|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Test No | Tube outer diameter (mm) | Tube wall thickness (mm) | Bending angle (°) | The distance of the mandrel (mm) | Mandrel type | Test Result |
| 1 | 20 | 1.0 | 30 | 0 | 0 | 0 |
| 2 | 20 | 1.0 | 30 | 3 | 1 | 1 |
| 3 | 20 | 1.0 | 45 | 5 | 0 | 1 |
| 4 | 20 | 1.0 | 45 | 0 | 1 | 0 |
| 5 | 20 | 1.5 | 45 | 3 | 0 | 0 |
| 6 | 20 | 1.5 | 60 | 5 | 1 | 1 |
| 7 | 20 | 1.5 | 60 | 0 | 0 | 0 |
| 8 | 20 | 1.5 | 60 | 3 | 1 | 1 |
| 9 | 20 | 2.0 | 75 | 5 | 0 | 1 |
| 10 | 20 | 2.0 | 75 | 0 | 1 | 0 |
| 11 | 20 | 2.0 | 75 | 3 | 0 | 0 |
| 12 | 20 | 2.0 | 90 | 5 | 1 | 1 |
| 13 | 20 | 2.5 | 90 | 0 | 0 | 0 |
| 14 | 20 | 2.5 | 90 | 3 | 1 | 1 |
| 15 | 20 | 2.5 | 90 | 5 | 0 | 1 |
| 16 | 20 | 2.5 | 30 | 0 | 1 | 0 |
| 17 | 20 | 3.0 | 30 | 3 | 0 | 0 |
| 18 | 20 | 3.0 | 45 | 5 | 1 | 1 |
| 19 | 20 | 3.0 | 45 | 0 | 0 | 0 |
| 20 | 20 | 3.0 | 45 | 3 | 1 | 1 |
| 21 | 22 | 1.0 | 60 | 5 | 0 | 0 |
| 22 | 22 | 1.0 | 60 | 0 | 1 | 0 |
| 23 | 22 | 1.0 | 60 | 3 | 0 | 0 |
| 24 | 22 | 1.0 | 75 | 5 | 1 | 1 |
| 25 | 22 | 1.5 | 75 | 0 | 0 | 0 |
| 26 | 22 | 1.5 | 75 | 3 | 1 | 1 |
| 27 | 0 | 1.5 | 90 | 5 | 0 | 1 |
| 28 | 22 | 1.5 | 90 | 0 | 1 | 0 |
| 29 | 22 | 2.0 | 90 | 3 | 0 | 0 |
| 30 | 22 | 2.0 | 90 | 5 | 1 | 1 |
| 31 | 22 | 2.0 | 30 | 0 | 0 | 0 |
| 32 | 22 | 2.0 | 30 | 3 | 1 | 1 |
| 33 | 22 | 2.5 | 45 | 5 | 0 | 1 |
| 34 | 22 | 2.5 | 45 | 0 | 1 | 0 |
| 35 | 22 | 2.5 | 45 | 3 | 0 | 0 |
| 36 | 22 | 2.5 | 60 | 5 | 1 | 1 |
| 37 | 22 | 3.0 | 60 | 0 | 0 | 0 |
| 38 | 22 | 3.0 | 60 | 3 | 1 | 1 |
| 39 | 22 | 3.0 | 75 | 5 | 0 | 1 |
| 40 | 22 | 3.0 | 75 | 0 | 1 | 0 |
| 41 | 25 | 1.0 | 75 | 3 | 0 | 0 |
| 42 | 25 | 1.0 | 90 | 5 | 1 | 1 |
| 43 | 25 | 1.0 | 90 | 0 | 0 | 0 |
| 44 | 25 | 1.0 | 90 | 3 | 1 | 0 |
| 45 | 25 | 1.5 | 90 | 5 | 0 | 1 |
| 46 | 25 | 1.5 | 30 | 0 | 1 | 0 |
| 47 | 25 | 1.5 | 30 | 0 | 1 | 0 |
| 48 | 25 | 1.5 | 30 | 3 | 0 | 0 |
| 49 | 25 | 1.5 | 45 | 5 | 1 | 1 |
| 50 | 25 | 2.0 | 45 | 0 | 0 | 0 |
| 51 | 25 | 2.0 | 45 | 3 | 1 | 1 |
| 52 | 25 | 2.0 | 60 | 5 | 0 | 1 |
| 53 | 25 | 2.0 | 60 | 0 | 1 | 0 |
| 54 | 25 | 2.5 | 60 | 3 | 0 | 0 |
| 55 | 25 | 2.5 | 75 | 5 | 1 | 1 |
| 56 | 25 | 2.5 | 75 | 0 | 0 | 0 |
| 57 | 25 | 2.5 | 75 | 3 | 1 | 1 |
| 58 | 25 | 3.0 | 90 | 5 | 0 | 1 |
| 59 | 25 | 3.0 | 90 | 0 | 1 | 0 |
| 60 | 25 | 3.0 | 90 | 3 | 0 | 0 |
| 61 | 25 | 3.0 | 90 | 5 | 1 | 1 |
| 62 | 28 | 1.0 | 30 | 0 | 0 | 0 |
| 63 | 28 | 1.0 | 30 | 3 | 1 | 0 |
| 64 | 28 | 1.0 | 45 | 5 | 0 | 0 |
| 65 | 28 | 1.0 | 45 | 0 | 1 | 0 |
| 66 | 28 | 1.5 | 45 | 3 | 0 | 0 |
| 67 | 28 | 1.5 | 60 | 5 | 1 | 1 |
| 68 | 28 | 1.5 | 60 | 0 | 0 | 0 |
| 69 | 28 | 1.5 | 60 | 3 | 1 | 0 |
| 70 | 28 | 2.0 | 75 | 5 | 0 | 1 |
| 71 | 28 | 2.0 | 75 | 0 | 1 | 0 |
| 72 | 28 | 2.0 | 75 | 3 | 0 | 0 |
| 73 | 28 | 2.0 | 90 | 5 | 1 | 1 |
| 74 | 28 | 2.5 | 90 | 0 | 0 | 0 |
| 75 | 28 | 2.5 | 90 | 3 | 1 | 1 |
| 76 | 28 | 2.5 | 90 | 5 | 0 | 1 |
| 77 | 28 | 2.5 | 30 | 0 | 1 | 0 |
| 78 | 28 | 3.0 | 30 | 3 | 0 | 0 |
| 79 | 28 | 3.0 | 45 | 5 | 1 | 1 |
| 80 | 28 | 3.0 | 45 | 0 | 0 | 0 |
| 81 | 28 | 3.0 | 45 | 3 | 1 | 1 |
| 82 | 30 | 1.0 | 60 | 5 | 0 | 0 |
| 83 | 30 | 1.0 | 60 | 0 | 1 | 0 |
| 84 | 30 | 1.0 | 60 | 3 | 0 | 0 |
| 85 | 30 | 1.0 | 75 | 5 | 1 | 0 |
| 86 | 30 | 1.5 | 75 | 0 | 0 | 0 |
| 87 | 30 | 1.5 | 75 | 3 | 1 | 0 |
| 88 | 30 | 1.5 | 90 | 5 | 0 | 0 |
| 89 | 30 | 1.5 | 90 | 0 | 1 | 0 |
| 90 | 30 | 2.0 | 90 | 3 | 0 | 0 |
| 91 | 30 | 2.0 | 90 | 5 | 1 | 1 |
| 92 | 30 | 2.0 | 30 | 0 | 0 | 0 |
| 93 | 30 | 2.0 | 30 | 3 | 1 | 1 |
| 94 | 30 | 2.5 | 45 | 5 | 0 | 1 |
| 95 | 30 | 2.5 | 45 | 0 | 1 | 0 |
| 96 | 30 | 2.5 | 45 | 3 | 0 | 0 |
| 97 | 30 | 2.5 | 60 | 5 | 1 | 1 |
| 98 | 30 | 3.0 | 60 | 0 | 0 | 0 |
| 99 | 30 | 3.0 | 60 | 3 | 1 | 1 |
| 100 | 30 | 3.0 | 75 | 5 | 0 | 1 |
| 101 | 32 | 3.0 | 75 | 0 | 1 | 0 |
| 102 | 32 | 1.0 | 75 | 3 | 0 | 0 |
| 103 | 32 | 1.0 | 90 | 5 | 1 | 0 |
| 104 | 32 | 1.0 | 90 | 0 | 0 | 0 |
| 105 | 32 | 1.0 | 90 | 3 | 1 | 0 |
| 106 | 32 | 1.5 | 90 | 5 | 0 | 0 |
| 107 | 32 | 1.5 | 30 | 0 | 1 | 0 |
| 108 | 32 | 1.5 | 30 | 3 | 0 | 0 |
| 109 | 32 | 1.5 | 45 | 5 | 1 | 1 |
| 110 | 32 | 2.0 | 45 | 0 | 0 | 0 |
| 111 | 32 | 2.0 | 45 | 3 | 1 | 0 |
| 112 | 32 | 2.0 | 60 | 5 | 0 | 1 |
| 113 | 32 | 2.0 | 60 | 0 | 1 | 0 |
| 114 | 32 | 2.5 | 60 | 3 | 0 | 0 |
| 115 | 32 | 2.5 | 75 | 5 | 1 | 1 |
| 116 | 32 | 2.5 | 75 | 0 | 0 | 0 |
| 117 | 32 | 2.5 | 75 | 3 | 1 | 1 |
| 118 | 32 | 3.0 | 90 | 5 | 0 | 1 |
| 119 | 32 | 3.0 | 90 | 0 | 1 | 1 |
| 120 | 32 | 3.0 | 90 | 3 | 0 | 0 |
| 121 | 32 | 3.0 | 90 | 5 | 1 | 1 |
| 122 | 38 | 1.0 | 30 | 0 | 0 | 0 |
| 123 | 38 | 1.0 | 30 | 3 | 1 | 0 |
| 124 | 38 | 1.0 | 45 | 5 | 0 | 0 |
| 125 | 38 | 1.0 | 45 | 0 | 1 | 0 |
| 126 | 38 | 1.0 | 45 | 3 | 0 | 0 |
| 127 | 38 | 1.0 | 60 | 5 | 1 | 0 |
| 128 | 38 | 1.5 | 60 | 0 | 0 | 0 |
| 129 | 38 | 1.5 | 60 | 3 | 1 | 0 |
| 130 | 38 | 1.5 | 75 | 5 | 0 | 0 |
| 131 | 38 | 1.5 | 75 | 0 | 1 | 0 |
| 132 | 38 | 1.5 | 75 | 3 | 0 | 0 |
| 133 | 38 | 1.5 | 90 | 5 | 1 | 0 |
| 134 | 38 | 2.0 | 90 | 0 | 0 | 0 |
| 135 | 38 | 2.0 | 90 | 3 | 1 | 0 |
| 136 | 38 | 2.0 | 90 | 5 | 0 | 0 |
| 137 | 38 | 2.0 | 30 | 0 | 1 | 0 |
| 138 | 38 | 2.0 | 30 | 3 | 0 | 0 |
| 139 | 38 | 2.0 | 45 | 5 | 1 | 1 |
| 140 | 38 | 2.5 | 45 | 0 | 0 | 0 |
| 141 | 38 | 2.5 | 45 | 3 | 1 | 0 |
| 142 | 38 | 2.5 | 60 | 5 | 0 | 0 |
| 143 | 38 | 2.5 | 60 | 0 | 1 | 0 |
| 144 | 38 | 2.5 | 60 | 3 | 0 | 0 |
| 145 | 38 | 2.5 | 75 | 5 | 1 | 1 |
| 146 | 38 | 3.0 | 75 | 0 | 0 | 0 |
| 147 | 38 | 3.0 | 75 | 3 | 1 | 0 |
| 148 | 38 | 3.0 | 90 | 5 | 0 | 0 |
| 149 | 38 | 3.0 | 90 | 0 | 1 | 0 |
| 150 | 38 | 3.0 | 90 | 3 | 0 | 0 |