

No attempt has been made to rank the information contained in this report in order of importance, since BPA Worldwide believes this is a judgment which must be made by the user of the report.

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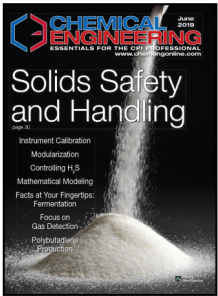
CHEMICAL ENGINEERING is a brand that reaches chemical engineers in the chemical process industries (CPI). In order to reach all major segments of the CPI, Chemical Engineering uses its website, newsletters, social media outlets, webinars, white papers, job board, technical books and involvement in trade shows and conferences. Brand extensions include chemengonline.com, CE Direct, Chememploy, CE Focus, Breakthrough Technologies, and the Chemical Engineering Buyers' Guide. Chemical Engineering's strength is its diversification in the marketplace.

BRAND REPORT PURPOSE

The Brand Report provides a deeper understanding and identification of all audited touch points with customers that have interest in the brand. It is designed to present analysis of all communication channels, including a brand's unique users within each channel of, but not across, multiple media platforms. This non-integrated report contains data for each separate media channel as indicated in the Executive Summary. No attempt has been made to identify or eliminate duplication that may exist across media channels.

CHANNELS

CHEMICAL ENGINEERING MAGAZINE



6 issues in the period
60,043 average circulation

CHEMICAL ENGINEERING WEBSITE



69,907 average users

CHEMICAL ENGINEERING SOCIAL MEDIA



24,600 Twitter followers
70,211 LinkedIn group members

EXECUTIVE SUMMARY

Below are the average contacts per occurrence, including frequency per period reported.

| | Non-Paid | Paid | Average |
|--|----------|-------|---------|
| CHEMICAL ENGINEERING MAGAZINE (6 issues in the period) | 58,667 | 1,376 | 60,043 |
| a. Print | 29,960 | 1,207 | 31,167 |
| b. Digital | 28,707 | 169 | 28,876 |
| 1. Requested | 27,496 | 169 | 27,665 |
| 2. Non-Requested | 1,211 | - | 1,211 |
| CHEMICAL ENGINEERING WEBSITE (Monthly Users with 153,735 average Pageviews) | 69,907 | - | 69,907 |
| CHEMICAL ENGINEERING SOCIAL MEDIA | | | |
| a. Twitter followers | *24,600 | - | *24,600 |
| b. LinkedIn group members | *70,211 | - | *70,211 |

*Social Media claims are cumulative figures, not averages.

FIELD SERVED

CHEMICAL ENGINEERING serves companies involved in manufacturing, engineering, government, educational services, financial services, public utilities/waste management, transportation, storage, distribution, wholesale/retail trade, business/legal services, consulting/misc. services, associations, societies, trade groups and others allied to the field.

DEFINITION OF RECIPIENT QUALIFICATION

Qualified recipients are involved in corporate management, plant operations, production management, engineering, technical direction, regulatory & safety management, purchasing, sales & marketing management, consulting and personnel in other functions within the Field Served.

AVERAGE NON-QUALIFIED CIRCULATION

| Non-Qualified Not Included Elsewhere | Copies |
|---|------------|
| Other Paid Circulation | - |
| Advertiser and Agency | 696 |
| Allocated for Trade Shows and Conventions | - |
| All Other | - |
| TOTAL | 696 |

1. AVERAGE QUALIFIED CIRCULATION BREAKOUT FOR THE PERIOD

| Qualified Circulation | Total Qualified | | Qualified Non-Paid | | Qualified Paid | |
|------------------------------------|-----------------|--------------|--------------------|-------------|----------------|------------|
| | Copies | Percent | Copies | Percent | Copies | Percent |
| Individual | 59,967 | 99.9 | 58,665 | 97.7 | 1,302 | 2.2 |
| Sponsored Individually Addressed | 1 | - | - | - | 1 | - |
| Membership Benefit | - | - | - | - | - | - |
| Multi-Copy Same Addressee | 75 | 0.1 | 2 | - | 73 | 0.1 |
| Single Copy Sales | - | - | - | - | - | - |
| TOTAL QUALIFIED CIRCULATION | 60,043 | 100.0 | 58,667 | 97.7 | 1,376 | 2.3 |

2. QUALIFIED CIRCULATION BY ISSUES FOR PERIOD

| 2019 Issue | Print | Digital | Qualified Non-Paid | Qualified Paid | Total Qualified |
|------------|--------|---------|--------------------|----------------|-----------------|
| January | 31,256 | 28,757 | 58,599 | 1,414 | 60,013 |
| February | 31,203 | 28,867 | 58,668 | 1,402 | 60,070 |
| March | 31,173 | 28,845 | 58,637 | 1,381 | 60,018 |
| April | 31,186 | 28,902 | 58,718 | 1,370 | 60,088 |
| May | 31,127 | 28,893 | 58,661 | 1,359 | 60,020 |
| June | 31,056 | 28,991 | 58,718 | 1,329 | 60,047 |

3a. BUSINESS/OCCUPATION BREAKOUT OF QUALIFIED CIRCULATION FOR ISSUE OF MAY 2019
 This issue is -% or 27 copies below the average of the other 5 issues reported in Paragraph 2.

| Business & Industry | Total Qualified | Percent of Total | Print | Digital | Qualified Non-Paid | Qualified Paid | Classification by Function | | | | | | |
|---|-----------------|------------------|---------------|---------------|--------------------|----------------|-------------------------------|---|----------------------|------------------------------|---------------------------------------|--|-----------------|
| | | | | | | | Corporate Management (Note 1) | Plant Operations & Production Management (Note 2) | Engineering (Note 3) | Technical Direction (Note 4) | Regulatory/Safety Manager, Consultant | Purchasing, Sales & Marketing (Note 5) | Other Functions |
| Chemical Process Industries Manufacturing | 28,366 | 47.3 | 12,599 | 15,767 | 28,291 | 75 | 4,052 | 9,380 | 10,776 | 1,782 | 1,035 | 878 | 463 |
| Industrial Machinery | 2,996 | 5.0 | 1,998 | 998 | 2,992 | 4 | 706 | 939 | 758 | 67 | 50 | 387 | 89 |
| Computer Hardware/Software | 407 | 0.7 | 165 | 242 | 407 | - | 115 | 88 | 108 | 26 | 30 | 38 | 2 |
| Engineering (Note 6) | 13,677 | 22.8 | 7,738 | 5,939 | 13,661 | 16 | 2,956 | 3,547 | 5,043 | 433 | 898 | 387 | 413 |
| Government | 825 | 1.4 | 467 | 358 | 821 | 4 | 74 | 292 | 272 | 89 | 66 | 11 | 21 |
| Educational Services | 1,189 | 2.0 | 262 | 927 | 1,185 | 4 | 41 | 223 | 355 | 240 | 53 | 17 | 260 |
| Financial Services | 158 | 0.2 | 66 | 92 | 157 | 1 | 51 | 56 | 20 | 3 | 19 | 5 | 4 |
| Public Utilities, Waste Management, Transportation, Storage | 6,542 | 10.9 | 4,703 | 1,839 | 6,539 | 3 | 1,136 | 3,094 | 1,782 | 159 | 117 | 174 | 80 |
| Chemical Distributor, Wholesale/Retail Trade | 734 | 1.2 | 455 | 279 | 732 | 2 | 254 | 239 | 124 | 20 | 19 | 69 | 9 |
| Business/Legal Services, Consulting, Misc. Services | 2,726 | 4.5 | 1,184 | 1,542 | 2,719 | 7 | 886 | 550 | 622 | 58 | 540 | 56 | 14 |
| Association, Society, Trade Group | 83 | 0.1 | 42 | 41 | 83 | - | 21 | 37 | 10 | 3 | 2 | 7 | 3 |
| Others Allied to the Field | 2,317 | 3.9 | 1,448 | 869 | 1,074 | 1,243 | 132 | 244 | 267 | 56 | 78 | 68 | 1,472 |
| Sub-Total | 60,020 | 100.0 | 31,127 | 28,893 | 58,661 | 1,359 | 10,424 | 18,689 | 20,137 | 2,936 | 2,907 | 2,097 | 2,830 |
| Other Paid Circulation | - | - | - | - | - | - | - | - | - | - | - | - | - |
| TOTAL QUALIFIED CIRCULATION | 60,020 | 100.0 | 31,127 | 28,893 | 58,661 | 1,359 | | | | | | | |

Note 1: Owner, Partner, President, CEO, COO, CFO, VP, GM, Company Official

Note 2: Director, Dept. Head, Work Exec., Manager, Plant/Facility/Operations Manager, Production Manager, Supervisor/Foreman, Non-Technical Manager/Associate

Note 3: Engineer

Note 4: Research/Development Manager, Scientist/Chemist/Metallurgist/Specialist

Note 5: Purchaser/Buyer, Sales/Marketing Manager

Note 6: Engineering, Consulting Engineering, Design, Construction, Independent Laboratories, Research & Development, Environmental Services

3b. QUALIFICATION SOURCE BREAKOUT OF QUALIFIED CIRCULATION FOR ISSUE OF MAY 2019

| Qualification Source | Qualified Within | | | Print | Digital | Qualified Non-Paid | Qualified Paid | Total Qualified | Percent |
|--|------------------|---------------|---------|---------------|---------------|--------------------|----------------|-----------------|--------------|
| | 1 Year | 2 Years | 3 Years | | | | | | |
| I. Direct Request: | 39,965 | 11,995 | - | 24,228 | 27,732 | 50,607 | 1,353 | 51,960 | 86.6 |
| II. Request from recipient's company: | 8 | - | - | 8 | - | 2 | 6 | 8 | - |
| III. Membership Benefit: | - | - | - | - | - | - | - | - | - |
| IV. *Communication from recipient or recipient's company (other than request): | 8,052 | - | - | 6,891 | 1,161 | 8,052 | - | 8,052 | 13.4 |
| V. TOTAL - Sources other than above (listed alphabetically): | - | - | - | - | - | - | - | - | - |
| Association rosters and directories | - | - | - | - | - | - | - | - | - |
| Business directories | - | - | - | - | - | - | - | - | - |
| Manufacturer's, distributor's, and wholesaler's lists | - | - | - | - | - | - | - | - | - |
| Other sources | - | - | - | - | - | - | - | - | - |
| VI. Single Copy Sales: | - | - | - | - | - | - | - | - | - |
| TOTAL QUALIFIED CIRCULATION | 48,025 | 11,995 | - | 31,127 | 28,893 | 58,661 | 1,359 | 60,020 | 100.0 |
| PERCENT | 80.0 | 20.0 | - | 51.9 | 48.1 | 97.7 | 2.3 | 100.0 | |

*See Additional Data

3c. MAILING ADDRESS BREAKOUT OF QUALIFIED CIRCULATION FOR ISSUE OF MAY 2019

| Mailing Address | Print | Digital | Qualified Non-Paid | Qualified Paid | Total Qualified | Percent |
|---|---------------|---------------|--------------------|----------------|-----------------|--------------|
| Individuals by name and title and/or function | 30,508 | 28,858 | 58,635 | 731 | 59,366 | 98.9 |
| Individuals by name only | 192 | 17 | 19 | 190 | 209 | 0.4 |
| Titles or functions only | 131 | 7 | 4 | 134 | 138 | 0.2 |
| Company names only | 222 | 11 | 1 | 232 | 233 | 0.4 |
| Multi-Copy Same Addressee copies | 74 | - | 2 | 72 | 74 | 0.1 |
| Single Copy Sales | - | - | - | - | - | - |
| TOTAL QUALIFIED CIRCULATION | 31,127 | 28,893 | 58,661 | 1,359 | 60,020 | 100.0 |

AVERAGE ANNUAL AUDITED QUALIFIED CIRCULATION AND CURRENT UNAUDITED BRAND REPORTS

| 6-Month Period Ended: | Audited Data | | Audited Data | | Audited Data | | Audited Data | | Audited Data | | Circulation Claim | |
|---|----------------------|---------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | July - December 2016 | January - June 2017 | July - December 2017 | January - June 2018 | July - December 2018 | January - June 2019* | July - December 2018 | January - June 2019* | July - December 2018 | January - June 2019* | July - December 2018 | January - June 2019* |
| Total Audit Average Qualified: | 60,036 | 60,033 | 60,062 | 60,056 | 60,077 | 60,043 | | | | | | |
| Qualified Non-Paid: | 58,054 | 58,175 | 58,361 | 58,490 | 58,608 | 58,667 | | | | | | |
| Print: | 28,463 | 28,959 | 28,981 | 28,749 | 28,679 | 29,960 | | | | | | |
| Digital: | 29,592 | 29,217 | 29,380 | 29,741 | 29,929 | 28,707 | | | | | | |
| Qualified Paid: | 1,982 | 1,858 | 1,701 | 1,566 | 1,469 | 1,376 | | | | | | |
| Print: | 1,776 | 1,666 | 1,524 | 1,404 | 1,298 | 1,207 | | | | | | |
| Digital: | 214 | 196 | 179 | 162 | 171 | 169 | | | | | | |
| Post Expire Copies included in Total Qualified Circulation: | 0.4% | 0.3% | 0.3% | 0.3% | 0.2% | **NC | | | | | | |
| Average Annual Order Price: | \$234.42 | \$283.19 | \$262.39 | \$253.88 | \$296.56 | \$243.14 | | | | | | |

*NOTE: January - June 2019 data is unaudited. With each successive period, new data will be added until six 6-month periods are displayed.

**NC = None Claimed.

GEOGRAPHICAL BREAKOUT OF QUALIFIED CIRCULATION FOR ISSUE OF MAY 2019*

| State | Print | Digital | Qualified Non-Paid | Qualified Paid | Total Qualified | Percent | State | Print | Digital | Qualified Non-Paid | Qualified Paid | Total Qualified | Percent |
|-------------------------|--------------|--------------|--------------------|----------------|-----------------|-------------|------------------------------------|---------------|---------------|--------------------|----------------|-----------------|--------------|
| Maine | 127 | 26 | 151 | 2 | 153 | | Kentucky | 406 | 82 | 482 | 6 | 488 | |
| New Hampshire | 157 | 36 | 188 | 5 | 193 | | Tennessee | 572 | 180 | 727 | 25 | 752 | |
| Vermont | 44 | 6 | 50 | - | 50 | | Alabama | 461 | 120 | 512 | 69 | 581 | |
| Massachusetts | 673 | 188 | 838 | 23 | 861 | | Mississippi | 150 | 43 | 192 | 1 | 193 | |
| Rhode Island | 87 | 22 | 105 | 4 | 109 | | EAST SO. CENTRAL | 1,589 | 425 | 1,913 | 101 | 2,014 | 3.4 |
| Connecticut | 369 | 88 | 453 | 4 | 457 | | Arkansas | 184 | 37 | 217 | 4 | 221 | |
| NEW ENGLAND | 1,457 | 366 | 1,785 | 38 | 1,823 | 3.0 | Louisiana | 505 | 181 | 671 | 15 | 686 | |
| New York | 1,222 | 358 | 1,530 | 50 | 1,580 | | Oklahoma | 326 | 107 | 423 | 10 | 433 | |
| New Jersey | 1,089 | 342 | 1,346 | 85 | 1,431 | | Texas | 3,166 | 1,376 | 4,445 | 97 | 4,542 | |
| Pennsylvania | 1,637 | 495 | 2,088 | 44 | 2,132 | | WEST SO. CENTRAL | 4,181 | 1,701 | 5,756 | 126 | 5,882 | 9.8 |
| MIDDLE ATLANTIC | 3,948 | 1,195 | 4,964 | 179 | 5,143 | 8.6 | Montana | 114 | 22 | 129 | 7 | 136 | |
| Ohio | 1,492 | 395 | 1,859 | 28 | 1,887 | | Idaho | 130 | 43 | 170 | 3 | 173 | |
| Indiana | 591 | 180 | 762 | 9 | 771 | | Wyoming | 102 | 24 | 123 | 3 | 126 | |
| Illinois | 1,710 | 495 | 2,167 | 38 | 2,205 | | Colorado | 418 | 134 | 540 | 12 | 552 | |
| Michigan | 898 | 235 | 1,112 | 21 | 1,133 | | New Mexico | 124 | 29 | 151 | 2 | 153 | |
| Wisconsin | 708 | 171 | 873 | 6 | 879 | | Arizona | 270 | 110 | 376 | 4 | 380 | |
| EAST NO. CENTRAL | 5,399 | 1,476 | 6,773 | 102 | 6,875 | 11.4 | Utah | 237 | 67 | 300 | 4 | 304 | |
| Minnesota | 629 | 146 | 763 | 12 | 775 | | Nevada | 171 | 50 | 218 | 3 | 221 | |
| Iowa | 374 | 86 | 454 | 6 | 460 | | MOUNTAIN | 1,566 | 479 | 2,007 | 38 | 2,045 | 3.4 |
| Missouri | 669 | 179 | 834 | 14 | 848 | | Alaska | 98 | 30 | 126 | 2 | 128 | |
| North Dakota | 108 | 26 | 132 | 2 | 134 | | Washington | 471 | 158 | 622 | 7 | 629 | |
| South Dakota | 94 | 17 | 108 | 3 | 111 | | Oregon | 241 | 49 | 284 | 6 | 290 | |
| Nebraska | 218 | 39 | 254 | 3 | 257 | | California | 1,989 | 668 | 2,596 | 61 | 2,657 | |
| Kansas | 428 | 100 | 525 | 3 | 528 | | Hawaii | 76 | 19 | 93 | 2 | 95 | |
| WEST NO. CENTRAL | 2,520 | 593 | 3,070 | 43 | 3,113 | 5.2 | PACIFIC | 2,875 | 924 | 3,721 | 78 | 3,799 | 6.3 |
| Delaware | 142 | 52 | 186 | 8 | 194 | | UNITED STATES | 28,093 | 8,455 | 35,737 | 811 | 36,548 | 60.9 |
| Maryland | 374 | 108 | 470 | 12 | 482 | | U.S. Territories | 80 | 43 | 121 | 2 | 123 | |
| Washington, DC | 98 | 53 | 149 | 2 | 151 | | Canada | 378 | 1,127 | 1,438 | 67 | 1,505 | |
| Virginia | 625 | 175 | 786 | 14 | 800 | | Mexico | 68 | 1,143 | 1,207 | 4 | 1,211 | |
| West Virginia | 177 | 47 | 222 | 2 | 224 | | Other International | 2,507 | 18,118 | 20,150 | 475 | 20,625 | |
| North Carolina | 785 | 222 | 990 | 17 | 1,007 | | APO/FPO | 1 | 4 | 5 | - | 5 | |
| South Carolina | 479 | 147 | 613 | 13 | 626 | | Email Only | - | 3 | 3 | - | 3 | |
| Georgia | 790 | 189 | 963 | 16 | 979 | | TOTAL QUALIFIED CIRCULATION | 31,127 | 28,893 | 58,661 | 1,359 | 60,020 | 100.0 |
| Florida | 1,088 | 303 | 1,369 | 22 | 1,391 | | | | | | | | |
| SOUTH ATLANTIC | 4,558 | 1,296 | 5,748 | 106 | 5,854 | 9.8 | | | | | | | |

*See Additional Data

GEOGRAPHICAL BREAKOUT OF QUALIFIED CIRCULATION FOR ISSUE OF MAY 2019*

| Region/Country | Print | Digital | Qualified Non-Paid | Qualified Paid | Total Qualified | Percent | Region/Country | Print | Digital | Qualified Non-Paid | Qualified Paid | Total Qualified | Percent |
|--|-------|---------|--------------------|----------------|-----------------|---------|------------------------------------|--------|---------|--------------------|----------------|-----------------|---------|
| ASIA | | | | | | | Burkina Faso | - | 1 | 1 | - | - | 1 |
| Afghanistan | 1 | 12 | 13 | - | 13 | | Burundi | 1 | 10 | 11 | - | 11 | |
| Armenia | - | 2 | 2 | - | 2 | | Cameroon | - | 23 | 23 | - | 23 | |
| Azerbaijan | 2 | 16 | 18 | - | 18 | | Chad | - | 2 | 2 | - | 2 | |
| Bangladesh | 7 | 76 | 83 | - | 83 | | Congo | 1 | 18 | 19 | - | 19 | |
| Bhutan | - | 2 | 2 | - | 2 | | Cote D'Ivoire | - | 6 | 6 | - | 6 | |
| Brunei Darussalam | 1 | 8 | 9 | - | 9 | | Djibouti | - | 2 | 2 | - | 2 | |
| Cambodia | 1 | - | 1 | - | 1 | | Egypt | 20 | 279 | 297 | 2 | 299 | |
| China | 82 | 107 | 188 | 1 | 189 | | Equatorial Guinea | - | 1 | 1 | - | 1 | |
| East Timor (Timor-Leste) | - | 1 | 1 | - | 1 | | Eritrea | - | 4 | 4 | - | 4 | |
| Georgia | - | 3 | 3 | - | 3 | | Ethiopia | 3 | 72 | 75 | - | 75 | |
| Hong Kong - SAR | 6 | 74 | 80 | - | 80 | | Gabon | - | 2 | 2 | - | 2 | |
| India | 208 | 2,215 | 2,354 | 69 | 2,423 | | Gambia | 1 | 6 | 7 | - | 7 | |
| Indonesia | 33 | 424 | 455 | 2 | 457 | | Ghana | 6 | 96 | 102 | - | 102 | |
| Japan | 39 | 110 | 118 | 31 | 149 | | Guinea | 1 | 5 | 6 | - | 6 | |
| Kazakhstan | 4 | 15 | 19 | - | 19 | | Kenya | 6 | 107 | 113 | - | 113 | |
| Korea, Democratic People's Republic Of | 10 | 6 | 6 | 10 | 16 | | Lesotho | - | 5 | 5 | - | 5 | |
| Korea, Republic Of | 27 | 196 | 211 | 12 | 223 | | Liberia | 1 | 38 | 39 | - | 39 | |
| Laos | 1 | 1 | 2 | - | 2 | | Libyan Arab Jamahiriya | - | 24 | 24 | - | 24 | |
| Macao | - | 1 | 1 | - | 1 | | Madagascar | - | 4 | 4 | - | 4 | |
| Malaysia | 33 | 417 | 443 | 7 | 450 | | Malawi | 2 | 10 | 12 | - | 12 | |
| Mongolia | - | 2 | 2 | - | 2 | | Mauritius | 4 | 20 | 24 | - | 24 | |
| Myanmar | 1 | 7 | 8 | - | 8 | | Morocco | 2 | 26 | 28 | - | 28 | |
| Nepal | - | 10 | 10 | - | 10 | | Mozambique | - | 7 | 7 | - | 7 | |
| Pakistan | 35 | 454 | 484 | 5 | 489 | | Namibia | 3 | 12 | 15 | - | 15 | |
| Philippines | 16 | 286 | 299 | 3 | 302 | | Niger | - | 2 | 2 | - | 2 | |
| Singapore | 37 | 351 | 383 | 5 | 388 | | Nigeria | 37 | 573 | 609 | 1 | 610 | |
| Sri Lanka | 10 | 78 | 87 | 1 | 88 | | Rwanda | 4 | 25 | 29 | - | 29 | |
| Taiwan | 15 | 189 | 193 | 11 | 204 | | Senegal | 1 | 4 | 5 | - | 5 | |
| Tajikistan | - | 1 | 1 | - | 1 | | Sierra Leone | 1 | 11 | 12 | - | 12 | |
| Thailand | 19 | 304 | 316 | 7 | 323 | | Somalia | 1 | 24 | 25 | - | 25 | |
| Turkmenistan | - | 2 | 2 | - | 2 | | South Africa | 62 | 507 | 559 | 10 | 569 | |
| Uzbekistan | 1 | 3 | 4 | - | 4 | | Sudan | 3 | 63 | 66 | - | 66 | |
| Vietnam | 8 | 75 | 83 | - | 83 | | Swaziland | 1 | 7 | 8 | - | 8 | |
| Subtotal | 597 | 5,448 | 5,881 | 164 | 6,045 | 10.1 | Tanzania | 3 | 64 | 67 | - | 67 | |
| MIDDLE EAST | | | | | | | Togo | - | 3 | 3 | - | 3 | |
| Bahrain | 5 | 54 | 58 | 1 | 59 | | Tunisia | 6 | 41 | 47 | - | 47 | |
| Iran | 24 | 412 | 436 | - | 436 | | Uganda | 6 | 90 | 96 | - | 96 | |
| Iraq | 2 | 45 | 47 | - | 47 | | Zambia | 6 | 63 | 68 | 1 | 69 | |
| Israel | 15 | 123 | 137 | 1 | 138 | | Zimbabwe | 2 | 64 | 66 | - | 66 | |
| Jordan | 2 | 34 | 36 | - | 36 | | unspecified Africa | - | 2 | 2 | - | 2 | |
| Kuwait | 4 | 86 | 89 | 1 | 90 | | Subtotal | 201 | 2,440 | 2,625 | 16 | 2,641 | 4.4 |
| Lebanon | 5 | 20 | 24 | 1 | 25 | | NORTH AMERICA | | | | | | |
| Oman | 7 | 75 | 82 | - | 82 | | Canada | 378 | 1,127 | 1,438 | 67 | 1,505 | |
| Qatar | 22 | 151 | 172 | 1 | 173 | | Mexico | 68 | 1,143 | 1,207 | 4 | 1,211 | |
| Saudi Arabia | 29 | 372 | 400 | 1 | 401 | | United States | 28,174 | 8,502 | 35,863 | 813 | 36,676 | |
| Syrian Arab Republic | - | 15 | 15 | - | 15 | | unspecified North America | - | 1 | 1 | - | 1 | |
| United Arab Emirates | 24 | 344 | 364 | 4 | 368 | | Subtotal | 28,620 | 10,773 | 38,509 | 884 | 39,393 | 65.6 |
| Yemen | 2 | 5 | 7 | - | 7 | | CARIBBEAN | | | | | | |
| unspecified Middle East | - | 1 | 1 | - | 1 | | Anguilla | - | 1 | 1 | - | 1 | |
| Subtotal | 141 | 1,737 | 1,868 | 10 | 1,878 | 3.1 | Antigua and Barbuda | - | 1 | 1 | - | 1 | |
| EUROPE | | | | | | | Bahamas | - | 2 | 2 | - | 2 | |
| Albania | - | 4 | 4 | - | 4 | | Barbados | - | 1 | 1 | - | 1 | |
| Austria | 15 | 36 | 46 | 5 | 51 | | Bermuda | - | 1 | 1 | - | 1 | |
| Belarus | 1 | 1 | 2 | - | 2 | | Cayman Islands | - | 1 | 1 | - | 1 | |
| Belgium | 53 | 183 | 216 | 20 | 236 | | Cuba | 12 | 43 | 55 | - | 55 | |
| Bosnia and Herzegovina | 1 | 13 | 14 | - | 14 | | Dominican Republic | 2 | 21 | 23 | - | 23 | |
| Bulgaria | 12 | 23 | 35 | - | 35 | | Haiti | - | 3 | 3 | - | 3 | |
| Croatia | 16 | 32 | 48 | - | 48 | | Jamaica | 2 | 30 | 32 | - | 32 | |
| Cyprus | 1 | 13 | 14 | - | 14 | | Martinique | - | 1 | 1 | - | 1 | |
| Czech Republic | 13 | 26 | 37 | 2 | 39 | | Netherlands Antilles | 1 | 9 | 10 | - | 10 | |
| Denmark | 16 | 55 | 64 | 7 | 71 | | Puerto Rico | 1 | - | - | 1 | 1 | |
| Estonia | 2 | 4 | 5 | 1 | 6 | | Trinidad and Tobago | 7 | 55 | 62 | - | 62 | |
| Faroe Islands | - | 1 | 1 | - | 1 | | Virgin Islands, British | - | 1 | 1 | - | 1 | |
| Finland | 24 | 44 | 58 | 10 | 68 | | Subtotal | 25 | 170 | 194 | 1 | 195 | 0.3 |
| France | 81 | 222 | 262 | 41 | 303 | | CENTRAL AMERICA | | | | | | |
| Germany | 103 | 310 | 388 | 25 | 413 | | Belize | - | 3 | 3 | - | 3 | |
| Gibraltar | - | 1 | 1 | - | 1 | | Costa Rica | 2 | 46 | 47 | 1 | 48 | |
| Greece | 32 | 154 | 186 | - | 186 | | El Salvador | 1 | 26 | 27 | - | 27 | |
| Holy See (Vatican City State) | - | 2 | 2 | - | 2 | | Guatemala | 5 | 74 | 79 | - | 79 | |
| Hungary | 7 | 42 | 49 | - | 49 | | Honduras | - | 18 | 18 | - | 18 | |
| Iceland | - | 8 | 6 | 2 | 8 | | Nicaragua | 2 | 11 | 13 | - | 13 | |
| Ireland | 27 | 99 | 124 | 2 | 126 | | Panama | 1 | 18 | 19 | - | 19 | |
| Italy | 99 | 444 | 510 | 33 | 543 | | Subtotal | 11 | 196 | 206 | 1 | 207 | 0.4 |
| Latvia | 2 | 3 | 5 | - | 5 | | SOUTH AMERICA | | | | | | |
| Lithuania | 1 | 7 | 8 | - | 8 | | Argentina | 40 | 455 | 492 | 3 | 495 | |
| Luxembourg | 2 | 11 | 13 | - | 13 | | Bolivia | 4 | 76 | 80 | - | 80 | |
| Macedonia | - | 7 | 7 | - | 7 | | Brazil | 51 | 650 | 697 | 4 | 701 | |
| Malta | 4 | 4 | 8 | - | 8 | | Chile | 22 | 245 | 263 | 4 | 267 | |
| Moldova | - | 1 | 1 | - | 1 | | Colombia | 22 | 443 | 464 | 1 | 465 | |
| Monaco | - | 1 | 1 | - | 1 | | Ecuador | 8 | 130 | 138 | - | 138 | |
| Montenegro | - | 1 | 1 | - | 1 | | Guyana | - | 3 | 3 | - | 3 | |
| Netherlands | 74 | 341 | 394 | 21 | 415 | | Paraguay | - | 9 | 9 | - | 9 | |
| Norway | 10 | 50 | 55 | 5 | 60 | | Peru | 22 | 405 | 424 | 3 | 427 | |
| Poland | 33 | 71 | 98 | 6 | 104 | | Suriname | - | 5 | 5 | - | 5 | |
| Portugal | 37 | 143 | 175 | 5 | 180 | | Uruguay | 3 | 58 | 61 | - | 61 | |
| Romania | 54 | 115 | 168 | 1 | 169 | | Venezuela | 32 | 326 | 358 | - | 358 | |
| Russian Federation | 16 | 97 | 109 | 4 | 113 | | Subtotal | 204 | 2,805 | 2,994 | 15 | 3,009 | 5.0 |
| San Marino | 1 | - | 1 | - | 1 | | ASIA PACIFIC | | | | | | |
| Serbia | 4 | 40 | 44 | - | 44 | | American Samoa | - | 1 | 1 | - | 1 | |
| Slovakia | 3 | 28 | 31 | - | 31 | | Australia | 84 | 609 | 674 | 19 | 693 | |
| Slovenia | 8 | 22 | 24 | 6 | 30 | | Fiji | 1 | 5 | 6 | - | 6 | |
| Spain | 101 | 524 | 612 | 13 | 625 | | Kiribati | - | 2 | 2 | - | 2 | |
| Sweden | 22 | 48 | 60 | 10 | 70 | | New Zealand | 16 | 90 | 100 | 6 | 106 | |
| Switzerland | 14 | 130 | 141 | 3 | 144 | | Palau | - | 1 | 1 | - | 1 | |
| Turkey | 20 | 265 | 283 | 2 | 285 | | Papua New Guinea | 6 | 33 | 39 | - | 39 | |
| Ukraine | 3 | 32 | 35 | - | 35 | | Vanuatu | - | 2 | 2 | - | 2 | |
| United Kingdom | 307 | 913 | 1,201 | 19 | 1,220 | | Western Samoa | - | 2 | 2 | - | 2 | |
| unspecified Europe | - | 2 | 2 | - | 2 | | unspecified Asia Pacific | 2 | 3 | 5 | - | 5 | |
| Subtotal | 1,219 | 4,573 | 5,549 | 243 | 5,792 | 9.7 | Subtotal | 109 | 748 | 832 | 25 | 857 | 1.4 |
| AFRICA | | | | | | | Email Only | - | 3 | 3 | - | 3 | |
| Algeria | 14 | 89 | 102 | 1 | 103 | | TOTAL QUALIFIED CIRCULATION | | | | | | |
| Angola | 2 | 13 | 15 | - | 15 | | 31,127 | 28,893 | 58,661 | 1,359 | 60,020 | 100.0 | |
| Benin | - | 4 | 4 | - | 4 | | | | | | | | |
| Botswana | 1 | 11 | 11 | 1 | 12 | | | | | | | | |

*See Additional Data

WEBSITE CHANNEL

WWW.CHEMENGONLINE.COM

| 2019 | Pageviews | Sessions | Users | Average Session Duration |
|-----------------|----------------|---------------|---------------|--------------------------|
| January | 153,462 | 94,640 | 70,693 | 1:20 |
| February | 149,956 | 94,749 | 71,800 | 1:18 |
| March | 183,491 | 111,835 | 81,950 | 1:22 |
| April | 159,655 | 99,551 | 73,208 | 1:19 |
| May | 153,148 | 90,214 | 65,688 | 1:30 |
| June | 122,699 | 76,856 | 56,106 | 1:30 |
| AVERAGE: | 153,735 | 94,640 | 69,907 | 1:23 |

January – June 2019 data was provided by Google Analytics. All website activity is audited by BPA Worldwide.

WEBSITE GLOSSARY

Pageviews: A Pageview is recorded each time a page implanted with the JavaScript code (tag) is displayed in a browser window. This will occur whether the page is served directly from the web server, from a proxy, or from the browser's cache.



Sessions: A single continuous set of activity attributable to a cookie browser resulting in one or more pulled text and/or graphics downloads from a site. A period of 30 minutes of inactivity will terminate the session.

Users: An identified and unduplicated Cookie Browser that accesses Internet content or advertising during a measurement period.

Average Session Duration: The time visitors remain on a site per session.

SOCIAL MEDIA CHANNEL

Chemical Engineering Social Media

| 2019 |  Twitter followers http://twitter.com/chemengonline.com/the-magazine |  LinkedIn group members http://linkedin.com/chemengonline.com |
|--------------------|--|---|
| Beginning Balance: | 23,300 | 69,767 |
| January | 23,600 | 69,759 |
| February | 23,800 | 69,843 |
| March | 24,300 | 69,843 |
| April | 24,300 | 70,054 |
| May | 24,400 | 70,115 |
| June | 24,600 | 70,211 |

ADDITIONAL DATA

MAGAZINE:

METHOD OF DISTRIBUTION:

All qualified circulation conforms to the field served and definition of recipient qualification, as reported. Print copies are distributed via postal services or other carriers. Recipients of the digital version are notified via email when the version is available.

STATEMENT OF CONTENT PLATFORM:

Editorial Replica – If a print edition exists, editorial and design are unchanged from the original print edition. Each issue's content and design are identical to the original edition. Apart from minor updates, the content cannot change once the issue is made available.

PARAGRAPH 3b:

Communication from recipient or recipient's company (other than request) includes 1 source of circulation for a quantity of 8,052 copies or 13.4%, including POWER magazine.

GEOGRAPHIC DISTRIBUTION:

Geographic data for Website and Social Media are not reported at the media owner's option.

PUBLISHER'S AFFIDAVIT

We hereby make oath and say that all data set forth in this statement are true.

Sarah Garwood, Marketing and Audience Development Director

Matthew Grant, Vice President and Group Publisher

(At least one of the above signatures must be that of an officer of the publishing company or its authorized representative.)

IMPORTANT NOTE:

This unaudited brand report has been checked against the previous audit report. It will be included in the annual audit made by BPA Worldwide.

Date signed

July 1, 2019

State

Maryland

County

Montgomery

Received by BPA Worldwide

July 1, 2019

Type

BD

ID Number

C709B0J9

About BPA Worldwide

A not-for-profit organization since 1931 and headquartered in Shelton, Connecticut, USA, BPA has a global membership, spanning more than 20 countries. The organization conducts 2,500+ audits for media brands in print, online/digital and live events. In addition, the BPA-iCompli division verifies compliance to defined industry standards, provides technology assurance, and certifies organization's sustainability practices and reporting. BPA is supported by 4,000+ advertiser and agency members. The latest innovation to move the industry forward is the BPA Media Exchange, a brand-safe and audited cooperative marketplace which offers automated solutions for the buying and selling of digital advertising.