

# BMC Magnet Usage Analysis

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## Executive Summary

Total Magnet Weight by Year:

| Year   | Total Weight (lbs) |
|--------|--------------------|
| Year 1 | 8,238.82           |
| Year 2 | 13,165.01          |
| Year 3 | 10,606.97          |

Unique Part Numbers Analyzed: 115

Grades Found: CRUMAX3714, N30, N33SH, N35, N35EH, N35P, N35SH, N38, N38M, N40, N40EH, N42, N45, N45P, N45SH, N48SH, N50, N50M, N52, N52P, UNKNOWN

## Weight by Magnet Grade (lbs)

| Grade      | Density (g/cm³) | Year 1 Qty | Year 1 (lbs) | Year 2 Qty | Year 2 (lbs) | Year 3 Qty | Year 3 (lbs) | 3-Year Total (lbs) |
|------------|-----------------|------------|--------------|------------|--------------|------------|--------------|--------------------|
| CRUMAX3714 | 7.50            | 85,080     | 202.70       | 65,000     | 154.86       | 65,000     | 154.86       | 512.42             |
| N30        | 7.40            | 710        | 0.97         | 240        | 0.33         | 1,685      | 2.30         | 3.60               |
| N33SH      | 7.45            | 220        | 0.79         | 1,972      | 7.11         | 1,838      | 6.63         | 14.54              |
| N35        | 7.50            | 562,685    | 4,865.30     | 621,085    | 4,913.55     | 447,532    | 3,927.37     | 13,706.23          |
| N35EH      | 7.50            | 0          | 0.00         | 0          | 0.00         | 5,000      | 6.65         | 6.65               |
| N35P       | 7.50            | 2,191      | 9.82         | 3,610      | 33.87        | 300        | 6.23         | 49.93              |
| N35SH      | 7.50            | 4,432      | 407.87       | 6,319      | 581.53       | 8,947      | 823.38       | 1,812.78           |
| N38        | 7.50            | 1,218      | 7.15         | 640        | 0.61         | 109        | 1.52         | 9.28               |
| N38M       | 7.50            | 1,477      | 1,600.80     | 5,473      | 5,931.73     | 3,953      | 4,284.33     | 11,816.86          |
| N40        | 7.52            | 2,643      | 32.40        | 1,622      | 17.30        | 750        | 20.65        | 70.36              |
| N40EH      | 7.52            | 1,119      | 103.25       | 2,242      | 206.88       | 914        | 84.34        | 394.47             |
| N42        | 7.55            | 58,739     | 773.84       | 101,110    | 801.54       | 76,788     | 778.89       | 2,354.27           |
| N45        | 7.55            | 10,841     | 4.87         | 9,200      | 4.14         | 8,397      | 3.77         | 12.78              |
| N45P       | 7.55            | 20,000     | 8.99         | 20,000     | 8.99         | 10,000     | 4.49         | 22.47              |
| N45SH      | 7.55            | 0          | 0.00         | 25         | 18.13        | 20         | 14.51        | 32.64              |

|                    |      |                |                 |                |                  |                |                  |                  |
|--------------------|------|----------------|-----------------|----------------|------------------|----------------|------------------|------------------|
| <b>N48SH</b>       | 7.55 | 2,992          | 26.91           | 3,934          | 36.04            | 9,297          | 87.42            | <b>150.37</b>    |
| <b>N50</b>         | 7.55 | 524            | 3.51            | 356            | 2.38             | 0              | 0.00             | <b>5.89</b>      |
| <b>N50M</b>        | 7.55 | 20,615         | 116.26          | 18,634         | 121.40           | 24,192         | 183.77           | <b>421.43</b>    |
| <b>N52</b>         | 7.55 | 1,269          | 46.63           | 2,007          | 73.74            | 2,481          | 91.12            | <b>211.48</b>    |
| <b>N52P</b>        | 7.55 | 10,000         | 0.00            | 10,000         | 0.00             | 10,000         | 0.00             | <b>0.00</b>      |
| <b>UNKNOWN</b>     | 7.50 | 3,468          | 26.75           | 13,090         | 250.86           | 6,910          | 124.74           | <b>402.35</b>    |
| <b>GRAND TOTAL</b> | -    | <b>790,223</b> | <b>8,238.82</b> | <b>886,559</b> | <b>13,165.01</b> | <b>684,113</b> | <b>10,606.97</b> | <b>32,010.80</b> |

## Calculation Methodology

### Volume Calculations

- **Discs/Cylinders:**  $V = \pi \times r^2 \times t$  (where  $r$  = diameter/2,  $t$  = thickness)
- **Blocks:**  $V = L \times W \times T$  (length  $\times$  width  $\times$  thickness)
- **Rings:**  $V = \pi \times (R^2 - r^2) \times t$  (outer radius<sup>2</sup> minus inner radius<sup>2</sup>  $\times$  thickness)

### Theoretical Densities Used (g/cm<sup>3</sup>)

| Grade     | Density |
|-----------|---------|
| N30       | 7.40    |
| N33       | 7.45    |
| N35/N35SH | 7.50    |
| N38/N38M  | 7.50    |
| N40       | 7.52    |
| N42-N52   | 7.55    |

### Weight Calculation

1. Volume (in<sup>3</sup>)  $\times$  16.387 = Volume (cm<sup>3</sup>)
2. Volume (cm<sup>3</sup>)  $\times$  Density (g/cm<sup>3</sup>) = Weight (grams)
3. Weight (grams)  $\times$  0.00220462 = Weight (lbs)
4. Weight per unit  $\times$  Quantity = Total weight

## Top 25 Parts by Weight (Year 1)

| Part    | Description                          | Grade | Shape | Unit Wt (lbs) | Yr1 Qty | Yr1 lbs  |
|---------|--------------------------------------|-------|-------|---------------|---------|----------|
| NEB3598 | MAG.NEO 1.000T 2.000W 2.000L N38M... | N38M  | block | 1.083817      | 1,477   | 1,600.80 |
| NEP3564 | MAG.NEO PLUG .870D .500T N35...      | N35   | disc  | 0.080537      | 17,326  | 1,395.38 |
| NEP3564 | MAG.NEO PLUG .870D .500T N35...      | N35   | disc  | 0.080537      | 17,326  | 1,395.38 |

|                     |  |            |       |          |         |        |
|---------------------|--|------------|-------|----------|---------|--------|
| NEB-2710            | MAG.NEO .106T .256W .745L N35...                         | N35        | block | 0.005478 | 98,141  | 537.59 |
| NEP3566             | MAG.NEO PLUG .930D .500T 35SH...                         | N35SH      | disc  | 0.092028 | 4,432   | 407.87 |
| N35P500250          | MAG.NEO .500D .250T N35NP...                             | N35        | disc  | 0.013300 | 19,765  | 262.88 |
| N42P500500          | MAG.NEO DISC .500D .500T N42NP<br>WITH SPACERS MAGNET... | N42        | disc  | 0.026778 | 8,020   | 214.76 |
| N42P500500          | MAG.NEO DISC .500D .500T N42NP<br>WITH SPACERS MAGNET... | N42        | disc  | 0.026778 | 8,020   | 214.76 |
| SNAP-ON-<br>ME14A22 | MAG.NEO .246D .185T CRUMAX3714...                        | CRUMAX3714 | disc  | 0.002382 | 85,080  | 202.70 |
| N42P375500          | MAG.NEO DISC .375D .500T N42NP<br>MAGNETIZED THROUGH ... | N42        | disc  | 0.015063 | 8,116   | 122.25 |
| N42P375500          | MAG.NEO DISC .375D .500T N42NP<br>MAGNETIZED THROUGH ... | N42        | disc  | 0.015063 | 8,116   | 122.25 |
| NEB35P752534        | MAG.NEO .340 .250 .750 N35NP...                          | N35        | block | 0.017273 | 6,759   | 116.75 |
| NEP4058             | MAG.NEO PLUG .938D .188T N50M...                         | N50M       | disc  | 0.035435 | 3,281   | 116.26 |
| N35P220100          | MAG.NEO .220D .100T N35NP...                             | N35        | disc  | 0.001030 | 104,034 | 107.15 |
| NEP4008EH           | MAG.NEO PLUG .930D .500T N40EH...                        | N40EH      | disc  | 0.092274 | 1,119   | 103.25 |
| N35P500125          | MAG.NEO PLUG .500D .125T N35NP...                        | N35        | disc  | 0.006650 | 15,184  | 100.98 |
| N35P500125          | MAG.NEO PLUG .500D .125T N35NP...                        | N35        | disc  | 0.006650 | 15,184  | 100.98 |
| NEB35P752550        | MAG.NEO .500 .250 .750 N35NP...                          | N35        | block | 0.025402 | 3,936   | 99.98  |
| SNAP-ON-<br>ME14A26 | MAG.NEO .250D .125T N35...                               | N35        | disc  | 0.001663 | 60,071  | 99.87  |
| N35P250250          | MAG.NEO .250D .250T N35NP...                             | N35        | disc  | 0.003325 | 29,177  | 97.02  |
| NEB35P505050        | MAG.NEO .500 .500 .500 N35NP...                          | N35        | block | 0.033869 | 1,712   | 57.98  |
| NEB35P755025        | MAG.NEO .250T .500W .750L N35NP...                       | N35        | block | 0.025402 | 2,103   | 53.42  |
| NEB35P755025        | MAG.NEO .250T .500W .750L N35NP...                       | N35        | block | 0.025402 | 2,103   | 53.42  |
| N35P500060          | MAG.NEO .500D .060T N35NP...                             | N35        | disc  | 0.003192 | 16,583  | 52.93  |
| N35P375060          | MAG.NEO .375D .060T N35NP...                             | N35        | disc  | 0.001796 | 20,320  | 36.49  |

#### ⚠ Items Not Fully Parsed (59 items)

The following items could not be automatically parsed for dimensions. These are NOT included in the totals above.

| Part         | Description   | Yr1   | Yr2   | Yr3   |
|--------------|---|-------|-------|-------|
| NEB3596      | MAG.NEO .500T 2.000W 2.000L N38M                          | 6,897 | 5,009 | 7,471 |
| NEB3592      | MAG.NEO .500T 1.000W 1.000L N38                           | 5,584 | 3,180 | 1,069 |
| N48P220100HT | MAG.NEO .220D X 100T N48P HT Magnetized through thickness | 5,000 | 0     | 2,000 |

|                       |  |       |       |       |
|-----------------------|--|-------|-------|-------|
| NEB3594               | MAG.NEO .500T 1.000W 2.000L 38M TOLS. +/- .005       | 3,285 | 3,300 | 2,075 |
| NEB52P1007505PSAN     | MAG.NEO .055T .750W 1.000L N52NP BLOCK<br>MAGNETIZED | 2,455 | 4     | 9     |
| NEB52P1007505PSAN     | MAG.NEO .055T .750W 1.000L N52NP BLOCK<br>MAGNETIZED | 2,455 | 4     | 9     |
| 70-43601-1            | MAG.NEO 30SH SPECIAL PER DWG 100% inspected          | 2,000 | 2,000 | 2,000 |
| NEB3852               | MAG.NEO .375T 2.000W 2.750L 38M                      | 1,592 | 1,228 | 1,521 |
| 51467JEH              | MAG.NEO RING .500T .930D N42EH .266 HOLE             | 1,540 | 2,726 | 0     |
| 9011638-1             | MAG.NEO N35P500250 BLACK EPOXY                       | 1,517 | 1,500 | 0     |
| 78-99491              | MAG.NEO ARC 12.000 OD N50                            | 1,334 | 806   | 1,799 |
| 904732-1              | MAG.NEO .125x .156x .250 N30                         | 1,000 | 1,000 | 1,000 |
| NEB3854               | MAG.NEO .750T 2.000W 2.750L N38M                     | 968   | 871   | 536   |
| 653006                | MAG.NEO NEP3012NP SPCL                               | 850   | 0     | 0     |
| NEB35P1004841         | MAG.NEO .410T .480W 1.000L N35NP                     | 829   | 1,322 | 413   |
| NEB35P1004841         | MAG.NEO .410T .480W 1.000L N35NP                     | 829   | 1,322 | 413   |
| 78-99445              | MAG.NEO ARC 8.000 OD N50                             | 626   | 4     | 1,843 |
| 9310357-1             | MAG.NEO 3.2MMT x 12.7MMW x 25.4MML                   | 400   | 0     | 0     |
| NEB3596-1.750         | MAG.NEO .500T 1.750W 2.000L GR. 38                   | 376   | 122   | 218   |
| NEB35P20010050        | MAG.NEO .500 1.00 2.00 N35NP                         | 309   | 138   | 258   |
| ... and 39 more items |  |       |       |       |

**Notes:** This analysis uses theoretical NdFeB densities. Actual weights may vary slightly due to plating thickness, manufacturing tolerances, and specific alloy compositions. All dimensions are assumed to be in inches unless marked as metric (mm).