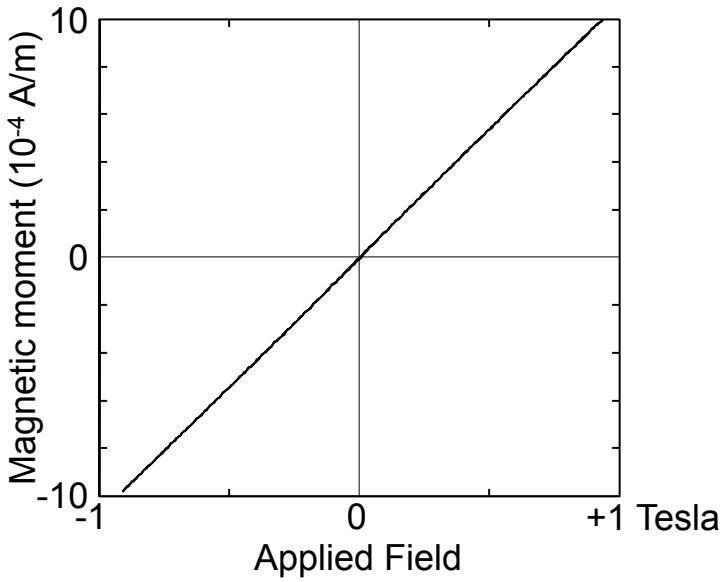
**Figure DR1**



## Table DR1

**Anisotropy of magnetic susceptibility data for mylonitic gneisses and pseudotachylytes**

| Name | $K_m$ | T | P' | T | dK1geo | iK1geo | dK2geo | iK2geo | dK3geo | iK3geo |
|---|---|---|---|---|---|---|---|---|---|---|
| | $10^{-6}$ [SI] | | | | ° | ° | ° | ° | ° | ° |
| *Mylonitic gneisses* | | | | | | | | | | |
| VG001A01 | 68 | 0.887 | 1.474 | 0.887 | 9 | 62 | 184 | 28 | 275 | 2 |
| VG001A02 | 32 | 0.890 | 1.853 | 0.890 | 12 | 68 | 177 | 21 | 269 | 5 |
| VG001A03 | 83 | 0.857 | 1.426 | 0.857 | 1 | 63 | 177 | 27 | 268 | 2 |
| VG001A04 | 79 | 0.784 | 1.401 | 0.784 | 49 | 85 | 177 | 3 | 268 | 4 |
| VG001A05 | 96 | 0.805 | 1.349 | 0.805 | 42 | 84 | 171 | 4 | 262 | 5 |
| VG001A06 | 86 | 0.898 | 1.436 | 0.898 | 1 | 62 | 176 | 28 | 267 | 2 |
| VG001A07 | 83 | 0.593 | 1.360 | 0.593 | 92 | 86 | 355 | 1 | 265 | 4 |
| VG001A08 | 97 | 0.902 | 1.401 | 0.902 | 5 | 63 | 177 | 27 | 269 | 3 |
| VG001A09 | 98 | 0.819 | 1.388 | 0.819 | 126 | 86 | 359 | 2 | 269 | 3 |
| VG001A10 | 113 | 0.769 | 1.378 | 0.769 | 173 | 82 | 358 | 8 | 268 | 1 |
| VG001A11 | 100 | 0.728 | 1.382 | 0.728 | 23 | 83 | 177 | 7 | 268 | 3 |
| VG001A12 | 96 | 0.846 | 1.370 | 0.846 | 142 | 81 | 355 | 7 | 265 | 5 |
| VG001A13 | 100 | 0.842 | 1.409 | 0.842 | 44 | 84 | 178 | 4 | 268 | 4 |
| VG001A14 | 98 | 0.744 | 1.404 | 0.744 | 28 | 77 | 179 | 11 | 270 | 6 |
| VG001A15 | 110 | 0.796 | 1.347 | 0.796 | 134 | 81 | 1 | 6 | 270 | 6 |
| VG001A30 | 117 | 0.940 | 1.317 | 0.940 | 179 | 34 | 360 | 56 | 269 | 0 |
| VG001A31 | 141 | 0.934 | 1.315 | 0.934 | 14 | 47 | 181 | 42 | 277 | 7 |
| VG001A32 | 89 | 0.942 | 1.372 | 0.942 | 354 | 60 | 175 | 30 | 85 | 1 |
| VG001A33 | 78 | 0.668 | 1.341 | 0.668 | 344 | 85 | 176 | 5 | 86 | 1 |
| VG001A34 | 106 | 0.889 | 1.352 | 0.889 | 6 | 54 | 177 | 36 | 270 | 5 |
| VG001A35 | 81 | 0.865 | 1.403 | 0.865 | 210 | 82 | 1 | 7 | 92 | 4 |
| VG001A36 | 90 | 0.734 | 1.317 | 0.734 | 358 | 54 | 181 | 36 | 90 | 2 |
| VG001A37 | 82 | 0.883 | 1.367 | 0.883 | 356 | 30 | 177 | 61 | 87 | 1 |
| VG001A38 | 117 | 0.946 | 1.291 | 0.946 | 359 | 54 | 171 | 36 | 264 | 4 |
| VG001A39 | 111 | 0.845 | 1.322 | 0.845 | 5 | 72 | 173 | 18 | 264 | 3 |
| VG001A40 | 113 | 0.858 | 1.293 | 0.858 | 190 | 89 | 358 | 1 | 88 | 0 |
| VG001A41 | 130 | 0.720 | 1.300 | 0.720 | 23 | 86 | 171 | 3 | 262 | 2 |
| VG001A42 | 144 | 0.828 | 1.253 | 0.828 | 359 | 51 | 177 | 40 | 268 | 1 |
| VG001A43 | 114 | 0.855 | 1.301 | 0.855 | 6 | 54 | 171 | 35 | 266 | 7 |
| *min* | *32* | *0.593* | *1.253* | *0.593* | | | | | | |
| *max* | *144* | *0.946* | *1.853* | *0.946* | | | | | | |
| *average* | *98* | *0.830* | *1.377* | *0.830* | | | | | | |
| *stdev* | *23* | *0.086* | *0.104* | *0.086* | | | | | | |
| | | | | | | | | | | |
| *Pseudotachylytes* | | | | | | | | | | |
| VG001A16 | 199 | 0.232 | 1.090 | 0.232 | 302 | 59 | 190 | 13 | 93 | 28 |
| VG001A17 | 211 | 0.245 | 1.091 | 0.245 | 299 | 60 | 189 | 12 | 92 | 28 |
| VG001A18 | 233 | 0.205 | 1.088 | 0.205 | 308 | 57 | 191 | 16 | 92 | 28 |
| VG001A19 | 215 | 0.146 | 1.079 | 0.146 | 292 | 59 | 186 | 9 | 91 | 29 |
| VG001A20 | 235 | 0.467 | 1.102 | 0.467 | 303 | 58 | 188 | 15 | 90 | 28 |
| VG001A21 | 197 | 0.257 | 1.078 | 0.257 | 298 | 60 | 191 | 9 | 96 | 28 |
| VG001A22 | 203 | 0.277 | 1.077 | 0.277 | 307 | 57 | 193 | 15 | 95 | 29 |
| VG001A23 | 205 | 0.483 | 1.080 | 0.483 | 290 | 61 | 193 | 4 | 101 | 29 |
| VG001A24 | 193 | 0.439 | 1.076 | 0.439 | 285 | 59 | 193 | 1 | 102 | 32 |
| VG001A25 | 183 | 0.558 | 1.078 | 0.558 | 316 | 55 | 200 | 18 | 99 | 29 |
| VG001A26 | 196 | 0.943 | 1.061 | 0.943 | 197 | 5 | 294 | 55 | 103 | 34 |
| VG001A27 | 210 | 0.584 | 1.072 | 0.584 | 288 | 58 | 193 | 3 | 102 | 32 |
| VG001A28 | 173 | 0.329 | 1.099 | 0.329 | 286 | 65 | 188 | 4 | 96 | 25 |
| VG001A29 | 193 | 0.283 | 1.101 | 0.283 | 293 | 64 | 186 | 8 | 92 | 25 |
| *min* | *173* | *0.146* | *1.061* | *0.146* | | | | | | |
| *max* | *235* | *0.943* | *1.102* | *0.943* | | | | | | |
| *average* | *203* | *0.389* | *1.084* | *0.389* | | | | | | |
| *stdev* | *17* | *0.210* | *0.012* | *0.210* | | | | | | |

**Magnetic hysteresis properties of pseudotachylytes**

| **sample** | **color** | **mass** | **$M_s$** | **$M_r$** | **$H_c$** | **$H_{cr}$** | **$H_{cr}/H_c$** | **$M_r/M_s$** | **Khf** | **Klf** | **%para** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| units | | | $mAm^2/kg$ | $mAm^2/kg$ | kA/m | kA/m | | | $10^{-6}$ [SI] | $10^{-6}$ [SI] | |
| VG001-16 | black | 1.72 | 0.63 | 0.17 | 40.6 | 102.3 | 2.52 | 0.15 | 183 | 199 | 91.7 |
| VG001-17 | black | 1.55 | 0.80 | 0.19 | 38.5 | 97.6 | 2.54 | 0.15 | 184 | 211 | 87.3 |
| VG001-18 | black | 1.40 | 0.84 | 0.21 | 42.7 | 97.8 | 2.29 | 0.17 | 185 | 233 | 79.3 |
| VG001-19 | black | 1.64 | 0.93 | 0.25 | 37.6 | 108.7 | 2.89 | 0.17 | 186 | 215 | 86.4 |
| VG001-20 | black | 1.30 | 1.10 | 0.26 | 36.7 | 114.8 | 3.13 | 0.18 | 208 | 235 | 88.5 |
| VG001-21 | black | 1.84 | 0.94 | 0.25 | 40.8 | 124.7 | 3.06 | 0.14 | 169 | 197 | 86.0 |
| VG001-22 | black | 1.67 | 1.22 | 0.40 | 47.5 | 118.5 | 2.49 | 0.19 | 173 | 203 | 85.3 |
| VG001-23 | black | 1.52 | 1.32 | 0.43 | 50.3 | 123.0 | 2.45 | 0.21 | 176 | 205 | 85.6 |
| VG001-24 | black | 2.14 | 1.39 | 0.41 | 47.6 | 117.9 | 2.48 | 0.14 | 162 | 193 | 83.7 |
| VG001-25 | black | 1.69 | 1.13 | 0.27 | 37.4 | 118.8 | 3.18 | 0.14 | 154 | 183 | 84.3 |
| VG001-26 | black | 1.59 | 1.10 | 0.24 | 22.6 | 119.7 | 5.30 | 0.14 | 157 | 196 | 80.2 |
| VG001-27 | black | 1.65 | 1.23 | 0.26 | 25.5 | 121.0 | 4.74 | 0.13 | 174 | 210 | 82.8 |
| VG001-28 | black | 1.59 | 0.85 | 0.18 | 30.9 | 122.8 | 3.97 | 0.13 | 153 | 173 | 88.4 |
| VG001-29 | black | 1.32 | 0.96 | 0.17 | 24.4 | 107.4 | 4.41 | 0.14 | 169 | 193 | 87.3 |
| | *min* | *1.30* | *0.63* | *0.17* | *22.6* | *97.6* | *2.29* | *0.13* | *153* | *173* | *79.3* |
| | *max* | *2.14* | *1.39* | *0.43* | *50.3* | *124.7* | *5.30* | *0.21* | *208* | *235* | *91.7* |
| | *average* | *1.62* | *1.03* | *0.26* | *37.4* | *113.9* | *3.25* | *0.16* | *174* | *203* | *85.5* |
| | *stdev* | *0.21* | *0.22* | *0.09* | *8.8* | *9.4* | *0.97* | *0.03* | *15* | *17* | *3.3* |