

## CC Series Flat Fan Nozzle

### CC series flat fan nozzle Series



Small capacity (CC)  
1/8"-1/4"  
NPT or BSPT(male)



Medium capacity (CC-N)  
1/8"-3/4"  
NPT or BSPT(male)



Large capacity (CC-M)  
1"-2"  
NPT or BSPT(male)



With strainer (CC-L)  
1/8"-1/4"  
NPT or BSPT(male)

### Design features

CC flat fan spray nozzles feature a high impact solid stream or a flat fan spray pattern with the spray angles between 0°-110°.

They produce a uniform distribution of small to medium sized drops. Properly aligned, the specially tapered spray edges make a evenly coverage.

CC and CC-L series nozzles have external piping thread connector and their flow rate are lower than 3.9 l/min at 3 bar. Inner strainer is available for CC-L Series nozzle with male connector only.

Standard flow rates of CC-N and CC-M Series are 3.9 l/min or larger at 3 bar. All have external piping thread connector.



### Common application

- Chemical cleaning
- Product washing /rinsing
- Pressure cleaning
- cooling and quenching
- Fire suppression / prevention
- Fire fighting
- Net blanket low pressure cleaning
- Spray coating
- Roller and scraper ordering

### Fan ceramic core



CCTC

### Fan tung alloy



CTCK

### Jet stabilizer for reducing turbulence



### ordering info

#### Jet stabilizer type

**CY21370—SS—1/8x1/8**

↓                      ↓                      ↓  
Jet                      Material                      Connection  
stabilizer                      code                      dimension  
type

### ordering info

**CC 1/4—SS 6505**

↓                      ↓                      ↓                      ↓  
Nozzle                      Inlet                      Material                      Capacity  
type                      size                      code                      size

Remark:

BRASS

SS-stainless steel

316SS-316 stainless steel

### Jet stabilizer type

| Jet stabilizer<br>for reducing<br>turbulence number | Inlet<br>Conn. NPT or BSPT | Nozzle Inlet<br>Conn. NPT or BSPT(in) | High(mm) | Net weight (kg) |
|-----------------------------------------------------|----------------------------|---------------------------------------|----------|-----------------|
| CY21370-1/8x1/8                                     | 1/8                        | 1/8                                   | 19       | 0.007           |
| CY21370-1/4x1/4                                     | 1/4                        | 1/4                                   | 24       | 0.01            |
| CY21370-3/8x3/8                                     | 3/8                        | 3/8                                   | 27       | 0.03            |
| CY21370-1/8x1/8                                     | 1/2                        | 1/2                                   | 32       | 0.05            |
| CY21370-1/2x1/2                                     | 3/4                        | 3/4                                   | 38       | 0.10            |
| CY21370-1x1                                         | 1                          | 1                                     | 46       | 0.18            |
| CY21370-1 1/4x1 1/4                                 | 1 1/4                      | 1 1/4                                 | 57       | 0.33            |

### Design features

Jet stabilizers installed in the heads of flat fan spray nozzle increase the spray distance and the durative power. When spray nozzles are installed on T-shape pipe, branching pipe or bend pipe and the fluid swerve into the nozzle, turbulence occurs, which diffuses the jet flow. The stabilizer minimize the diffusion and concentrate the jet flow through a thinner and stabler way, offering a better performance in jet distance and durative power.

# Performance data

| Spray angle<br>(3 bar) | Capacity<br>Size | Nozzle Type /Inlet Conn. NPT |     |      |     |      |     |     |     |     |      |       | Equivalent<br>spray<br>orifice(mm) | Capacity (L/min) |          |          |          |          |          |          |          |           |           |           |            |          |          | Spray angle |      |     |  |
|------------------------|------------------|------------------------------|-----|------|-----|------|-----|-----|-----|-----|------|-------|------------------------------------|------------------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|------------|----------|----------|-------------|------|-----|--|
|                        |                  | CC                           |     | CC-L |     | CC-N |     |     |     |     | CC-M |       |                                    | 0.3<br>bar       | 1<br>bar | 2<br>bar | 3<br>bar | 4<br>bar | 5<br>bar | 6<br>bar | 7<br>bar | 10<br>bar | 20<br>bar | 35<br>bar | 1.5<br>bar | 3<br>bar | 6<br>bar | 14<br>bar   |      |     |  |
|                        |                  | 1/8                          | 1/4 | 1/8  | 1/4 | 1/8  | 1/4 | 3/8 | 1/2 | 3/4 | 1    | 1 1/4 |                                    |                  |          |          |          |          |          |          |          |           |           |           |            |          |          |             | 2    |     |  |
| 110°                   | 11001            | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.66                               | 0.12             | 0.23     | 0.32     | 0.39     | 0.46     | 0.51     | 0.56     | 0.60     | 0.72      | 1.0       | 1.3       | 94°        | 110°     | 121°     | 124°        |      |     |  |
|                        | 110015           | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.79                               | 0.19             | 0.34     | 0.48     | 0.59     | 0.68     | 0.76     | 0.84     | 0.90     | 1.1       | 1.5       | 2.0       | 97°        | 110°     | 121°     | 124°        |      |     |  |
|                        | 11002            | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.91                               | 0.25             | 0.46     | 0.64     | 0.79     | 0.91     | 1.0      | 1.1      | 1.2      | 1.4       | 2.0       | 2.7       | 98°        | 110°     | 120°     | 123°        |      |     |  |
|                        | 11003            | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.1                                | 0.37             | 0.68     | 0.97     | 1.2      | 1.4      | 1.5      | 1.7      | 1.8      | 2.2       | 3.1       | 4.0       | 99°        | 110°     | 120°     | 123°        |      |     |  |
|                        | 11004            | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.3                                | 0.50             | 0.91     | 1.3      | 1.6      | 1.8      | 2.0      | 2.2      | 2.4      | 2.9       | 4.1       | 5.4       | 100°       | 110°     | 119°     | 122°        |      |     |  |
|                        | 11005            | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.4                                | 0.62             | 1.1      | 1.6      | 2.0      | 2.3      | 2.5      | 2.8      | 3.0      | 3.6       | 5.1       | 6.7       | 100°       | 110°     | 118°     | 122°        |      |     |  |
|                        | 11006            | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.6                                | 0.75             | 1.4      | 1.9      | 2.4      | 2.7      | 3.1      | 3.3      | 3.6      | 4.3       | 6.1       | 8.1       | 101°       | 110°     | 117°     | 122°        |      |     |  |
|                        | 11008            | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.8                                | 1.0              | 1.8      | 2.6      | 3.2      | 3.6      | 4.1      | 4.5      | 4.8      | 5.8       | 8.2       | 10.8      | 102°       | 110°     | 117°     | 121°        |      |     |  |
|                        | 11010            | ●                            | ●   |      |     |      |     |     |     |     |      |       | 2.0                                | 1.2              | 2.3      | 3.2      | 3.9      | 4.6      | 5.1      | 5.6      | 6.0      | 7.2       | 10.2      | 13.5      | 103°       | 110°     | 117°     | 119°        |      |     |  |
|                        | 11015            | ●                            | ●   |      |     |      |     |     |     |     |      |       | 2.4                                | 1.9              | 3.4      | 4.8      | 5.9      | 6.8      | 7.6      | 8.4      | 9.0      | 10.8      | 15.3      | 20        | 104°       | 110°     | 117°     | 118°        |      |     |  |
| 11020                  | ●                | ●                            |     |      |     | ●    |     |     |     |     |      | 2.8   | 2.5                                | 4.6              | 6.5      | 7.9      | 9.1      | 10.2     | 11.2     | 12.1     | 14.4     | 20        | 27        | 105°      | 110°       | 117°     | 118°     |             |      |     |  |
| 95°                    | 950050           | ●                            |     |      | ●   |      |     |     |     |     |      |       | 0.46                               |                  |          |          | 0.316    | 0.20     | 0.23     | 0.25     | 0.28     | 0.30      | 0.36      | 0.51      | 0.67       | 81°      | 95°      | 105°        | 113° |     |  |
|                        | 9501             |                              |     | ●    | ●   | ●    |     |     |     |     |      |       | 0.66                               | 0.12             | 0.23     | 0.32     | 0.39     | 0.46     | 0.51     | 0.56     | 0.60     | 0.72      | 1.0       | 1.3       | 81°        | 95°      | 105°     | 113°        |      |     |  |
|                        | 95015            | ●                            |     |      | ●   |      |     |     |     |     |      |       | 0.79                               | 0.19             | 0.34     | 0.48     | 0.59     | 0.68     | 0.76     | 0.84     | 0.90     | 1.1       | 1.5       | 2.0       | 82°        | 95°      | 105°     | 113°        |      |     |  |
|                        | 9502             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.91                               | 0.25             | 0.46     | 0.64     | 0.79     | 0.91     | 1.0      | 1.1      | 1.2      | 1.4       | 2.0       | 2.7       | 82°        | 95°      | 105°     | 113°        |      |     |  |
|                        | 9503             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.1                                | 0.37             | 0.68     | 0.97     | 1.2      | 1.4      | 1.5      | 1.7      | 1.8      | 2.2       | 3.1       | 4.0       | 83°        | 95°      | 104°     | 111°        |      |     |  |
|                        | 9504             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.3                                | 0.50             | 0.91     | 1.3      | 1.6      | 1.8      | 2.0      | 2.2      | 2.4      | 2.9       | 4.1       | 5.4       | 84°        | 95°      | 103°     | 108°        |      |     |  |
|                        | 9505             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.4                                | 0.62             | 1.1      | 1.6      | 2.0      | 2.3      | 2.5      | 2.8      | 3.0      | 3.6       | 5.1       | 6.7       | 84°        | 95°      | 102°     | 107°        |      |     |  |
|                        | 9506             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.6                                | 0.75             | 1.4      | 1.9      | 2.4      | 2.7      | 3.1      | 3.3      | 3.6      | 4.3       | 6.1       | 8.1       | 86°        | 95°      | 101°     | 106°        |      |     |  |
|                        | 9508             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.8                                | 1.0              | 1.8      | 2.6      | 3.2      | 3.6      | 4.1      | 4.5      | 4.8      | 5.8       | 8.2       | 10.8      | 87°        | 95°      | 100°     | 105°        |      |     |  |
|                        | 9510             |                              |     |      |     | ●    | ●   |     | ●   |     |      |       | 2.0                                | 1.2              | 2.3      | 3.2      | 3.9      | 4.6      | 5.1      | 5.6      | 6.0      | 7.2       | 10.2      | 13.5      | 89°        | 95°      | 100°     | 105°        |      |     |  |
|                        | 9515             |                              |     |      |     | ●    | ●   |     | ●   |     |      |       | 2.4                                | 1.9              | 3.4      | 4.8      | 5.9      | 6.8      | 7.6      | 8.4      | 9.0      | 10.8      | 15.3      | 20        | 90°        | 95°      | 100°     | 105°        |      |     |  |
|                        | 9520             |                              |     |      |     | ●    | ●   |     | ●   |     |      |       | 2.8                                | 2.5              | 4.6      | 6.5      | 7.9      | 9.1      | 10.2     | 11.2     | 12.1     | 14.4      | 20        | 27        | 90°        | 95°      | 100°     | 105°        |      |     |  |
|                        | 9530             |                              |     |      |     | ●    | ●   |     | ●   |     |      |       | 3.6                                | 3.7              | 6.8      | 9.7      | 11.8     | 13.7     | 15.3     | 16.7     | 18.1     | 22        | 31        | 40        | 91°        | 95°      | 101°     | 105°        |      |     |  |
|                        | 9540             |                              |     |      |     |      | ●   |     |     |     |      |       | 4.0                                | 5.0              | 9.1      | 12.9     | 15.8     | 18.2     | 20       | 22       | 24       | 29        | 41        | 54        | 92°        | 95°      | 100°     | 105°        |      |     |  |
|                        | 9550             |                              |     |      |     |      | ●   |     |     | ●   |      |       | 4.4                                | 6.2              | 11.4     | 16.1     | 19.7     | 23       | 25       | 28       | 30       | 36        | 51        | 68        | 93°        | 95°      | 99°      | 103°        |      |     |  |
|                        | 9560             |                              |     |      |     |      | ●   |     |     | ●   |      |       | 4.8                                | 7.5              | 13.7     | 19.3     | 24       | 27       | 31       | 33       | 36       | 43        | 61        | 81        | 93°        | 95°      | 99°      | 103°        |      |     |  |
|                        | 9570             |                              |     |      |     |      | ●   | ●   | ●   |     |      |       | 5.2                                | 8.7              | 16.0     | 23       | 28       | 32       | 36       | 39       | 42       | 50        | 71        | 94        | 93°        | 95°      | 99°      | 103°        |      |     |  |
|                        | 95100            |                              |     |      |     |      |     |     |     | ●   |      |       | 6.4                                | 12.5             | 23       | 32       | 39       | 46       | 51       | 56       | 60       | 72        | 102       | 135       | 93°        | 95°      | 99°      | 102°        |      |     |  |
|                        | 95150            |                              |     |      |     |      |     |     |     | ●   |      |       | 7.5                                | 18.7             | 34       | 48       | 59       | 68       | 76       | 84       | 90       | 108       | 153       | 205       | 93°        | 95°      | 99°      | 102°        |      |     |  |
| 80°                    | 850050           | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.46                               |                  | 0.11     | 0.16     | 0.20     | 0.23     | 0.25     | 0.28     | 0.30     | 0.36      | 0.51      | 0.67      | 61°        | 80°      | 95°      | 101°        |      |     |  |
|                        | 800067           | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.53                               |                  | 0.15     | 0.22     | 0.26     | 0.31     | 0.34     | 0.37     | 0.40     | 0.48      | 0.68      | 0.90      | 67°        | 80°      | 94°      | 99°         |      |     |  |
|                        | 8001             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.66                               |                  | 0.23     | 0.32     | 0.39     | 0.46     | 0.51     | 0.56     | 0.60     | 0.72      | 1.0       | 1.3       | 68°        | 80°      | 89°      | 92°         |      |     |  |
|                        | 80015            | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.79                               |                  | 0.34     | 0.48     | 0.59     | 0.68     | 0.76     | 0.84     | 0.90     | 1.1       | 1.5       | 2.0       | 68°        | 80°      | 89°      | 92°         |      |     |  |
|                        | 8002             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.91                               | 0.25             | 0.46     | 0.64     | 0.79     | 0.91     | 1.0      | 1.1      | 1.2      | 1.4       | 2.0       | 2.7       | 69°        | 80°      | 88°      | 91°         |      |     |  |
|                        | 8003             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.1                                | 0.37             | 0.68     | 0.97     | 1.2      | 1.4      | 1.5      | 1.7      | 1.8      | 2.2       | 3.1       | 4.0       | 70°        | 80°      | 87°      | 90°         |      |     |  |
|                        | 8004             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.3                                | 0.50             | 0.91     | 1.3      | 1.6      | 1.8      | 2.0      | 2.2      | 2.4      | 2.9       | 4.1       | 5.4       | 71°        | 80°      | 86°      | 89°         |      |     |  |
|                        | 8005             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.4                                | 0.62             | 1.1      | 1.6      | 2.0      | 2.3      | 2.5      | 2.8      | 3.0      | 3.6       | 5.1       | 6.7       | 71°        | 80°      | 86°      | 89°         |      |     |  |
|                        | 8006             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.6                                | 0.75             | 1.4      | 1.9      | 2.4      | 2.7      | 3.1      | 3.3      | 3.6      | 4.3       | 6.1       | 8.1       | 72°        | 80°      | 85°      | 88°         |      |     |  |
|                        | 8008             | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.8                                | 1.0              | 1.8      | 2.6      | 3.2      | 3.6      | 4.1      | 4.5      | 4.8      | 5.8       | 8.2       | 10.8      | 72°        | 80°      | 84°      | 87°         |      |     |  |
|                        | 8010             |                              |     |      |     | ●    | ●   |     | ●   | ●   |      |       | 2.0                                | 1.2              | 2.3      | 3.2      | 3.9      | 4.6      | 5.1      | 5.6      | 6.0      | 7.2       | 10.2      | 13.5      | 73°        | 80°      | 84°      | 87°         |      |     |  |
|                        | 8015             |                              |     |      |     | ●    | ●   |     | ●   | ●   |      |       | 2.4                                | 1.9              | 3.4      | 4.8      | 5.9      | 6.8      | 7.6      | 8.4      | 9.0      | 10.8      | 15.3      | 20        | 74°        | 80°      | 83°      | 86°         |      |     |  |
|                        | 8020             |                              |     |      |     | ●    | ●   |     | ●   | ●   |      |       | 2.8                                | 2.5              | 4.6      | 6.5      | 7.9      | 9.1      | 10.2     | 11.2     | 12.1     | 14.4      | 20        | 27        | 74°        | 80°      | 83°      | 86°         |      |     |  |
|                        | 8030             |                              |     |      |     | ●    | ●   |     | ●   | ●   |      |       | 3.6                                | 3.7              | 6.8      | 9.7      | 11.8     | 13.7     | 15.3     | 16.7     | 18.1     | 22        | 31        | 40        | 74°        | 80°      | 83°      | 86°         |      |     |  |
|                        | 8040             |                              |     |      |     | ●    | ●   |     | ●   | ●   |      |       | 4.0                                | 5.0              | 9.1      | 12.9     | 15.8     | 18.2     | 20       | 22       | 24       | 29        | 41        | 54        | 74°        | 80°      | 83°      | 86°         |      |     |  |
|                        | 8050             |                              |     |      |     |      | ●   |     | ●   | ●   |      |       | 4.4                                | 6.2              | 11.4     | 16.1     | 19.7     | 23       | 25       | 28       | 30       | 36        | 51        | 68        | 74°        | 80°      | 83°      | 85°         |      |     |  |
|                        | 8060             |                              |     |      |     |      | ●   |     | ●   | ●   |      |       | 4.8                                | 7.5              | 13.7     | 19.3     | 24       | 27       | 31       | 33       | 36       | 43        | 61        | 81        | 75°        | 80°      | 83°      | 85°         |      |     |  |
| 8070                   |                  |                              |     |      |     | ●    |     | ●   | ●   |     |      | 5.2   | 8.7                                | 16.0             | 23       | 28       | 32       | 36       | 39       | 42       | 50       | 71        | 94        | 75°       | 80°        | 83°      | 86°      |             |      |     |  |
| 80100                  |                  |                              |     |      |     |      |     |     | ●   |     |      | 6.4   | 12.5                               | 23               | 32       | 39       | 46       | 51       | 56       | 60       | 72       | 102       | 135       | 75°       | 80°        | 83°      | 86°      |             |      |     |  |
| 80150                  |                  |                              |     |      |     |      |     |     | ●   |     |      | 7.5   | 18.7                               | 34               | 48       | 59       | 68       | 76       | 84       | 90       | 108      | 153       | 205       | 73°       | 80°        | 84°      | 86°      |             |      |     |  |
| 80200                  |                  |                              |     |      |     |      |     |     | ●   |     |      | 8.7   | 25                                 | 36               | 64       | 79       | 91       | 102      | 112      | 121      | 144      | 205       | 270       | 74°       | 80°        | 82°      | 85°      |             |      |     |  |
| 80400                  |                  |                              |     |      |     |      |     |     |     |     |      | 12.7  | 50                                 | 91               | 129      | 158      | 182      | 205      | 225      | 240      | 290      | 410       | 540       | 78°       | 80°        | 81°      | 83°      |             |      |     |  |
| 73°                    | 730077           | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.56                               |                  |          |          | 0.18     | 0.25     | 0.30     | 0.35     | 0.39     | 0.43      | 0.46      | 0.55      | 0.78       | 1.0      | 53°      | 73°         | 86°  | 92° |  |
|                        | 730154           | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.81                               | 0.19             | 0.35     | 0.50     | 0.61     | 0.70     | 0.78     | 0.86     | 0.93     | 1.1       | 1.6       | 2.1       | 55°        | 73°      | 84°      | 88°         |      |     |  |
|                        | 730231           |                              |     |      |     |      |     |     |     |     |      |       | 1.0                                | 0.29             | 0.53     | 0.74     | 0.91     | 1.1      | 1.2      | 1.3      | 1.4      | 1.7       | 2.4       | 3.1       | 56°        | 73°      | 83°      | 87°         |      |     |  |
|                        | 730308           | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 1.1                                | 0.38             | 0.70     | 0.99     | 1.2      | 1.4      | 1.6      | 1.7      | 1.9      | 2.2       | 3.1       | 4.2       | 58°        | 73°      | 82°      | 86°         |      |     |  |
|                        | 730462           |                              |     |      |     |      |     |     |     |     |      |       | 1.4                                | 0.58             | 1.1      | 1.5      | 1.8      | 2.1      | 2.4      | 2.6      | 2.8      | 3.3       | 4.7       | 6.2       | 60°        | 73°      | 80°      | 84°         |      |     |  |
|                        | 730770           | ●                            |     |      | ●   |      |     |     |     |     |      |       | 1.8                                | 0.96             | 1.8      | 2.5      | 3.0      | 3.5      | 3.9      | 4.3      | 4.6      | 5.5       | 7.8       | 10.4      | 64°        | 73°      | 77°      | 82°         |      |     |  |
| 65°                    | 650017           | ●                            |     |      | ●   |      |     |     |     |     |      |       | 0.28                               |                  |          |          |          | 0.05     | 0.06     | 0.07     | 0.08     | 0.09      | 0.10      | 0.12      | 0.17       | 0.23     | 44°      | 65°         | 77°  | 86° |  |
|                        | 650033           |                              |     |      | ●   |      |     |     |     |     |      |       | 0.38                               |                  |          |          | 0.11     | 0.13     | 0.15     | 0.17     | 0.18     | 0.20      | 0.24      | 0.34      | 0.44       | 47°      | 65°      | 76°         | 83°  |     |  |
|                        | 650067           | ●                            | ●   | ●    | ●   |      |     |     |     |     |      |       | 0.53                               |                  |          |          | 0.15     | 0.22     | 0.26     | 0.31     | 0.34     | 0         |           |           |            |          |          |             |      |     |  |



| Spray angle<br>(3 bar) | Capacity<br>Size | Nozzle Type /Inlet Conn. NPT |     |      |     |      |     |     |     |      |   |       |   | Equivalent<br>spray<br>orifice (mm) | Capacity(L/min) |          |          |          |          |          |          |          |           |           |           |            | Spray angle |          |           |  |
|------------------------|------------------|------------------------------|-----|------|-----|------|-----|-----|-----|------|---|-------|---|-------------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|------------|-------------|----------|-----------|--|
|                        |                  | CC                           |     | CC-L |     | CC-N |     |     |     | CC-M |   |       |   |                                     | 0.3<br>bar      | 1<br>bar | 2<br>bar | 3<br>bar | 4<br>bar | 5<br>bar | 6<br>bar | 7<br>bar | 10<br>bar | 20<br>bar | 35<br>bar | 1.5<br>bar | 3<br>bar    | 6<br>bar | 14<br>bar |  |
|                        |                  | 1/8                          | 1/4 | 1/8  | 1/4 | 1/8  | 1/4 | 3/8 | 1/2 | 3/4  | 1 | 1 1/4 | 2 |                                     |                 |          |          |          |          |          |          |          |           |           |           |            |             |          |           |  |
| 50°                    | 5001             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 0.66                                |                 | 0.23     | 0.32     | 0.39     | 0.46     | 0.51     | 0.56     | 0.60     | 0.72      | 1.0       | 1.3       | 37°        | 50°         | 59°      | 65°       |  |
|                        | 5002             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 0.91                                |                 | 0.46     | 0.64     | 0.79     | 0.91     | 1.0      | 1.1      | 1.2      | 1.4       | 2.0       | 2.7       | 39°        | 50°         | 57°      | 63°       |  |
|                        | 5003             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.1                                 | 0.37            | 0.68     | 0.97     | 1.2      | 1.4      | 1.5      | 1.7      | 1.8      | 2.2       | 3.1       | 4.0       | 40°        | 50°         | 56°      | 62°       |  |
|                        | 5004             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.3                                 | 0.50            | 0.91     | 1.3      | 1.6      | 1.8      | 2.0      | 2.2      | 2.4      | 2.9       | 4.1       | 5.4       | 42°        | 50°         | 56°      | 61°       |  |
|                        | 5005             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.4                                 | 0.62            | 1.1      | 1.6      | 2.0      | 2.3      | 2.5      | 2.8      | 3.0      | 3.6       | 5.1       | 6.7       | 44°        | 50°         | 56°      | 61°       |  |
|                        | 5006             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.6                                 | 0.75            | 1.4      | 1.9      | 2.4      | 2.7      | 3.1      | 3.3      | 3.6      | 4.3       | 6.1       | 8.1       | 45°        | 50°         | 56°      | 60°       |  |
|                        | 5008             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.8                                 | 1.0             | 1.8      | 2.6      | 3.2      | 3.6      | 4.1      | 4.5      | 4.8      | 5.8       | 8.2       | 10.8      | 45°        | 50°         | 55°      | 60°       |  |
|                        | 5010             | ●                            | ●   | ●    | ●   | ●    | ●   | ●   |     |      |   |       |   | 2.0                                 | 1.2             | 2.3      | 3.2      | 3.9      | 4.6      | 5.1      | 5.6      | 6.0      | 7.2       | 10.2      | 13.5      | 45°        | 50°         | 55°      | 59°       |  |
|                        | 5015             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 2.4                                 | 1.9             | 3.4      | 4.8      | 5.9      | 6.8      | 7.6      | 8.4      | 9.0      | 10.8      | 15.3      | 20        | 45°        | 50°         | 55°      | 59°       |  |
|                        | 5020             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 2.8                                 | 2.5             | 4.6      | 6.5      | 7.9      | 9.1      | 10.2     | 11.2     | 12.1     | 14.4      | 20        | 27        | 45°        | 50°         | 55°      | 59°       |  |
|                        | 5030             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 3.6                                 | 3.7             | 6.8      | 9.7      | 11.8     | 13.7     | 15.3     | 16.7     | 18.1     | 22        | 31        | 40        | 45°        | 50°         | 55°      | 59°       |  |
|                        | 5040             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 4.0                                 | 5.0             | 9.1      | 13.9     | 15.8     | 18.2     | 20       | 22       | 24       | 29        | 41        | 54        | 46°        | 50°         | 54°      | 59°       |  |
|                        | 5050             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 4.4                                 | 6.2             | 11.4     | 16.1     | 19.7     | 23       | 25       | 28       | 30       | 36        | 51        | 68        | 46°        | 50°         | 54°      | 59°       |  |
|                        | 5060             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 4.8                                 | 7.5             | 13.7     | 19.3     | 24       | 27       | 31       | 33       | 36       | 43        | 61        | 81        | 46°        | 50°         | 54°      | 59°       |  |
|                        | 5070             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 5.2                                 | 8.7             | 16.0     | 23       | 28       | 32       | 36       | 39       | 42       | 50        | 71        | 94        | 46°        | 50°         | 54°      | 59°       |  |
|                        | 50100            |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 6.4                                 | 12.5            | 23       | 32       | 39       | 46       | 51       | 56       | 60       | 72        | 102       | 135       | 44°        | 50°         | 52°      | 54°       |  |
|                        | 50120            |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 6.7                                 | 15.0            | 27       | 39       | 47       | 55       | 61       | 67       | 72       | 86        | 122       | 162       | 44°        | 50°         | 53°      | 55°       |  |
|                        | 50150            |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 7.5                                 | 18.7            | 34       | 48       | 59       | 68       | 76       | 84       | 90       | 108       | 153       | 205       | 45°        | 50°         | 52°      | 55°       |  |
|                        | 50200            |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 8.7                                 | 25              | 46       | 64       | 79       | 91       | 102      | 112      | 121      | 144       | 205       | 270       | 46°        | 50°         | 52°      | 55°       |  |
|                        | 50400            |                              |     |      |     |      |     |     |     | ●    |   |       |   | 12.7                                | 50              | 91       | 129      | 158      | 182      | 205      | 225      | 240      | 290       | 410       | 540       | 46°        | 50°         | 52°      | 55°       |  |
|                        | 50500            |                              |     |      |     |      |     |     |     | ●    | ● |       |   | 13.1                                | 62              | 114      | 161      | 197      | 230      | 255      | 280      | 300      | 360       | 510       | 680       | 49°        | 50°         | 51°      | 54°       |  |
|                        | 50580            |                              |     |      |     |      |     |     |     | ●    |   |       |   | 13.9                                | 72              | 132      | 187      | 230      | 265      | 295      | 325      | 350      | 420       | 600       | 780       | 49°        | 50°         | 51°      | 53°       |  |
|                        | 50750            |                              |     |      |     |      |     |     |     |      | ● |       |   | 15.9                                | 94              | 171      | 240      | 295      | 340      | 385      | 420      | 455      | 540       | 770       | 1010      | 49°        | 50°         | 51°      | 53°       |  |
|                        | 501000           |                              |     |      |     |      |     |     |     |      | ● |       |   | 18.3                                | 125             | 230      | 325      | 395      | 455      | 510      | 560      | 610      | 720       | 1020      | 1350      | 49°        | 50°         | 51°      | 53°       |  |
|                        | 501500           |                              |     |      |     |      |     |     |     |      | ● |       |   | 22.6                                | 187             | 340      | 485      | 600      | 690      | 770      | 840      | 910      | 1080      | 1530      | 2020      | 49°        | 50°         | 51°      | 52°       |  |
|                        | 502000           |                              |     |      |     |      |     |     |     |      | ● |       |   | 26.2                                | 250             | 460      | 650      | 790      | 910      | 1020     | 1120     | 1210     | 1440      | 2040      | 2700      | 49°        | 50°         | 51°      | 52°       |  |
| 40°                    | 4001             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 0.66                                |                 |          | 0.32     | 0.39     | 0.46     | 0.51     | 0.56     | 0.60     | 0.72      | 1.0       | 1.3       | 26°        | 40°         | 52°      | 59°       |  |
|                        | 40015            | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 0.79                                |                 |          | 0.48     | 0.59     | 0.68     | 0.76     | 0.84     | 0.90     | 1.1       | 1.5       | 2.0       | 27°        | 40°         | 52°      | 59°       |  |
|                        | 4002             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 0.91                                |                 | 0.46     | 0.64     | 0.79     | 0.91     | 1.0      | 1.1      | 1.2      | 1.4       | 2.0       | 2.7       | 29°        | 40°         | 51°      | 58°       |  |
|                        | 4003             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.1                                 |                 | 0.68     | 0.97     | 1.2      | 1.4      | 1.5      | 1.7      | 1.8      | 2.2       | 3.1       | 4.0       | 30°        | 40°         | 50°      | 57°       |  |
|                        | 4004             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.3                                 |                 | 0.91     | 1.3      | 1.6      | 1.8      | 2.0      | 2.2      | 2.4      | 2.9       | 4.1       | 5.4       | 30°        | 40°         | 50°      | 56°       |  |
|                        | 4005             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.4                                 |                 | 1.1      | 1.6      | 2.0      | 2.3      | 2.5      | 2.8      | 3.0      | 3.6       | 5.1       | 6.7       | 31°        | 40°         | 49°      | 55°       |  |
|                        | 4006             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.6                                 |                 | 1.4      | 1.9      | 2.4      | 2.7      | 3.1      | 3.3      | 3.6      | 4.3       | 6.1       | 8.1       | 31°        | 40°         | 49°      | 55°       |  |
|                        | 4008             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.8                                 | 1.0             | 1.8      | 2.6      | 3.2      | 3.6      | 4.1      | 4.5      | 4.8      | 5.8       | 8.2       | 10.8      | 31°        | 40°         | 47°      | 53°       |  |
|                        | 4010             |                              |     |      |     | ●    | ●   | ●   |     |      |   |       |   | 2.0                                 | 1.2             | 2.3      | 3.2      | 3.9      | 4.6      | 5.1      | 5.6      | 6.0      | 7.2       | 10.2      | 13.5      | 32°        | 40°         | 45°      | 48°       |  |
|                        | 4015             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 2.4                                 | 1.9             | 3.4      | 4.8      | 5.9      | 6.8      | 7.6      | 8.4      | 9.0      | 10.8      | 15.3      | 20        | 32°        | 40°         | 45°      | 48°       |  |
|                        | 4020             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 2.8                                 | 2.5             | 4.6      | 6.5      | 7.9      | 9.1      | 10.2     | 11.2     | 12.1     | 14.4      | 20        | 27        | 32°        | 40°         | 45°      | 48°       |  |
|                        | 4030             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 3.6                                 | 3.7             | 6.8      | 9.7      | 11.8     | 13.7     | 15.3     | 16.7     | 18.1     | 22        | 31        | 40        | 33°        | 40°         | 45°      | 48°       |  |
|                        | 4040             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 4.0                                 | 5.0             | 9.1      | 12.9     | 15.8     | 18.2     | 20       | 22       | 24       | 29        | 41        | 54        | 34°        | 40°         | 45°      | 48°       |  |
|                        | 4050             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 4.4                                 | 6.2             | 11.4     | 16.1     | 19.7     | 23       | 25       | 28       | 30       | 36        | 51        | 68        | 35°        | 40°         | 45°      | 48°       |  |
|                        | 4060             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 4.8                                 | 7.5             | 13.7     | 19.3     | 24       | 27       | 31       | 33       | 36       | 43        | 61        | 81        | 35°        | 40°         | 45°      | 48°       |  |
|                        | 4070             |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 5.2                                 | 8.7             | 16.0     | 23       | 28       | 32       | 36       | 39       | 42       | 50        | 71        | 94        | 35°        | 40°         | 45°      | 48°       |  |
|                        | 40100            |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 6.4                                 | 12.5            | 23       | 32       | 39       | 46       | 51       | 56       | 60       | 72        | 102       | 135       | 34°        | 40°         | 43°      | 46°       |  |
|                        | 40150            |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 7.5                                 | 18.7            | 34       | 48       | 59       | 68       | 76       | 84       | 90       | 108       | 153       | 205       | 40°        | 43°         | 44°      |           |  |
|                        | 40200            |                              |     |      |     | ●    | ●   | ●   | ●   |      |   |       |   | 8.7                                 | 25              | 46       | 64       | 79       | 91       | 102      | 112      | 121      | 144       | 205       | 270       | 36°        | 40°         | 42°      | 44°       |  |
| 25°                    | 2501             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 0.66                                |                 |          | 0.32     | 0.39     | 0.46     | 0.51     | 0.56     | 0.60     | 0.72      | 1.0       | 1.3       | 14°        | 25°         | 34°      | 42°       |  |
|                        | 2502             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 0.91                                |                 | 0.46     | 0.64     | 0.79     | 0.91     | 1.0      | 1.1      | 1.2      | 1.4       | 2.0       | 2.7       | 15°        | 25°         | 33°      | 40°       |  |
|                        | 2503             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.1                                 |                 | 0.68     | 0.97     | 1.2      | 1.4      | 1.5      | 1.7      | 1.8      | 2.2       | 3.1       | 4.0       | 15°        | 25°         | 33°      | 40°       |  |
|                        | 2504             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.3                                 |                 | 0.91     | 1.3      | 1.6      | 1.8      | 2.0      | 2.2      | 2.4      | 2.9       | 4.1       | 5.4       | 16°        | 25°         | 32°      | 39°       |  |
|                        | 2505             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.4                                 |                 | 1.1      | 1.6      | 2.0      | 2.3      | 2.5      | 2.8      | 3.0      | 3.6       | 5.1       | 6.7       | 16°        | 25°         | 32°      | 39°       |  |
|                        | 2506             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.6                                 |                 | 1.4      | 1.9      | 2.4      | 2.7      | 3.1      | 3.3      | 3.6      | 4.3       | 6.1       | 8.1       | 17°        | 25°         | 31°      | 38°       |  |
|                        | 2508             | ●                            | ●   | ●    | ●   |      |     |     |     |      |   |       |   | 1.8                                 |                 | 1.8      | 2.6      | 3.2      | 3.6      | 4.1      | 4.5      | 4.8      | 5.8       | 8.2       | 10.8      | 17°        | 25°         | 31°      | 38°       |  |
|                        | 2510             | ●                            | ●   | ●    | ●   | ●    | ●   | ●   |     |      |   |       |   | 2.0                                 |                 | 2.3      | 3.2      | 3.9      | 4.6      | 5.1      | 5.6      | 6.0      | 7.2       | 10.2      | 13.5      | 18°        | 25°         |          |           |  |