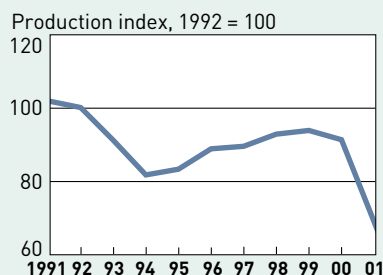
SOURCE: Federal Reserve Board

Furniture and fixtures



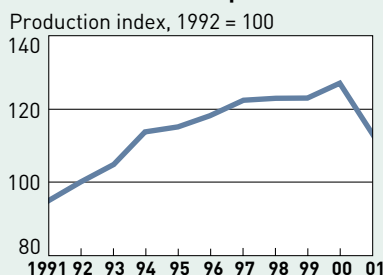
SOURCE: Federal Reserve Board

Aluminum



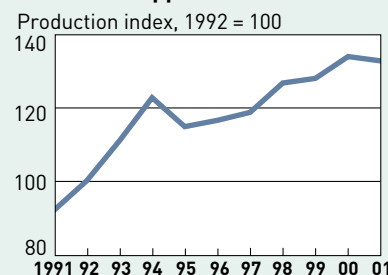
SOURCE: Federal Reserve Board

Basic steel and mill products



SOURCE: Federal Reserve Board

Household appliances



SOURCE: Federal Reserve Board