

**CFB-1 Data Sheet**  
**General Properties**

|                    |                          |             |             |             |             |             |             |             |             |
|--------------------|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Wire Diameter (um) | <b>18</b>                | <b>20</b>   | <b>23</b>   | <b>25</b>   | <b>28</b>   | <b>30</b>   | <b>32</b>   | <b>35</b>   | <b>38</b>   |
| Tolerance (um)     | +/- 1.0                  |             |             |             |             |             |             |             |             |
| Weight (mg/200mm)  | 0.405-0.506              | 0.506-0.618 | 0.678-0.807 | 0.807-0.947 | 1.021-1.178 | 1.178-1.347 | 1.347-1.526 | 1.620-1.816 | 1.918-2.131 |
| Breaking Load (gf) | 3.6 - 7.8                | 4.4 - 9.6   | 5.8 - 12.6  | 6.8 - 14.9  | 8.5 - 18.6  | 9.7 - 21.1  | 11.3 - 24.8 | 13.5 - 29.5 | 15.8 - 34.5 |
| Elongation (%)     | Room Temp.<br>7.0 - 17.0 |             | 8.0 - 20.0  |             |             | 12.0 - 24.0 |             |             |             |

**Physical Property**

|   |                |                |                |                |                |                |                |                |                |
|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Hardness (HV)                                       | Free Air Ball  | 55 - 75        |                |                |                |                |                |                |                |
|   | HAZ            | 65 - 80        |                |                |                |                |                |                |                |
|   | Wire           | 70 - 90        |                |                |                |                |                |                |                |
| Density (g/cm <sup>3</sup> )                        | 8.92           |                |                |                |                |                |                |                |                |
| Resistivity (uΩ cm) @ 20°C                          | 1.9            |                |                |                |                |                |                |                |                |
| Fusing Current (A, Length=3mm,10sec)                | 0.6            | 0.7            | 0.9            | 1.1            | 1.4            | 1.6            | 1.9            | 2.3            | 2.7            |
| Electrical resistance (Ω , Length 10mm, Room Temp.) | 0.67<br>- 0.84 | 0.55<br>- 0.67 | 0.42<br>- 0.50 | 0.36<br>- 0.42 | 0.29<br>- 0.33 | 0.25<br>- 0.29 | 0.22<br>- 0.25 | 0.19<br>- 0.21 | 0.16<br>- 0.18 |
| Thermal Conductivity @ 20°C (W/m/K)                 | 385            |                |                |                |                |                |                |                |                |
| Linear Expansion Coefficient (0-100°C) (ppm/K)      | 17.0           |                |                |                |                |                |                |                |                |
| Elastic Modulus (GPa)                               | 60 - 90        |                |                |                |                |                |                |                |                |
| Melting Point (°C)                                  | 1,083          |                |                |                |                |                |                |                |                |

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**CA-1 Data Sheet**  
**General Properties**

|                    |                          |             |             |             |             |             |             |             |             |
|--------------------|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Wire Diameter (um) | <b>18</b>                | <b>20</b>   | <b>23</b>   | <b>25</b>   | <b>28</b>   | <b>30</b>   | <b>32</b>   | <b>35</b>   | <b>38</b>   |
| Tolerance (um)     | +/- 1.0                  |             |             |             |             |             |             |             |             |
| Weight (mg/200mm)  | 0.406-0.508              | 0.508-0.620 | 0.680-0.810 | 0.810-0.950 | 1.025-1.182 | 1.182-1.351 | 1.351-1.531 | 1.625-1.822 | 1.925-2.138 |
| Breaking Load (gf) | 3.5 - 7.7                | 4.2 - 9.5   | 5.5 - 12.4  | 6.6 - 14.7  | 8.2 - 18.2  | 9.3 - 20.8  | 10.9 - 24.4 | 13.0 - 29.0 | 15.2 - 33.9 |
| Elongation (%)     | Room Temp.<br>7.0 - 17.0 |             | 8.0 - 20.0  |             |             | 9.0 - 22.0  |             |             |             |

**Physical Property**

|   |                |                |                |                |                |                |                |                |                |
|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Hardness (HV)                                       | Free Air Ball  | 65 - 85        |                |                |                |                |                |                |                |
|   | HAZ            | 75 - 85        |                |                |                |                |                |                |                |
|   | Wire           | 75 - 95        |                |                |                |                |                |                |                |
| Density (g/cm <sup>3</sup> )                        | 8.95           |                |                |                |                |                |                |                |                |
| Resistivity (uΩ cm) @ 20°C                          | 2.2            |                |                |                |                |                |                |                |                |
| Fusing Current (A, Length=3mm,10sec)                | 0.5            | 0.6            | 0.8            | 1.0            | 1.2            | 1.4            | 1.6            | 2.0            | 2.3            |
| Electrical resistance (Ω , Length 10mm, Room Temp.) | 0.78<br>- 0.97 | 0.64<br>- 0.78 | 0.49<br>- 0.58 | 0.41<br>- 0.49 | 0.33<br>- 0.38 | 0.29<br>- 0.33 | 0.26<br>- 0.29 | 0.22<br>- 0.24 | 0.18<br>- 0.20 |
| Thermal Conductivity @ 20°C (W/m/K)                 | 333            |                |                |                |                |                |                |                |                |
| Linear Expansion Coefficient (0-100°C) (ppm/K)      | 17.0           |                |                |                |                |                |                |                |                |
| Elastic Modulus (GPa)                               | 55 - 95        |                |                |                |                |                |                |                |                |
| Melting Point (°C)                                  | 1,086          |                |                |                |                |                |                |                |                |

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# CLR-1A Data Sheet

## General Properties

|                    |             |             |             |             |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Wire Diameter (um) | 15          | 18          | 20          | 23          | 25          | 28          | 30          | 32          | 35          | 38          |
| Tolerance (um)     | +/- 1.0     |             |             |             |             |             |             |             |             |             |
| Weight (mg/200mm)  | 0.276-0.361 | 0.407-0.509 | 0.509-0.621 | 0.682-0.812 | 0.812-0.952 | 1.027-1.185 | 1.185-1.354 | 1.354-1.534 | 1.629-1.826 | 1.929-2.143 |
| Breaking Load (gf) | 2.2 - 5.0   | 3.2 - 7.2   | 4.0 - 8.9   | 5.4 - 11.9  | 6.3 - 14.0  | 7.9 - 17.6  | 9.1 - 20.2  | 10.3 - 22.9 | 12.3 - 27.4 | 14.4 - 32.2 |
| Elongation (%)     | 3.0 - 13.0  | 5.0 - 15.0  |             |             |             |             | 7.0 - 20.0  |             |             |             |

## Physical Property

|  |                |                |                |                |                |                |                |                |                |                |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Hardness (HV)                                      | Free Air Ball  | 60 - 80        |                |                |                |                |                |                |                |                |
|  | HAZ            | 70 - 80        |                |                |                |                |                |                |                |                |
|  | Wire           | 70 - 90        |                |                |                |                |                |                |                |                |
| Density (g/cm <sup>3</sup> )                       | 8.97           |                |                |                |                |                |                |                |                |                |
| Resistivity (u Ω cm) @ 20°C                        | 1.9            |                |                |                |                |                |                |                |                |                |
| Fusing Current (A, Length=3mm,10sec)               | 0.4            | 0.6            | 0.7            | 0.9            | 1.1            | 1.4            | 1.6            | 1.9            | 2.3            | 2.7            |
| Electrical resistance (Ω, Length 10mm, Room Temp.) | 0.94<br>- 1.23 | 0.67<br>- 0.84 | 0.55<br>- 0.67 | 0.42<br>- 0.50 | 0.36<br>- 0.42 | 0.29<br>- 0.33 | 0.25<br>- 0.29 | 0.22<br>- 0.25 | 0.19<br>- 0.21 | 0.16<br>- 0.18 |
| Thermal Conductivity @ 20°C (W/m/K)                | 385            |                |                |                |                |                |                |                |                |                |
| Linear Expansion Coefficient (0-100°C) (ppm/K)     | 17.0           |                |                |                |                |                |                |                |                |                |
| Elastic Modulus (GPa)                              | 60 - 85        |                |                |                |                |                |                |                |                |                |
| Melting Point (°C)                                 | 1,083          |                |                |                |                |                |                |                |                |                |