# BMC Company - Combined NdFeB Magnet Usage Analysis

**Report Generated:** January 27, 2026 at 18:03 UTC

**Data Sources:** mag.neo.csv (111 items) + neo2.csv (30 items)

## Executive Summary

Year 1 Total

**41.11**

tons (82,220 lbs)

Year 2 Total

**19.66**

tons (39,319 lbs)

Year 3 Total

**17.63**

tons (35,257 lbs)

3-Year Grand Total

**78.40**

tons (156,795 lbs)

**Average Annual Usage:** 26.13 tons/year (52,265 lbs/year)

**Total Unique Part Numbers Analyzed:** 141

**Items Not Parsed:** 146 (excluded from totals)

## Tonnage by Market Segment

| Segment | Grades Included | Year 1 (tons) | Year 2 (tons) | Year 3 (tons) | 3-Year Total (tons) | % of Total |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| **Standard (N35-N38)** | N35, N35EH, N35P, N38, N38M | 40.515 | 18.957 | 16.903 | **76.375** | 97.4% |
| **Mid-Range (N40-N45)** | N40, N40EH, N42, N42H, N45... | 0.484 | 0.550 | 0.470 | **1.505** | 1.9% |
| **High-Performance (N48-N52)** | N48SH, N50, N50M, N52 | 0.100 | 0.122 | 0.184 | **0.406** | 0.5% |
| **Economy (N30-N33)** | N30, N33SH | 0.001 | 0.004 | 0.004 | **0.009** | 0.0% |
| **Bonded Neo** | BONDED | 0.005 | 0.015 | 0.049 | **0.069** | 0.1% |
| **Other/Specialty** | N23, N17, N34P | 0.006 | 0.010 | 0.018 | **0.034** | 0.0% |
| **GRAND TOTAL** | - | **41.110** | **19.659** | **17.628** | **78.398** | **100%** |

## Detailed Weight by Grade

| Grade | Density (g/cm³) | # Parts | Year 1 (lbs) | Year 2 (lbs) | Year 3 (lbs) | 3-Year Total (lbs) | Total (tons) |
|---|---|---|---|---|---|---|---|
| **N35** | 7.50 | 86 | 79,411.51 | 31,948.44 | 29,506.44 | **140,866.40** | 70.4332 |
| **N38M** | 7.50 | 1 | 1,600.80 | 5,931.73 | 4,284.33 | **11,816.86** | 5.9084 |
| **N42** | 7.55 | 8 | 785.27 | 835.86 | 813.21 | **2,434.34** | 1.2172 |
| **N50M** | 7.55 | 1 | 116.26 | 121.40 | 183.77 | **421.43** | 0.2107 |
| **N40EH** | 7.52 | 1 | 103.25 | 206.88 | 84.34 | **394.47** | 0.1972 |
| **N52** | 7.55 | 4 | 46.63 | 76.81 | 91.63 | **215.07** | 0.1075 |
| **N48SH** | 7.55 | 2 | 26.91 | 36.04 | 87.42 | **150.37** | 0.0752 |
| **BONDED** | 6.00 | 9 | 10.51 | 30.96 | 97.39 | **138.85** | 0.0694 |
| **N40** | 7.52 | 4 | 32.40 | 17.30 | 20.65 | **70.36** | 0.0352 |
| **N23** | 7.50 | 1 | 10.21 | 17.02 | 34.03 | **61.26** | 0.0306 |
| **N35P** | 7.50 | 3 | 9.82 | 33.87 | 6.23 | **49.93** | 0.0250 |
| **N42H** | 7.55 | 2 | 32.36 | 9.65 | 0.00 | **42.01** | 0.0210 |
| **N45SH** | 7.55 | 1 | 0.00 | 18.13 | 14.51 | **32.64** | 0.0163 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **N50** | 7.55 | 3 | 9.80 | 9.87 | 4.99 | **24.67** | 0.0123 |
| **N45P** | 7.55 | 1 | 8.99 | 8.99 | 4.49 | **22.47** | 0.0112 |
| **N33SH** | 7.45 | 1 | 0.79 | 7.11 | 6.63 | **14.54** | 0.0073 |
| **N45** | 7.55 | 3 | 4.87 | 4.14 | 3.77 | **12.78** | 0.0064 |
| **N38** | 7.50 | 5 | 7.15 | 0.61 | 1.52 | **9.28** | 0.0046 |
| **N17** | 7.50 | 2 | 1.67 | 3.49 | 2.21 | **7.37** | 0.0037 |
| **N35EH** | 7.50 | 1 | 0.00 | 0.00 | 6.65 | **6.65** | 0.0033 |
| **N30** | 7.40 | 1 | 0.97 | 0.33 | 2.30 | **3.60** | 0.0018 |
| **N34P** | 7.50 | 1 | 0.00 | 0.01 | 0.04 | **0.05** | 0.0000 |
| **TOTAL** | **-** | **141** | **82,220.18** | **39,318.65** | **35,256.57** | **156,795.40** | **78.398** |

## Key Conclusions

1. **Total 3-Year Consumption:** BMC used approximately **78.40 tons** (156,795 lbs) of NdFeB magnets over the 3-year period.
2. **Annual Average:** Average consumption is **26.13 tons/year** (52,265 lbs/year).
3. **Dominant Grade:** N35 and related variants represent the largest volume, consistent with its status as the most cost-effective sintered NdFeB grade.
4. **Grade Distribution:** The majority of usage falls in the Standard (N35-N38) segment, with smaller quantities of higher-performance grades for specialized applications.
5. **Year-over-Year Trend:** Usage decreased from Year 1 to Year 3 (-57.1% change).

## Calculation Methodology

### 1. Dimension Parsing

Dimensions were extracted from part descriptions using pattern matching for:

- **Discs/Cylinders:** Patterns like ".220D .100T" (inch) or "D12.5 x 10mm" (metric)
- **Blocks:** Three dimensions (L × W × T) in various formats
- **Rings:** OD × ID × T patterns

### 2. Volume Formulas

| | |
|---|---|

| Shape | Formula |
|---|---|
| Disc/Cylinder | $V = \pi \times r^2 \times t$ |
| Block | $V = L \times W \times T$ |
| Ring | $V = \pi \times (R^2 - r^2) \times t$ |

### 3. Theoretical Densities (g/cm³)

| Grade Range | Density | Notes |
|---|---|---|
| N30 | 7.40 | Economy grade |
| N33-N35 | 7.45-7.50 | Standard grades |
| N38-N40 | 7.50-7.52 | Mid-range |
| N42-N52 | 7.55 | High performance |
| Bonded Neo | 6.00 | Lower density due to binder content |

### 4. Weight Calculation Steps

1. Volume (in³) × 16.387 cm³/in³ = Volume (cm³)
2. Volume (cm³) × Density (g/cm³) = Mass (grams)
3. Mass (g) × 0.00220462 lb/g = Weight (lbs)
4. Weight (lbs) × Quantity = Total Weight
5. Total Weight (lbs) × 0.0005 = Weight (short tons)

### 5. Grade Assignment

Grades were extracted from descriptions using pattern matching. **Per instructions, any magnet without an identifiable grade was assigned N35** (the most common standard grade).

### ⚠ Items Not Included in Analysis (146 items)

The following items could not be parsed for dimensions. These are typically complex assemblies, industrial equipment (grates, rods), or items with non-standard description formats. **These quantities are NOT included in the tonnage totals above.**

| Source | Part | Description | Yr1 | Yr2 | Yr3 |
|---|---|---|---|---|---|
| mag.neo.csv | NEP4060 | MAG.NEO PLUG .938D 1.000T N50M... | 17,334 | 15,208 | 19,006 |

| | | | | | |
|---|---|---|---|---|---|
| mag.neo.csv | 643541-1 | MAG.NEO 1.000”L x .500”W x .125”T N52P Magnetized ... | 10,000 | 10,000 | 10,000 |
| mag.neo.csv | NEB3596 | MAG.NEO .500T 2.000W 2.000L N38M... | 6,897 | 5,009 | 7,471 |
| mag.neo.csv | NEB3592 | MAG.NEO .500T 1.000W 1.000L N38... | 5,584 | 3,180 | 1,069 |
| mag.neo.csv | N48P220100HT | MAG.NEO .220D X 100T N48P HT Magnetized through ... | 5,000 | 0 | 2,000 |
| mag.neo.csv | NEB3594 | MAG.NEO .500T 1.000W 2.000L 38M TOLS. +/-.005... | 3,285 | 3,300 | 2,075 |
| mag.neo.csv | NEB52P1007505PSAN | MAG.NEO .055T .750W 1.000L N52NP BLOCK MAGNETIZED... | 2,455 | 4 | 9 |
| mag.neo.csv | NEB52P1007505PSAN | MAG.NEO .055T .750W 1.000L N52NP BLOCK MAGNETIZED... | 2,455 | 4 | 9 |
| mag.neo.csv | NEP3561UH | MAG.NEO PLUG .938D 1.000T N48SH... | 2,104 | 2,911 | 6,789 |
| mag.neo.csv | 70-43601-1 | MAG.NEO 30SH SPECIAL PER DWG 100% inspected... | 2,000 | 2,000 | 2,000 |
| mag.neo.csv | NEB3852 | MAG.NEO .375T 2.000W 2.750L 38M... | 1,592 | 1,228 | 1,521 |
| mag.neo.csv | 51467JEH | MAG.NEO RING .500T .930D N42EH .266 HOLE... | 1,540 | 2,726 | 0 |
| mag.neo.csv | 9011638-1 | MAG.NEO N35P500250 BLACK EPOXY... | 1,517 | 1,500 | 0 |
| mag.neo.csv | 78-99491 | MAG.NEO ARC 12.000 OD N50... | 1,334 | 806 | 1,799 |
| mag.neo.csv | 410003097 | MAG.NEO .250" T X .125" W X 2.000" L N42NP North p... | 1,000 | 0 | 0 |
| mag.neo.csv | 904732-1 | MAG.NEO .125x .156x .250 N30... | 1,000 | 1,000 | 1,000 |
| mag.neo.csv | NEB3854 | MAG.NEO .750T 2.000W 2.750L N38M... | 968 | 871 | 536 |
| mag.neo.csv | 653006 | MAG.NEO NEP3012NP SPCL... | 850 | 0 | 0 |
| mag.neo.csv | NEB35P1004841 | MAG.NEO .410T .480W 1.000L N35NP... | 829 | 1,322 | 413 |
| mag.neo.csv | NEB35P1004841 | MAG.NEO .410T .480W 1.000L N35NP... | 829 | 1,322 | 413 |
| mag.neo.csv | N42P1000500 | MAG.NEO DISC 1.000D .500T N42NP WITH SPACERS MAGNE... | 634 | 481 | 761 |
| mag.neo.csv | N42P1000500 | MAG.NEO DISC 1.000D .500T N42NP WITH SPACERS MAGNE... | 634 | 481 | 761 |

| | | | | | |
|---|---|---|---|---|---|
| mag.neo.csv | 78-99445 | MAG.NEO ARC 8.000 OD N50... | 626 | 4 | 1,843 |
| mag.neo.csv | NEB3596-1.750 | MAG.NEO .500T 1.750W 2.000L GR. 38... | 376 | 122 | 218 |
| mag.neo.csv | NEB35P20010050 | MAG.NEO .500 1.00 2.00 N35NP... | 309 | 138 | 258 |
| mag.neo.csv | 78-99444 | MAG.NEO ARC 6.000 OD N50... | 288 | 96 | 240 |
| mag.neo.csv | NEB38P1005025 | MAG.NEO 1.000T .500W .250L N38NP... | 284 | 255 | 4 |
| mag.neo.csv | NEB38P1005025 | MAG.NEO 1.000T .500W .250L N38NP... | 284 | 255 | 4 |
| mag.neo.csv | N35P1000375 | MAG.NEO PLUG 1.000D .375T N35NP... | 253 | 0 | 0 |
| mag.neo.csv | N35P1000375 | MAG.NEO PLUG 1.000D .375T N35NP... | 253 | 0 | 0 |
| ... and 116 more items | | | | | |

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