**Appendix A.**

**Table A.1.** Maximum aperture difference (*w*) for fractures with sampling length less than 0.5 m at different line spacing.

|  |  |  |
| --- | --- | --- |
| No. | Length(m) | Ratio of measuring line spacing to fracture length (*r*) (%) |
| 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 |
| J01 | 0.228 | - | - | - | 0.0 | - | - | - | - | -0.1 | - | - | - | -0.2 | - | - | - | - | -0.1 | - | - | - | -0.3 | - | - | - | -0.1 | - | - | - | -0.5 |
| J02 | 0.254 | - | - | - | 0.0 | - | - | - | -0.2 | - | - | - | -0.4 | - | - | - | -0.4 | - | - | - | -0.3 | - | - | - | -0.2 | - | - | - | -0.3 | - | - |
| J03 | 0.281 | - | - | - | 0.0 | - | - | -0.1 | - | - | - | 0.0 | - | - | -0.3 | - | - | - | -0.2 | - | - | -0.9 | - | - | - | -0.2 | - | - | -0.7 | - | -1.2 |
| J04 | 0.330 | - | - | -0.1 | - | - | 0.0 | - | - | -0.2 | - | - | -0.1 | - | - | -0.2 | - | - | -0.6 | - | - | -0.2 | - | - | -0.4 | - | - | -0.8 | - | - | -0.3 |
| J05 | 0.334 | - | - | -0.1 | - | - | -0.4 | - | - | 0.0 | - | - | -0.7 | - | - | -0.2 | - | - | -0.5 | - | - | -2.8 | - | - | -2.9 | - | - | -0.5 | - | - | -2.5 |
| J06 | 0.336 | - | - | 0.0 | - | - | 0.0 | - | - | -0.1 | - | - | -0.5 | - | - | -1.9 | - | - | -3.3 | - | - | -2.7 | - | - | -2.4 | - | - | -4.8 | - | - | -3.0 |
| J07 | 0.338 | - | - | 0.0 | - | - | -2.3 | - | - | - | -1.9 | - | -3.0 | - | - | -3.0 | - | - | -2.6 | - | -1.7 | - | - | - | -6.5 | - | - | -4.8 | - | - | -2.7 |
| J08 | 0.444 | - | 0.0 | - | - | -0.6 | - | -0.9 | - | -1.1 | - | -1.4 | - | - | -1.6 | - | -0.4 | - | -2.0 | - | -2.1 | - | - | -1.6 | - | -1.5 | - | -2.5 | - | -1.5 | -1.3 |
| J09 | 0.486 | - | 0.0 | - | -1.1 | - | -1.1 | - | -1.1 | - | -1.3 | - | -1.2 | - | -1.3 | - | -1.4 | - | - | -1.4 | - | -1.2 | - | -1.3 | - | -1.3 | - | -1.3 | - | -1.4 | -1.4 |
| J10 | 0.496 | - | -1.1 | - | -1.6 | - | -1.1 | - | 0.0 | - | -0.7 | - | -1.4 | - | -2.7 | - | -2.0 | - | -0.8 | - | -3.0 | - | -0.2 | - | -1.8 | - | -3.2 | - | -1.1 | - | -3.2 |
| J11 | 0.497 | - | 0.0 | - | -0.1 | - | 0.0 | - | -0.1 | - | -0.1 | - | -0.3 | - | -0.2 | - | -0.1 | - | 0.0 | - | -0.3 | - | -0.1 | - | -0.1 | - | -0.2 | - | -0.4 | - | -0.6 |
| J12 | 0.497 | - | -0.6 | - | -1.4 | - | -1.3 | - | -1.4 | - | -0.3 | - | -0.6 | - | -1.4 | - | -0.8 | - | -2.5 | - | -0.8 | - | -2.7 | - | -0.5 | - | 0.0 | - | -5.8 | - | -0.2 |

Note: The red font indicates that the apertures obtained at the current measuring line spacing do not obey the form of the 7 in the distribution mentioned in the study.

**Table A.2.** Maximum aperture difference (*w*) for fractures with sampling length of 0.5 to 1 m at different line spacing.

|  |  |  |
| --- | --- | --- |
| No. | Length(m) | Ratio of measuring line spacing to fracture length (*r*) (%) |
| 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 |
| J13 | 0.572 | - | 0.0 | -0.7 | - | -0.6 | - | -1.1 | - | -1.2 | -0.6 | - | -1.4 | - | -0.1 | - | -1.1 | -0.6 | - | - | -1.3 | -1.3 | -2.0 | -1.9 | - | -2.2 | - | -2.4 | - | -0.4 | - |
| J14 | 0.606 | - | 0.0 | 0.0 | - | 0.0 | - | 0.0 | 0.0 | - | -0.1 | - | 0.0 | 0.0 | - | 0.0 | - | -0.1 | 0.0 | - | 0.0 | 0.0 | - | -0.1 | - | -0.1 | 0.0 | - | 0.0 | - | 0.0 |
| J15 | 0.647 | - | 0.0 | -0.1 | - | -0.1 | -0.2 | - | -0.2 | - | -0.1 | 0.0 | 0.0 | - | -0.1 | -0.4 | - | 0.0 | - | -0.2 | 0.0 | - | -0.3 | -0.4 | - | -0.6 | -0.2 | - | -0.4 | -0.6 | - |
| J16 | 0.650 | - | 0.0 | -0.1 | - | -0.4 | -0.8 | - | -1.1 | -1.0 | -0.9 | - | -0.5 | - | -1.7 | -0.4 | - | -1.5 | -0.7 | - | -1.1 | - | -1.2 | -1.0 | - | -1.2 | -0.7 | - | -2.7 | -0.7 | - |
| J17 | 0.671 | -0.7 | - | -0.6 | -0.2 | - | -1.0 | -0.7 | - | -2.3 | -1.3 | - | -0.6 | -1.0 | - | 0.0 | -1.2 | - | -0.8 | -1.1 | -4.6 | - | -2.9 | - | -3.3 | -2.6 | - | -3.0 | -1.2 | - | -5.0 |
| J18 | 0.714 | 0.0 | - | -0.1 | 0.0 | - | -0.3 | 0.0 | -0.2 | - | -0.5 | -0.4 | - | -0.3 | -0.7 | -0.6 | - | -0.5 | -0.5 | - | -0.2 | 0.0 | -0.1 | - | -0.3 | -0.7 | - | -1.1 | -0.2 | -1.0 | -0.1 |
| J19 | 0.732 | 0.0 | - | -0.3 | -0.8 | -0.9 | - | -1.2 | -2.4 | - | -1.3 | -1.9 | -3.0 | - | -2.7 | -1.2 | -1.3 | - | -1.3 | -3.9 | -2.7 | - | -1.2 | -1.1 | - | -3.7 | -2.6 | -1.4 | - | -0.8 | -1.0 |
| J20 | 0.785 | -0.5 | - | -0.1 | -0.7 | -0.7 | -0.7 | - | -0.8 | -0.1 | -0.3 | -0.6 | - | -0.2 | -0.6 | -1.1 | - | -1.3 | -0.8 | -0.5 | -0.9 | - | -1.6 | -0.7 | -1.3 | -2.3 | - | -2.2 | -2.5 | -2.7 | - |
| J21 | 0.788 | 0.0 | - | 0.0 | 0.0 | -0.1 | -0.1 | - | 0.0 | -0.1 | 0.0 | -0.1 | - | -0.1 | -0.2 | -0.1 | -0.1 | - | -0.3 | -0.1 | -0.2 | - | -0.3 | 0.0 | -0.4 | -0.2 | - | -0.1 | -0.1 | -0.2 | -0.3 |
| J22 | 0.798 | 0.0 | - | -0.1 | 0.0 | 0.0 | -0.1 | - | -0.1 | 0.0 | -0.2 | -0.1 | - | -0.1 | -0.1 | -0.1 | -0.1 | - | -0.1 | -0.3 | -0.1 | -0.1 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | -0.6 | 0.0 | -0.2 |
| J23 | 0.810 | -0.1 | -0.2 | - | -0.1 | -0.2 | -0.4 | -0.4 | - | -0.5 | -0.6 | -0.5 | -0.6 | - | -0.4 | -0.1 | -0.2 | -0.7 | - | -0.7 | -0.3 | -0.7 | -0.8 | -0.7 | - | 0.0 | -0.9 | -1.4 | -0.3 | - | -0.6 |
| J24 | 0.938 | -0.4 | -0.5 | -0.1 | -0.2 | -0.6 | -0.8 | -1.0 | - | -1.2 | 0.0 | -1.5 | 0.0 | -1.7 | -1.4 | -2.0 | -2.1 | -0.6 | -0.1 | -1.9 | -1.5 | -2.7 | -2.9 | -1.9 | - | -0.8 | -3.2 | -1.6 | -1.3 | -2.8 | -3.7 |

Note: The red font indicates that the apertures obtained at the current measuring line spacing do not obey the form of the 7 in the distribution mentioned in the study.

**Table A.3.** Maximum aperture difference (*w*) for fractures with sampling length of 1 to 2 m at different line spacing.

|  |  |  |
| --- | --- | --- |
| No. | Length(m) | Ratio of measuring line spacing to fracture length (*r*) (%) |
| 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 |
| J25 | 1.039 | 0.0 | -0.3 | 0.0 | -0.5 | -0.2 | -0.3 | -0.9 | -0.8 | -0.6 | -0.6 | -1.1 | -1.4 | -1.3 | -0.6 | -1.1 | -0.9 | -0.6 | -1.4 | -0.7 | -2.0 | -1.2 | -0.9 | -2.5 | -0.7 | -1.1 | -1.8 | -2.2 | -1.9 | -2.0 | -0.7 |
| J26 | 1.145 | 0.0 | -0.3 | -0.5 | -0.6 | -0.3 | -0.8 | -0.8 | -1.5 | -1.0 | -1.2 | -1.6 | -1.4 | -0.4 | -1.3 | -1.3 | -1.7 | -1.7 | -1.3 | -1.7 | -0.7 | -0.6 | -1.5 | -1.6 | -1.9 | -0.4 | -2.0 | -2.2 | -2.4 | -2.4 | -2.4 |
| J27 | 1.171 | 0.0 | -1.3 | -1.8 | -2.7 | -1.3 | -5.4 | -2.2 | -5.4 | -4.3 | -4.0 | -6.3 | -6.5 | -2.1 | -5.8 | -4.4 | -7.8 | -4.2 | -5.0 | -8.4 | -7.7 | -6.9 | -2.7 | -5.8 | -8.9 | -5.7 | -8.1 | -5.2 | -10.4 | -5.6 | -8.1 |
| J28 | 1.204 | 0.0 | -0.2 | -0.1 | -0.3 | -0.4 | -0.5 | -0.4 | -0.5 | -0.8 | 0.0 | -0.3 | -0.4 | -0.6 | -1.0 | -0.3 | -0.2 | -0.3 | -1.2 | -0.2 | -1.7 | -1.2 | -0.8 | -0.8 | -1.0 | -1.4 | -2.0 | -0.8 | -1.7 | -0.9 | -1.1 |
| J29 | 1.215 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 | -0.1 | -0.1 |
| J30 | 1.240 | -1.7 | -2.1 | -0.2 | -2.1 | -3.1 | -3.1 | -2.6 | -1.8 | -3.4 | -0.7 | -1.6 | -0.6 | -5.1 | -5.3 | -3.4 | -2.8 | -3.9 | -1.7 | -4.4 | -0.1 | -5.0 | -5.2 | -2.7 | -6.0 | -8.4 | -7.7 | -7.7 | -9.0 | -7.4 | -3.2 |
| J31 | 1.358 | -0.5 | -1.0 | -0.8 | -0.1 | -1.5 | -0.9 | -0.9 | -1.1 | -2.4 | -1.1 | -1.7 | -1.1 | -2.6 | -2.8 | -2.8 | -2.6 | -3.1 | -2.7 | -3.7 | -0.2 | -4.4 | -3.7 | -3.3 | -3.8 | -5.3 | -5.7 | -2.0 | -5.3 | -2.1 | -6.7 |
| J32 | 1.389 | -0.3 | -0.8 | 0.0 | -0.4 | -0.6 | -0.6 | -0.8 | -0.8 | -0.5 | -0.8 | -0.7 | -0.8 | 0.0 | -0.7 | -0.3 | -0.9 | -0.7 | -0.8 | -0.6 | -0.9 | -0.5 | -1.0 | -0.9 | -0.4 | -1.0 | -0.9 | -0.8 | -0.6 | -0.2 | -1.1 |
| J33 | 1.518 | -0.1 | -0.3 | -0.4 | -0.2 | -0.5 | -0.6 | -0.4 | -0.4 | -0.2 | -0.6 | -0.5 | -0.7 | -0.8 | -0.5 | -0.7 | -0.6 | -0.4 | -0.5 | -0.4 | -1.0 | -1.3 | -0.8 | -1.5 | -1.0 | -0.4 | -2.0 | -3.7 | -0.9 | -1.3 | -2.0 |
| J34 | 1.719 | -1.3 | -1.3 | -1.4 | -1.5 | -1.6 | -1.4 | -1.5 | -1.6 | -1.7 | -1.8 | -1.9 | -2.0 | -2.2 | -2.2 | -2.3 | -2.4 | -2.6 | -2.6 | -2.8 | -2.8 | -2.6 | -1.5 | -0.2 | -0.2 | -0.3 | -0.4 | -0.5 | -0.6 | -0.7 | -0.8 |

Note: The red font indicates that the apertures obtained at the current measuring line spacing do not obey the form of the 7 in the distribution mentioned in the study.