

# FEDERAL RESERVE statistical release



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## CAPACITY UTILIZATION Manufacturing, Mining, Utilities, and Industrial Materials

Capacity utilization in manufacturing, mining, and utilities declined 0.3 percentage point in May, returning to its March level of 83.8 percent. The operating rates for manufacturing and for utilities both declined in May, but the rate for mining increased by about a percentage point for the third consecutive month. The large gains for mining since February reflect a rebound in coal mining after a weather-related drop as well as higher operating rates for oil and gas extraction.

The May decline in utilization for manufacturing resulted principally from lower rates for construction-related industries, motor vehicles, and petroleum refining. Most manufacturing industries showed some decrease in utilization in May, continuing the easing that started at the beginning of the year. Most of the fall-off this year has come in industries where operating rates had been increasing rapidly last year, such as chemicals and fabricated metal products. Only textiles, nonelectrical machinery, and aerospace and miscellaneous transportation equipment have had notable increases in utilization so far in 1989; the latter two industries, however, showed little change during May.

Utilization for producers of industrial materials held steady in May at 84.2 percent despite another significant increase in the operating rate for energy materials.

### Capacity Utilization: Summary

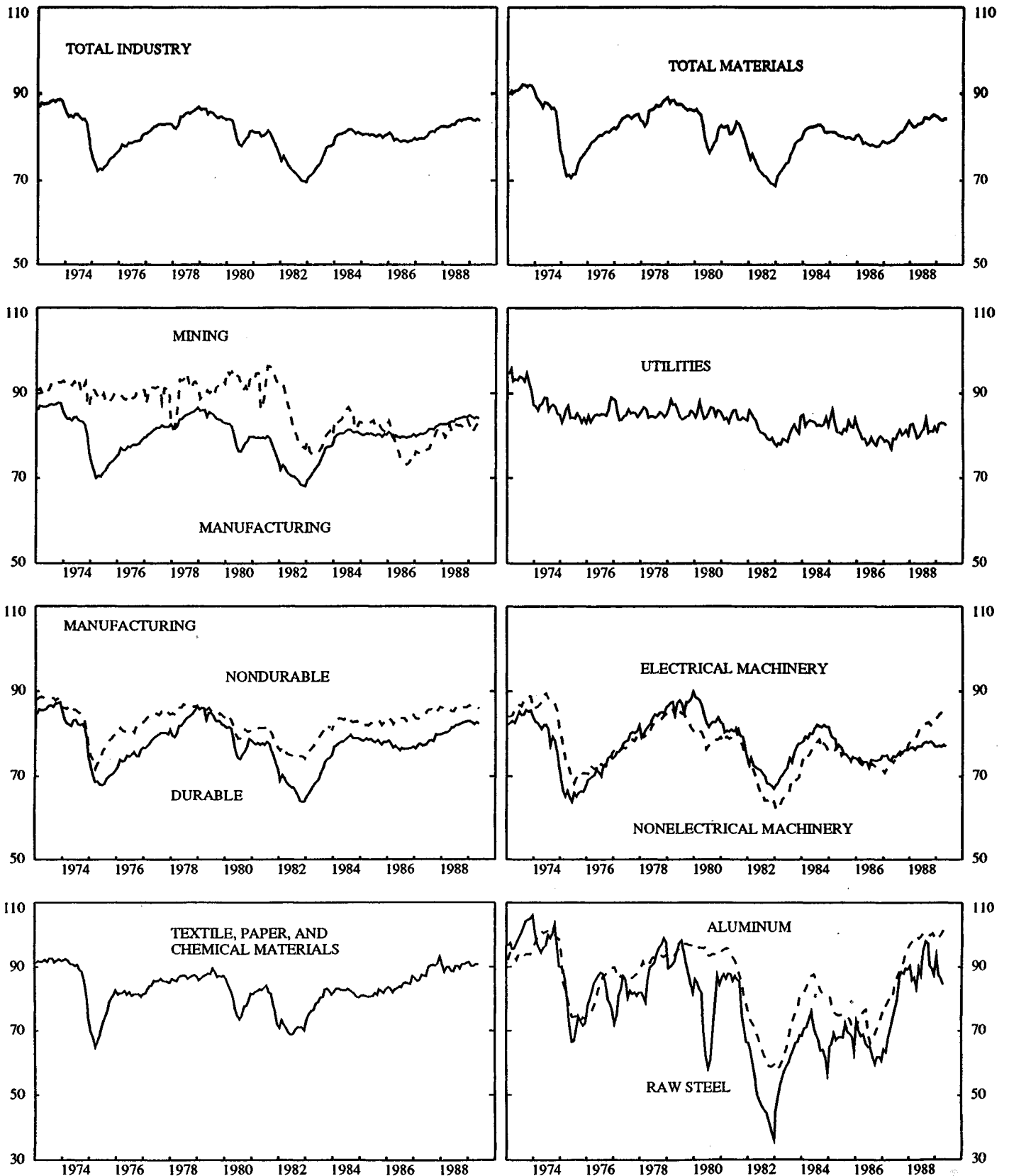
*Percent of capacity, seasonally adjusted*

| Series                   | 1973<br>High | 1975<br>Low | 1978<br>—80<br>High | 1982<br>Low | 1967<br>—88<br>Ave. | 1989<br>Feb | Mar  | Apr  | May  |
|--------------------------|--------------|-------------|---------------------|-------------|---------------------|-------------|------|------|------|
| Total industry           | 88.6         | 72.1        | 86.9                | 69.5        | 81.6                | 83.9        | 83.8 | 84.1 | 83.8 |
| Manufacturing            | 87.7         | 69.9        | 86.5                | 68.0        | 80.7                | 84.3        | 84.0 | 84.3 | 84.0 |
| Durable manufacturing    | 87.4         | 67.9        | 86.3                | 63.7        | 78.8                | 82.9        | 82.5 | 82.8 | 82.5 |
| Nondurable manufacturing | 88.8         | 71.8        | 87.0                | 74.2        | 83.6                | 86.3        | 86.1 | 86.3 | 86.0 |
| Mining                   | 92.8         | 87.8        | 95.2                | 76.9        | 86.5                | 80.6        | 81.5 | 82.4 | 83.5 |
| Utilities                | 95.6         | 82.9        | 88.5                | 78.0        | 86.7                | 82.6        | 82.9 | 82.8 | 82.3 |
| Materials                | 92.0         | 70.5        | 89.1                | 68.5        | 82.3                | 84.0        | 83.8 | 84.2 | 84.2 |

# CAPACITY UTILIZATION

SEASONALLY ADJUSTED, PERCENT

MAY DATA



# MANUFACTURING, MINING AND UTILITIES

Table 1

## Capacity Utilization

Monthly, seasonally adjusted, percent of capacity

| Series                      | 1973  | 1975 | 1978        | 1982 | 1967        | 1988 | 1988 |      |      |      | 1989 |      |      |      |      |
|-----------------------------|-------|------|-------------|------|-------------|------|------|------|------|------|------|------|------|------|------|
|                             | High  | Low  | -80<br>High | Low  | -88<br>Ave. | May  | Sep  | Oct  | Nov  | Dec  | Jan  | Feb  | Mar  | Apr  | May  |
| Total industry              | 88.6  | 72.1 | 86.9        | 69.5 | 81.6        | 82.9 | 83.7 | 84.0 | 84.1 | 84.3 | 84.3 | 83.9 | 83.8 | 84.1 | 83.8 |
| Manufacturing               | 87.7  | 69.9 | 86.5        | 68.0 | 80.7        | 83.3 | 84.0 | 84.3 | 84.4 | 84.4 | 84.7 | 84.3 | 84.0 | 84.3 | 84.0 |
| Primary processing          | 91.9  | 68.3 | 89.1        | 65.0 | 92.0        | 87.0 | 87.2 | 87.9 | 88.1 | 87.9 | 88.4 | 87.0 | 86.3 | 86.6 | 86.3 |
| Advanced processing         | 86.0  | 71.1 | 85.1        | 69.5 | 80.2        | 81.7 | 82.4 | 82.6 | 82.6 | 82.8 | 83.1 | 83.0 | 82.8 | 83.2 | 83.0 |
| Durable manufacturing       | 87.4  | 67.9 | 86.6        | 63.7 | 78.8        | 81.8 | 82.5 | 82.8 | 83.0 | 83.1 | 83.2 | 82.9 | 82.5 | 82.8 | 82.5 |
| Stone, clay & glass prod.   | 89.3  | 67.1 | 86.6        | 62.9 | 78.5        | 81.8 | 82.2 | 82.6 | 83.5 | 83.6 | 84.5 | 83.6 | 83.4 | 83.0 |      |
| Primary metals              | 101.9 | 67.0 | 97.1        | 45.8 | 79.9        | 87.5 | 90.9 | 91.9 | 90.4 | 87.6 | 90.6 | 88.4 | 85.6 | 86.3 | 86.2 |
| Iron and steel              | 105.8 | 66.6 | 103.3       | 37.6 | 79.0        | 88.0 | 90.9 | 92.8 | 90.2 | 86.5 | 91.6 | 87.9 | 84.1 | 85.6 |      |
| Nonferrous metals           | 95.6  | 62.1 | 91.1        | 60.8 | 81.5        | 86.8 | 90.9 | 90.7 | 90.7 | 89.1 | 89.3 | 89.0 | 87.5 | 87.3 |      |
| Fabricated metal products   | 85.0  | 64.7 | 87.4        | 61.3 | 78.0        | 82.9 | 84.1 | 83.7 | 84.8 | 84.9 | 84.3 | 84.1 | 83.5 | 83.1 | 83.1 |
| Nonelectrical machinery     | 89.0  | 68.2 | 86.0        | 62.9 | 78.2        | 81.4 | 82.8 | 82.2 | 82.8 | 83.7 | 83.9 | 84.7 | 85.1 | 85.5 | 85.6 |
| Electrical machinery        | 85.7  | 63.7 | 89.9        | 66.9 | 78.1        | 77.4 | 78.1 | 78.5 | 78.0 | 77.3 | 77.3 | 77.5 | 77.2 | 77.7 | 77.4 |
| Motor vehicles and parts    | 97.1  | 52.7 | 93.3        | 47.0 | 78.2        | 83.8 | 82.6 | 84.7 | 85.5 | 87.2 | 86.6 | 85.4 | 83.2 | 84.7 | 82.8 |
| Autos                       |       |      | 93.3        | 36.6 |             | 75.3 | 74.2 | 77.0 | 76.7 | 79.8 | 75.7 | 72.9 | 72.2 | 75.2 | 73.1 |
| Aerosp. & misc. transp. eq. | 77.0  | 69.6 | 87.1        | 70.7 | 78.1        | 86.4 | 85.9 | 86.2 | 85.6 | 85.6 | 85.7 | 86.2 | 86.1 | 86.8 | 86.7 |
| Instruments                 | 89.2  | 74.9 | 88.9        | 77.8 | 82.9        | 80.3 | 82.8 | 83.6 | 83.6 | 82.7 | 83.4 | 83.2 | 82.7 | 83.1 | 83.3 |
| Other durables              | 87.7  | 69.0 | 81.0        | 69.1 | 81.6        | 82.2 | 80.7 | 81.2 | 81.7 | 82.4 | 81.7 | 79.4 | 79.6 | 79.6 | 79.0 |
| Nondurable manufacturing    | 88.8  | 71.8 | 87.0        | 74.2 | 83.6        | 85.4 | 86.2 | 86.4 | 86.4 | 86.3 | 86.8 | 86.3 | 86.1 | 86.3 | 86.0 |
| Foods                       | 85.8  | 77.6 | 85.1        | 76.5 | 82.1        | 79.7 | 80.1 | 80.4 | 81.1 | 81.0 | 81.2 | 80.8 | 80.2 | 80.4 |      |
| Textile mill products       | 92.1  | 58.9 | 88.3        | 70.6 | 85.2        | 88.9 | 88.8 | 89.1 | 88.9 | 89.1 | 90.7 | 89.9 | 90.4 | 91.2 |      |
| Paper and products          | 95.6  | 67.7 | 92.7        | 80.2 | 88.8        | 94.8 | 94.5 | 94.7 | 93.7 | 94.1 | 95.1 | 93.5 | 93.2 | 94.1 |      |
| Chemicals and products      | 88.6  | 69.2 | 82.9        | 67.6 | 79.3        | 86.1 | 88.7 | 89.0 | 89.1 | 89.2 | 89.3 | 88.7 | 88.6 | 88.3 |      |
| Petroleum products          | 99.6  | 83.7 | 91.7        | 68.8 | 86.9        | 85.5 | 83.9 | 86.1 | 84.9 | 87.5 | 87.5 | 85.9 | 86.6 | 87.1 | 85.3 |
| Rubber & plastics prod.     | 97.5  | 59.5 | 89.4        | 71.2 | 85.0        | 88.1 | 87.3 | 87.7 | 87.6 | 87.2 | 86.0 | 85.2 | 84.5 | 84.4 |      |
| Other nondurables           | 86.4  | 72.3 | 92.4        | 78.9 | 86.0        | 85.4 | 86.3 | 86.0 | 85.7 | 85.1 | 86.5 | 86.6 | 86.8 | 87.1 | 86.8 |
| Mining                      | 92.8  | 87.8 | 95.2        | 76.9 | 86.5        | 80.8 | 82.3 | 81.9 | 83.3 | 83.6 | 82.2 | 80.6 | 81.5 | 82.4 | 83.5 |
| Utilities                   | 95.6  | 82.9 | 88.5        | 78.0 | 86.7        | 79.7 | 80.4 | 81.0 | 80.8 | 82.0 | 80.9 | 82.6 | 82.9 | 82.8 | 82.3 |
| Electric utilities          | 98.7  | 83.0 | 87.6        | 78.2 | 87.9        | 83.5 | 84.6 | 84.9 | 84.0 | 84.7 | 83.4 | 86.0 | 86.3 | 86.2 | 85.7 |

Table 2

## Output, Capacity, and Capacity Utilization

Quarterly, seasonally adjusted

| Series                      | Output |       |       |       |       | Capacity |       |       |       |       | Utilization |      |      |      |      |      |  |  |  |  |
|-----------------------------|--------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------------|------|------|------|------|------|--|--|--|--|
|                             | 1988   |       |       |       |       | 1989     |       |       |       |       | 1988        |      |      |      |      | 1989 |  |  |  |  |
|                             | QI     | QII   | QIII  | QIV   | QI    | QI       | QII   | QIII  | QIV   | QI    | QI          | QII  | QIII | QIV  | QI   |      |  |  |  |  |
| Total industry              | 134.5  | 136.0 | 138.4 | 139.9 | 140.6 | 163.1    | 164.2 | 165.2 | 166.3 | 167.5 | 82.4        | 82.8 | 83.8 | 84.1 | 84.0 |      |  |  |  |  |
| Manufacturing               | 139.6  | 141.5 | 144.0 | 145.8 | 146.9 | 168.9    | 170.2 | 171.5 | 172.8 | 174.3 | 82.7        | 83.2 | 84.0 | 84.4 | 84.3 |      |  |  |  |  |
| Primary processing          | 123.0  | 123.9 | 125.9 | 127.7 | 127.8 | 141.6    | 142.7 | 143.9 | 145.2 | 146.5 | 86.9        | 86.8 | 87.5 | 87.9 | 87.2 |      |  |  |  |  |
| Advanced processing         | 149.7  | 152.3 | 154.9 | 156.7 | 158.5 | 185.4    | 186.7 | 188.1 | 189.5 | 191.0 | 80.7        | 81.5 | 82.4 | 82.7 | 83.0 |      |  |  |  |  |
| Durable manufacturing       | 138.4  | 141.0 | 143.3 | 145.2 | 145.9 | 172.0    | 173.0 | 174.0 | 175.0 | 176.1 | 80.4        | 81.5 | 82.4 | 82.9 | 82.8 |      |  |  |  |  |
| Stone, clay & glass prod.   | 121.5  | 122.1 | 122.5 | 124.4 | 125.7 | 147.9    | 148.4 | 148.9 | 149.4 | 150.0 | 82.1        | 82.2 | 82.2 | 83.2 | 83.8 |      |  |  |  |  |
| Primary metals              | 86.0   | 87.3  | 91.8  | 92.3  | 90.9  | 101.6    | 102.0 | 102.3 | 102.6 | 103.1 | 84.7        | 85.7 | 89.7 | 90.0 | 88.2 |      |  |  |  |  |
| Iron and steel              | 76.5   | 75.8  | 80.2  | 80.5  | 79.1  | 89.2     | 89.3  | 89.5  | 89.6  | 90.0  | 85.8        | 84.8 | 89.6 | 89.8 | 87.9 |      |  |  |  |  |
| Nonferrous metals           | 104.1  | 109.1 | 113.7 | 114.5 | 113.2 | 125.1    | 125.8 | 126.4 | 127.1 | 127.7 | 83.2        | 86.8 | 89.9 | 90.1 | 88.6 |      |  |  |  |  |
| Fabricated metal products   | 117.8  | 119.7 | 122.1 | 124.1 | 124.3 | 143.8    | 144.6 | 145.7 | 146.9 | 148.0 | 81.9        | 82.7 | 83.9 | 84.5 | 84.0 |      |  |  |  |  |
| Nonelectrical machinery     | 163.7  | 169.6 | 174.0 | 175.7 | 180.6 | 208.0    | 209.3 | 210.6 | 211.9 | 213.5 | 78.7        | 81.0 | 82.6 | 82.9 | 84.6 |      |  |  |  |  |
| Electrical machinery        | 177.2  | 179.1 | 181.8 | 182.0 | 181.4 | 230.5    | 231.5 | 232.5 | 233.5 | 234.5 | 76.9        | 77.4 | 78.2 | 78.0 | 77.3 |      |  |  |  |  |
| Motor vehicles and parts    | 110.6  | 117.9 | 117.5 | 123.4 | 122.9 | 142.3    | 142.8 | 143.3 | 143.8 | 144.4 | 77.8        | 82.5 | 82.0 | 85.8 | 85.1 |      |  |  |  |  |
| Autos                       | 92.6   | 109.9 | 108.2 | 116.9 | 110.6 | 149.8    | 149.9 | 150.1 | 150.2 | 150.2 | 61.8        | 73.3 | 72.1 | 77.8 | 73.6 |      |  |  |  |  |
| Aerosp. & misc. transp. eq. | 153.9  | 151.5 | 152.0 | 152.3 | 153.6 | 174.2    | 175.3 | 176.4 | 177.5 | 178.6 | 88.3        | 86.4 | 86.2 | 85.8 | 86.0 |      |  |  |  |  |
| Instruments                 | 149.0  | 151.6 | 157.0 | 159.8 | 161.1 | 186.6    | 188.3 | 190.1 | 191.8 | 193.9 | 79.9        | 80.5 | 82.6 | 83.3 | 83.1 |      |  |  |  |  |
| Other durables              | 137.8  | 138.1 | 137.6 | 139.9 | 138.3 | 167.3    | 168.6 | 169.9 | 171.2 | 172.5 | 82.3        | 81.9 | 81.0 | 81.7 | 80.2 |      |  |  |  |  |
| Nondurable manufacturing    | 141.4  | 142.3 | 145.0 | 146.7 | 148.3 | 164.6    | 166.3 | 168.0 | 169.8 | 171.6 | 85.9        | 85.6 | 86.3 | 86.4 | 86.4 |      |  |  |  |  |
| Foods                       | 141.4  | 140.9 | 143.3 | 145.2 | 146.1 | 175.4    | 176.8 | 178.2 | 179.6 | 181.0 | 80.6        | 79.7 | 80.4 | 80.8 | 80.7 |      |  |  |  |  |
| Textile mill products       | 116.2  | 115.4 | 116.6 | 117.4 | 119.9 | 127.5    | 128.9 | 130.4 | 131.8 | 132.7 | 91.1        | 89.5 | 89.4 | 89.1 | 90.3 |      |  |  |  |  |
| Paper and products          | 149.0  | 149.1 | 151.4 | 151.4 | 152.4 | 156.2    | 157.7 | 159.2 | 160.7 | 162.3 | 95.4        | 94.5 | 95.1 | 94.2 | 93.9 |      |  |  |  |  |
| Chemicals and products      | 146.6  | 149.5 | 154.5 | 157.4 | 158.9 | 171.7    | 173.2 | 174.9 | 176.7 | 178.8 | 85.3        | 86.3 | 88.5 | 89.1 | 88.9 |      |  |  |  |  |
| Petroleum products          | 96.9   | 95.9  | 94.9  | 96.4  | 97.1  | 111.1    | 111.4 | 111.6 | 111.9 | 112.1 | 87.2        | 86.1 | 85.0 | 86.2 | 86.6 |      |  |  |  |  |
| Rubber & plastics prod.     | 171.7  | 173.4 | 175.3 | 177.3 | 175.1 | 193.9    | 196.8 | 199.7 | 202.6 | 205.5 | 88.5        | 88.1 | 87.8 | 87.5 | 85.2 |      |  |  |  |  |
| Other nondurables           | 143.0  | 144.5 | 147.2 | 148.3 | 152.1 | 166.2    | 168.6 | 170.9 | 173.3 | 175.7 | 86.1        | 85.7 | 86.1 | 85.6 | 86.6 |      |  |  |  |  |
| Mining                      | 102.5  | 103.4 | 103.9 | 104.2 | 101.9 | 127.7    | 127.0 | 126.3 | 125.7 | 125.1 | 80.3        | 81.5 | 82.3 | 82.9 | 81.5 |      |  |  |  |  |
| Utilities                   | 114.7  | 111.9 | 115.1 | 114.3 | 115.8 | 139.8    | 140.1 | 140.4 | 140.7 | 141.0 | 82.0        | 79.9 | 81.9 | 81.3 | 82.1 |      |  |  |  |  |
| Electric utilities          | 130.0  | 129.8 | 135.2 | 132.4 | 134.2 | 154.8    | 155.4 | 156.1 | 156.7 | 157.4 | 84.0        | 83.5 | 86.6 | 84.5 | 85.2 |      |  |  |  |  |

Note. Data for output are percentages of 1977 output as shown in the Federal Reserve's seasonally adjusted indexes of industrial production. Capacity is also

expressed as a percentage of 1977 actual output. Capacity utilization percentages are calculated as ratios of production to capacity.

## INDUSTRIAL MATERIALS

Table 3

### Capacity Utilization

Monthly, seasonally adjusted, percent of capacity

| Series                       | 1973<br>High | 1975<br>Low | 1978<br>-80<br>High | 1982<br>Low | 1967<br>-88<br>Ave. | 1988<br>May | 1988<br>Sep | Oct  | Nov   | Dec  | 1989<br>Jan | Feb  | Mar   | Apr   | May  |
|------------------------------|--------------|-------------|---------------------|-------------|---------------------|-------------|-------------|------|-------|------|-------------|------|-------|-------|------|
| Materials                    | 92.0         | 70.5        | 89.1                | 68.5        | 82.3                | 83.0        | 84.1        | 84.7 | 85.1  | 84.9 | 84.6        | 84.0 | 83.8  | 84.2  | 84.2 |
| Durable goods materials      | 91.8         | 64.4        | 89.8                | 60.9        | 79.1                | 80.8        | 81.9        | 82.4 | 82.7  | 82.1 | 82.1        | 81.5 | 80.8  | 81.0  | 80.8 |
| Metal materials              | 99.2         | 67.1        | 93.6                | 45.7        | 77.9                | 82.1        | 86.0        | 87.3 | 86.9  | 84.6 | 86.1        | 83.8 | 81.5  | 82.7  | 82.9 |
| Raw steel                    | 106.0        | 66.4        | 98.9                | 36.1        | 80.7                | 89.7        | 97.5        | 90.4 | 89.3  | 87.6 | 93.3        | 87.6 | 86.3  | 84.4  |      |
| Aluminum                     | 95.7         | 73.0        | 97.4                | 58.8        | 87.8                | 98.8        | 100.3       | 99.8 | 100.5 | 99.4 | 100.2       | 99.2 | 100.0 | 101.5 |      |
| Nondurable goods materials   | 91.1         | 66.7        | 88.1                | 70.7        | 83.6                | 87.7        | 88.2        | 89.3 | 89.4  | 89.8 | 90.1        | 89.0 | 88.9  | 89.4  | 89.3 |
| Textile, paper, & chem. mat. | 92.8         | 64.8        | 89.4                | 68.8        | 84.1                | 88.8        | 89.4        | 90.9 | 90.9  | 91.3 | 91.5        | 90.3 | 90.3  | 90.8  | 90.7 |
| Pulp & paper materials       | 98.4         | 70.6        | 97.3                | 79.9        | 92.0                | 98.1        | 97.9        | 97.8 | 96.7  | 98.4 | 98.1        | 95.8 | 95.4  | 95.9  |      |
| Chemical materials           | 92.5         | 64.4        | 87.9                | 63.5        | 81.3                | 86.9        | 88.0        | 90.2 | 90.5  | 90.7 | 90.7        | 89.8 | 89.7  | 90.2  |      |
| Energy materials             | 94.6         | 86.9        | 94.0                | 82.3        | 88.9                | 83.3        | 85.3        | 85.3 | 86.2  | 86.5 | 84.9        | 84.9 | 85.6  | 86.6  | 87.2 |

Table 4

### Output, Capacity, and Capacity Utilization

Quarterly, seasonally adjusted

| Series                       | Output     |       |       |       | 1989<br>QI | Capacity   |       |       |       | 1989<br>QI | Utilization |      |       |      | 1989<br>QI |
|------------------------------|------------|-------|-------|-------|------------|------------|-------|-------|-------|------------|-------------|------|-------|------|------------|
|                              | 1988<br>QI | QII   | QIII  | QIV   |            | 1988<br>QI | QII   | QIII  | QIV   |            | 1988<br>QI  | QII  | QIII  | QIV  |            |
| Materials                    | 122.5      | 124.0 | 126.5 | 128.0 | 127.6      | 148.5      | 149.3 | 150.1 | 150.8 | 151.7      | 82.5        | 83.0 | 84.3  | 84.9 | 84.1       |
| Durable goods materials      | 131.5      | 134.1 | 137.1 | 139.2 | 138.6      | 165.7      | 166.8 | 167.9 | 169.0 | 170.1      | 79.4        | 80.4 | 81.6  | 82.4 | 81.5       |
| Metal materials              | 86.2       | 88.1  | 92.7  | 94.8  | 92.3       | 108.8      | 109.1 | 109.5 | 109.8 | 110.2      | 79.2        | 80.8 | 84.8  | 86.3 | 83.8       |
| Raw steel                    | 77.7       | 77.1  | 85.9  | 79.5  | 79.8       | 88.7       | 88.7  | 88.9  | 89.2  | 89.6       | 87.5        | 86.9 | 96.8  | 89.1 | 89.0       |
| Aluminum                     | 92.5       | 94.8  | 97.2  | 97.8  | 98.5       | 94.3       | 95.5  | 96.7  | 97.9  | 98.7       | 98.1        | 99.2 | 100.5 | 99.9 | 99.8       |
| Nondurable goods materials   | 129.4      | 130.4 | 132.8 | 135.4 | 136.4      | 146.8      | 148.3 | 149.8 | 151.2 | 152.7      | 88.1        | 87.9 | 88.6  | 89.5 | 89.3       |
| Textile, paper, & chem. mat. | 131.6      | 132.4 | 135.3 | 138.1 | 139.2      | 146.7      | 148.5 | 150.2 | 151.8 | 153.5      | 89.7        | 89.2 | 90.0  | 91.0 | 90.7       |
| Pulp & paper materials       | 145.7      | 145.9 | 148.9 | 148.6 | 148.5      | 147.6      | 149.2 | 150.7 | 152.3 | 154.0      | 98.7        | 97.8 | 98.8  | 97.6 | 96.4       |
| Chemical materials           | 133.5      | 135.7 | 139.4 | 144.1 | 145.4      | 153.5      | 155.4 | 157.4 | 159.3 | 161.4      | 87.0        | 87.3 | 88.6  | 90.5 | 90.1       |
| Energy materials             | 100.9      | 100.6 | 102.5 | 102.0 | 100.8      | 119.7      | 119.4 | 119.0 | 118.7 | 118.4      | 84.3        | 84.2 | 86.0  | 86.0 | 85.1       |

#### Explanatory Notes.

**Definition.** This release contains estimates of output, capacity, and capacity utilization for the nation's factories, mines, and electric and gas utilities. Output data are the Federal Reserve's seasonally adjusted indexes of industrial production, which express output as percentages of 1977 output. The capacity estimates are expressed as percentages of 1977 output as well. Capacity utilization percentages are calculated as ratios of production to capacity. The capacity indexes are based on a variety of data, including capacity data in physical units compiled by trade associations, private and government surveys of capacity growth and utilization rates, and estimates of capital stock growth. The concept of practical capacity is applied, which is defined as the greatest level of output that a plant can maintain within the framework of a realistic work pattern, taking account of normal downtime, and assuming sufficient availability of inputs to operate machinery and equipment in place. When the capacity indexes for individual industries are aggregated—for example to total manufacturing—no explicit account is taken of possible general equilibrium constraints such as emerging industry bottlenecks. Because of the large and heterogeneous database, changes in utilization rates may be more meaningful in the analysis of business conditions than any particular level of these rates.

**Groupings.** Estimates of capacity and industrial production are aggregated to primary and advanced processing industries, to durable and nondurable manufacturing industries, and to total manufacturing. The mining, manufacturing, and utilities estimates aggregate to the total index. Primary processing includes textile mill products, paper and products, industrial chemicals, petroleum products, rubber and plastics products, lumber and products, primary metals, fabricated metal products, and stone, clay, and glass products. Advanced processing includes foods, tobacco products, apparel products, printing and publishing, chemical products such as drugs and toiletries, leather and products, furniture and fixtures, government-owned-and-operated ordnance facilities. Industrial materials are items produced and used as inputs by manufacturing plants, mines, and utilities. Industrial materials include many of the items included in the primary processing grouping of manufacturing, as well as some of the output of the

advanced processing industries, mines, and utilities—such as iron ore, crude oil, semiconductors, and electricity sold to industry.

**Perspective.** The historical highs and lows in capacity utilization shown in the tables above are specific to each series and did not all occur in the same month. Industrial plants usually operate at capacity utilization rates that are well below 100 percent; none of the broad aggregates has ever reached 100 percent. For mining, manufacturing, and utilities as a whole, and for total manufacturing, utilization rates as high as 90 percent have been exceeded only in wartime.

**Revisions.** The first estimates for a month are published about the 16th of the following month. These estimates may revise in each of the next three months as new data become available. After the fourth month, no further revisions are undertaken until an annual or benchmark revision. The median of the revisions in the total manufacturing utilization rate between the first and fourth estimate is 0.3 percentage point; that is, in about half of the cases, the absolute value of the revision from the first to the fourth estimate is less than 0.3 of a percentage point.

**Sources.** The basic methodology used to estimate the series is discussed in Richard D. Raddock, "Revised Federal Reserve Rates of Capacity Utilization," *Federal Reserve Bulletin* Vol. 71 (October 1985), pp. 754-66. Historical utilization rates since 1967 (1948 in the case of manufacturing) are included in the statistical supplement to the October 1987 capacity utilization release. Copies may be obtained from Publications Services, Board of Governors of the Federal Reserve System, Washington, D.C. 20551.

**Rounding.** Utilization rates are calculated from unrounded capacity and production indexes. Aggregates are derived from unrounded detailed components.

**Release schedule for 1989.** At 9:15 a.m. on January 18, February 15, March 16, April 14, May 15, June 15, July 14, August 16, September 15, October 17, November 14, and December 15.