Table 8: Average values of energy dispersive spectroscopy data from the matrix and WEM around cracks and inclusions (butterflies) using FIB/TEM samples and SEM samples. The inclusions that most likely originated the RCF crack of figs. 10 and 11 were also analysed.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | Region | Elemental composition (wt%) | | | | | | | | | |
| Al | Si | P | S | Ca | Cr | Cu | Mn | O | Fe |
| L1 [SC] | WEM of butterfly | - | - | - | 0.59±0.15 | - | 3.24±0.37 | - | 0.33±0.21 | - | 95.81±1.87 |
| Matrix | - | 0.11±0.07 | - | 0.72±0.12 | - | 1.93±0.21 | - | 1.25±0.19 | - | 95.97±1.39 |
| Butterfly main inclusion | 0.2±0.01 | - | - | 29.83±0.22 | - | 1.23±0.05 | - | 57.02±0.33 | 2.52±0.11 | 9.17±0.14 |
| Butterfly secondary inclusion | 59.1±0.39 | - | - | 0.21±0.02 | - | 0.03±0.01 | - | 0.21±0.01 | 40.12±0.52 | 0.28±0.02 |
| MPC | WEM of crack | - | 0.35±0.03 | - | - | - | 1.65±0.15 | - | - | - | 98.00±1.95 |
| Matrix | - | 0.45±0.03 | - | - | - | 1.50±0.13 | - | - | - | 98.05±1.95 |
| EBSD1 [MPC] | Inclusion 1 | - | 0.46±0.03 | 0.23±0.02 | 0.39±0.03 | 0.19±0.02 | 1.59±0.15 | - | 0.26±0.02 | 13.08±0.44 | 83.78±1.19 |
| Inclusion 2 | 2.55±0.21 | 0.29±0.03 | - | 4.08±0.2 | - | 2.25±0.21 | - | 11.65±0.37 | 11.66±0.37 | 67.52±0.73 |
| Inclusion 3 | - | 0.40±0.03 | - | 0.20±0.02 | - | 1.68±0.17 | - | - | 4.70±0.23 | 93.01±1.58 |
| Inclusion 4 | - | 0.42±0.03 | 0.22±0.02 | 0.29±0.03 | - | 1.83±0.21 | 0.42±0.03 | 0.33±0.03 | 8.10±0.32 | 88.39±1.22 |
| Inclusion 5 | - | 0.34±0.03 | 0.22±0.02 | 0.20±0.02 | - | 1.72±0.17 | - | - | 5.24±0.26 | 92.28±1.54 |