شماره مدرک : LA-F-023-02

تاریخ : دی ۹۴ صفحه ۲ از ۴

# گزارش ماهانه کنترل کیفیت سیمان ممتازان کرمان

## نوع سیمان : پرتلند تیپ ۵

### Chemical Compositions & Phases %

| DAY | IR | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | $SO_3$ | $K_2O$ | $Na_2O$ | Cl | LOSS | C3S | C2S | C3A | C4AF | C4AF +2C3A | F.CaO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 S | 0.34 | 20.65 | 4.75 | 4.56 | 63.44 | 1.54 | 1.90 | 0.65 | 0.71 | 0.030 | 0.70 | 57.5 | 15.8 | 4.9 | 13.9 | 23.6 | 1.90 |
| 5 M | 0.39 | 21.01 | 4.78 | 4.55 | 64.28 | 1.56 | 2.11 | 0.61 | 0.73 | 0.023 | 0.81 | 57.4 | 17.0 | 5.0 | 13.8 | 23.8 | 1.50 |
| 6 M | 0.47 | 20.73 | 4.80 | 4.57 | 63.78 | 1.52 | 2.11 | 0.62 | 0.74 | 0.024 | 0.80 | 57.3 | 16.2 | 5.0 | 13.9 | 23.9 | 1.85 |
| 7 M | 0.39 | 20.67 | 4.75 | 4.57 | 63.76 | 1.54 | 2.18 | 0.63 | 0.75 | 0.024 | 0.94 | 57.8 | 15.6 | 4.9 | 13.9 | 23.6 | 1.75 |
| 23 S | 0.35 | 20.79 | 4.77 | 4.62 | 64.10 | 1.59 | 2.12 | 0.64 | 0.76 | 0.024 | 0.65 | 58.2 | 15.7 | 4.8 | 14.1 | 23.7 | 1.80 |
| 27 S | 0.32 | 20.55 | 4.74 | 4.53 | 63.49 | 1.58 | 2.15 | 0.60 | 0.69 | 0.025 | 0.77 | 57.8 | 15.3 | 4.9 | 13.8 | 23.6 | 1.82 |
| 27 M | 0.42 | 20.51 | 4.71 | 4.52 | 63.47 | 1.58 | 2.22 | 0.66 | 0.68 | 0.027 | 0.69 | 58.1 | 15.0 | 4.8 | 13.8 | 23.4 | 1.95 |
| 28 M | 0.43 | 20.53 | 4.68 | 4.52 | 63.44 | 1.57 | 2.17 | 0.68 | 0.67 | 0.027 | 0.69 | 58.1 | 15.0 | 4.8 | 13.8 | 23.3 | 1.90 |
| 29 M | 0.38 | 20.54 | 4.70 | 4.52 | 63.49 | 1.56 | 2.18 | 0.69 | 0.66 | 0.026 | 0.68 | 58.1 | 15.1 | 4.8 | 13.8 | 23.4 | 1.90 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Avg | 0.39 | 20.66 | 4.74 | 4.55 | 63.69 | 1.56 | 2.13 | 0.64 | 0.71 | 0.026 | 0.75 | 57.8 | 15.6 | 4.9 | 13.8 | 23.6 | 1.82 |
| Min | 0.32 | 20.51 | 4.68 | 4.52 | 63.44 | 1.52 | 1.90 | 0.60 | 0.66 | 0.023 | 0.65 | 57.3 | 15.0 | 4.8 | 13.8 | 23.3 | 1.50 |
| Max | 0.47 | 21.01 | 4.80 | 4.62 | 64.28 | 1.59 | 2.22 | 0.69 | 0.76 | 0.030 | 0.94 | 58.2 | 17.0 | 5.0 | 14.1 | 23.9 | 1.95 |
| S.D | 0.05 | 0.16 | 0.04 | 0.03 | 0.31 | 0.02 | 0.09 | 0.03 | 0.04 | 0.002 | 0.09 | 0.36 | 0.65 | 0.08 | 0.10 | 0.20 | 0.13 |

S : Silo M : Mill

### Physical Test

| DAY | FINENESS | | SETTING TIME | | SOUNDNESS | | COMPRESSIVE STRENGTH (kg/cm²) | | | | | BEND STRENGTH (kg/cm²) | | | Lab.Code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sieve 90 mic | Blaine (cm²/gr) | INIT (min) | FINAL (min) | LEACHTELIER (mm) | Auto Clave (%) | 1 DAY | 2 DAYS | 3 DAYS | 7 DAYS | 28 DAYS | 2 DAYS | 7 DAYS | 28 DAYS | |
| 4 S | 0.2 | 3170 | 120 | 165 | 0.8 | 0.09 | - | 158 | 239 | 411 | 523 | 30 | 66 | 73 | 462 |
| 5 M | 0.3 | 3050 | 125 | 175 | 1.1 | 0.11 | - | 151 | 201 | 326 | 480 | 31 | 56 | 71 | 464 |
| 6 M | 0.3 | 3170 | 125 | 175 | 1.3 | 0.17 | - | 158 | 212 | 343 | 491 | 32 | 58 | 74 | 466 |
| 7 M | 0.3 | 3140 | 130 | 180 | 1.2 | 0.17 | - | 162 | 208 | 321 | 454 | 36 | 57 | 76 | 468 |
| 23 S | 0.4 | 3170 | 125 | 175 | 1.2 | 0.14 | - | 159 | 214 | 356 | 491 | 30 | 62 | 75 | 495 |
| 27 S | 0.2 | 3140 | 125 | 175 | 1.3 | 0.14 | - | 175 | 217 | 328 | 481 | 34 | 58 | 75 | 502 |
| 27 M | 0.3 | 3110 | 130 | 180 | 1.3 | 0.17 | - | 159 | 206 | 312 | 461 | 33 | 55 | 74 | 503 |
| 28 M | 0.3 | 3080 | 125 | 175 | 1.2 | 0.17 | - | 165 | 207 | 302 | 447 | 38 | 58 | 73 | 505 |
| 29 M | 0.3 | 3110 | 125 | 175 | 1.3 | 0.17 | - | 158 | 201 | 315 | 451 | 32 | 59 | 74 | 507 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Avg | 0.3 | 3127 | 126 | 175 | 1.2 | 0.15 | - | 161 | 212 | 335 | 475 | 33 | 59 | 74 | - |
| Min | 0.2 | 3050 | 120 | 165 | 0.8 | 0.09 | - | 151 | 201 | 302 | 447 | 30 | 55 | 71 | - |
| Max | 0.4 | 3170 | 130 | 180 | 1.3 | 0.17 | - | 175 | 239 | 411 | 523 | 38 | 66 | 76 | - |
| S.D | 0.06 | 42.72 | 3.00 | 4.33 | 0.16 | 0.03 | - | 6.58 | 11.60 | 32.83 | 24.68 | 2.71 | 3.35 | 1.45 | - |

کارشناس آزمایشگاه : شریف مجیبان

رئیس آزمایشگاهها : ارطرل ایله

مدیر کنترل کیفی و آزمایشگاهها : سعید غریب حسنی

مدیر کارخانه : حمیدرضا ایرانمنش

۱۳۹۴/۱۲/۲

شماره مدرک : LA-F-023-02

تاریخ : دی ۹۴ صفحه ۱ از ۴

# گزارش ماهانه کنترل کیفیت سیمان ممتازان کرمان

## نوع سیمان : پرتلند تیپ ۲

### Chemical Compositions & Phases %

### Physical Test

| DAY | IR | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | $SO_3$ | $K_2O$ | $Na_2O$ | Cl | LOSS | C3S | C2S | C3A | C4AF | C4AF +2C3A | F.CaO | FINENESS | | SETTING TIME | | SOUNDNESS | | COMPRESSIVE STRENGTH (kg/cm²) | | | | | BEND STRENGTH (kg/cm²) | | | Lab.Code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | Sieve 90 mic | Blaine (cm²/gr) | INIT (min) | FINAL (min) | LEACHTELIER (mm) | Auto Clave (%) | 1 DAY | 2 DAYS | 3 DAYS | 7 DAYS | 28 DAYS | 2 DAYS | 7 DAYS | 28 DAYS | |
| 1 S | 0.50 | 20.43 | 4.66 | 3.74 | 62.97 | 1.48 | 2.73 | 0.65 | 0.71 | 0.025 | 2.10 | 56.6 | 15.8 | 6.0 | 11.4 | 23.4 | 1.75 | 0.6 | 3170 | 120 | 165 | 1.1 | 0.17 | - | 224 | 289 | 391 | 498 | 44 | 69 | 82 | 456 |
| 1 M | 0.47 | 20.37 | 4.63 | 3.74 | 62.85 | 1.46 | 2.57 | 0.65 | 0.71 | 0.024 | 2.31 | 57.3 | 15.2 | 5.9 | 11.4 | 23.2 | 1.80 | 0.5 | 3140 | 135 | 190 | 1.2 | 0.17 | - | 195 | 252 | 364 | 476 | 39 | 65 | 79 | 457 |
| 2 S | 0.46 | 20.42 | 4.64 | 3.75 | 63.11 | 1.48 | 2.69 | 0.66 | 0.69 | 0.025 | 2.10 | 57.5 | 15.1 | 6.0 | 11.4 | 23.3 | 1.85 | 0.4 | 3230 | 125 | 175 | 1.3 | 0.17 | - | 217 | 282 | 379 | 486 | 41 | 64 | 75 | 458 |
| 2 M | 0.39 | 20.29 | 4.89 | 3.77 | 62.84 | 1.49 | 2.64 | 0.64 | 0.73 | 0.025 | 2.21 | 55.8 | 16.0 | 6.6 | 11.5 | 24.6 | 1.90 | 0.6 | 3080 | 130 | 180 | 1.4 | 0.20 | - | 203 | 251 | 360 | 475 | 38 | 60 | 79 | 459 |
| 3 S | 0.38 | 20.60 | 4.59 | 3.75 | 63.20 | 1.49 | 2.85 | 0.70 | 0.72 | 0.025 | 2.21 | 56.4 | 16.5 | 5.8 | 11.4 | 23.0 | 1.95 | 0.4 | 3260 | 125 | 175 | 0.9 | 0.10 | - | 219 | 284 | 389 | 490 | 39 | 67 | 74 | 460 |
| 3 M | 0.31 | 20.35 | 4.62 | 3.74 | 62.98 | 1.50 | 2.66 | 0.69 | 0.73 | 0.025 | 2.31 | 57.8 | 14.8 | 5.9 | 11.4 | 23.2 | 1.95 | 0.5 | 3080 | 130 | 180 | 1.3 | 0.17 | - | 199 | 263 | 363 | 474 | 38 | 56 | 83 | 461 |
| 4 M | 0.42 | 20.63 | 4.70 | 3.71 | 62.96 | 1.47 | 2.62 | 0.68 | 0.74 | 0.025 | 2.17 | 55.2 | 17.5 | 6.2 | 11.3 | 23.6 | 1.90 | 0.6 | 3140 | 125 | 175 | 1.2 | 0.14 | - | 188 | 251 | 372 | 491 | 37 | 60 | 78 | 463 |
| 7 S | 0.42 | 20.35 | 4.65 | 3.74 | 63.13 | 1.46 | 2.73 | 0.67 | 0.75 | 0.025 | 2.18 | 58.0 | 14.6 | 6.0 | 11.4 | 23.4 | 1.90 | 0.5 | 3320 | 125 | 175 | 1.2 | 0.17 | - | 224 | 290 | 389 | 497 | 39 | 70 | 75 | 467 |
| 8 M | 0.55 | 20.59 | 4.71 | 3.83 | 63.01 | 1.48 | 2.55 | 0.66 | 0.76 | 0.025 | 2.31 | 55.6 | 17.1 | 6.0 | 11.7 | 23.7 | 1.65 | 0.4 | 3080 | 135 | 185 | 1.0 | 0.14 | - | 193 | 252 | 348 | 457 | 38 | 57 | 79 | 470 |
| 9 M | 0.38 | 20.54 | 4.67 | 3.75 | 62.90 | 1.49 | 2.67 | 0.64 | 0.66 | 0.025 | 2.29 | 55.6 | 16.9 | 6.0 | 11.4 | 23.5 | 1.75 | 0.6 | 3110 | 125 | 175 | 1.2 | 0.17 | - | 189 | 236 | 334 | 451 | 35 | 56 | 80 | 471 |
| 10 S | 0.45 | 20.47 | 4.67 | 3.80 | 63.19 | 1.47 | 2.68 | 0.63 | 0.67 | 0.026 | 2.17 | 57.2 | 15.5 | 5.9 | 11.6 | 23.5 | 1.95 | 0.6 | 3200 | 125 | 175 | 1.1 | 0.17 | - | 206 | 265 | 374 | 468 | 42 | 64 | 79 | 472 |
| 10 M | 0.36 | 20.45 | 4.66 | 3.74 | 62.89 | 1.49 | 2.79 | 0.62 | 0.68 | 0.025 | 2.24 | 56.0 | 16.4 | 6.0 | 11.4 | 23.4 | 1.75 | 0.8 | 3080 | 130 | 180 | 1.1 | 0.14 | - | 182 | 231 | 328 | 447 | 34 | 57 | 71 | 473 |
| 13 S | 0.36 | 20.20 | 4.55 | 3.76 | 62.70 | 1.44 | 2.74 | 0.61 | 0.69 | 0.025 | 2.27 | 58.0 | 14.2 | 5.7 | 11.4 | 22.8 | 1.72 | 0.7 | 3200 | 125 | 175 | 1.1 | 0.14 | - | 220 | 276 | 372 | 475 | 39 | 65 | 78 | 477 |
| 13 M | 0.41 | 20.54 | 4.70 | 3.79 | 62.75 | 1.47 | 2.72 | 0.60 | 0.70 | 0.025 | 1.95 | 54.6 | 17.7 | 6.0 | 11.5 | 23.6 | 1.95 | 0.5 | 3140 | 125 | 175 | 1.2 | 0.17 | - | 206 | 258 | 348 | 469 | 41 | 56 | 75 | 478 |
| 14 M | 0.50 | 20.60 | 4.72 | 3.83 | 63.04 | 1.49 | 2.68 | 0.70 | 0.72 | 0.026 | 2.36 | 55.2 | 17.4 | 6.0 | 11.7 | 23.7 | 1.75 | 0.5 | 3170 | 130 | 185 | 1.1 | 0.17 | - | 186 | 239 | 323 | 448 | 39 | 57 | 76 | 480 |
| 15 S | 0.33 | 20.33 | 4.63 | 3.75 | 62.55 | 1.45 | 2.72 | 0.69 | 0.73 | 0.025 | 2.11 | 55.9 | 16.1 | 5.9 | 11.4 | 23.3 | 1.80 | 0.7 | 3140 | 130 | 180 | 1.3 | 0.17 | - | 216 | 278 | 383 | 478 | 41 | 64 | 75 | 481 |
| 15 M | 0.37 | 20.44 | 4.61 | 3.77 | 62.96 | 1.50 | 2.62 | 0.68 | 0.74 | 0.026 | 2.54 | 57.1 | 15.5 | 5.8 | 11.5 | 23.1 | 1.90 | 0.6 | 3080 | 135 | 190 | 1.3 | 0.17 | - | 192 | 244 | 350 | 455 | 38 | 60 | 79 | 482 |
| 16 M | 0.31 | 20.44 | 4.64 | 3.81 | 62.56 | 1.48 | 2.51 | 0.67 | 0.75 | 0.025 | 1.84 | 55.6 | 16.7 | 5.8 | 11.6 | 23.3 | 1.90 | 0.5 | 3080 | 130 | 185 | 1.3 | 0.14 | - | 194 | 232 | 330 | 452 | 36 | 51 | 74 | 484 |
| 17 S | 0.39 | 20.37 | 4.62 | 3.78 | 62.83 | 1.49 | 2.72 | 0.66 | 0.76 | 0.026 | 2.21 | 56.8 | 15.6 | 5.8 | 11.5 | 23.2 | 1.90 | 0.4 | 3200 | 125 | 175 | 1.2 | 0.17 | - | 213 | 271 | 357 | 461 | 40 | 52 | 77 | 485 |
| 17 M | 0.38 | 20.55 | 4.71 | 3.80 | 62.89 | 1.50 | 2.60 | 0.70 | 0.66 | 0.024 | 2.14 | 55.4 | 17.2 | 6.1 | 11.6 | 23.7 | 1.80 | 0.6 | 3080 | 135 | 185 | 1.1 | 0.14 | - | 197 | 245 | 341 | 451 | 37 | 60 | 76 | 486 |
| 18 S | 0.35 | 20.30 | 4.62 | 3.74 | 62.61 | 1.48 | 2.64 | 0.69 | 0.67 | 0.025 | 2.14 | 56.7 | 15.4 | 5.9 | 11.4 | 23.2 | 1.90 | 0.6 | 3170 | 125 | 175 | 1.2 | 0.17 | - | 211 | 274 | 373 | 463 | 40 | 51 | 76 | 487 |
| 18 M | 0.41 | 20.50 | 4.70 | 3.80 | 62.59 | 1.49 | 2.50 | 0.68 | 0.68 | 0.025 | 2.01 | 54.9 | 17.4 | 6.0 | 11.6 | 23.6 | 1.60 | 0.5 | 3140 | 130 | 185 | 0.9 | 0.11 | - | 186 | 226 | 341 | 458 | 39 | 60 | 75 | 488 |
| 20 S | 0.47 | 20.23 | 4.57 | 3.78 | 62.68 | 1.47 | 2.66 | 0.67 | 0.69 | 0.025 | 2.12 | 57.7 | 14.4 | 5.7 | 11.5 | 22.9 | 1.75 | 0.7 | 3230 | 130 | 180 | 1.1 | 0.14 | - | 209 | 273 | 365 | 458 | 43 | 60 | 82 | 489 |
| 20 M | 0.40 | 20.48 | 4.63 | 3.76 | 62.51 | 1.46 | 2.57 | 0.66 | 0.70 | 0.025 | 2.08 | 55.0 | 17.2 | 5.9 | 11.4 | 23.3 | 1.95 | 0.6 | 3110 | 125 | 175 | 1.2 | 0.17 | - | 197 | 246 | 335 | 451 | 36 | 58 | 77 | 490 |
| 21 M | 0.42 | 20.67 | 4.78 | 3.82 | 62.55 | 1.50 | 2.57 | 0.65 | 0.71 | 0.025 | 1.89 | 52.6 | 19.5 | 6.2 | 11.6 | 24.0 | 1.50 | 0.4 | 3080 | 125 | 170 | 0.9 | 0.11 | - | 190 | 241 | 341 | 453 | 38 | 59 | 79 | 492 |
| 22 M | 0.47 | 20.54 | 4.74 | 3.78 | 62.66 | 1.51 | 2.66 | 0.64 | 0.72 | 0.025 | 1.77 | 54.1 | 18.0 | 6.2 | 11.5 | 23.8 | 1.62 | 0.6 | 3170 | 125 | 175 | 1.0 | 0.14 | - | 194 | 248 | 352 | 463 | 35 | 65 | 74 | 494 |
| 23 M | 0.47 | 20.51 | 4.70 | 3.76 | 62.69 | 1.50 | 2.72 | 0.63 | 0.73 | 0.025 | 1.83 | 54.6 | 17.6 | 6.1 | 11.4 | 23.6 | 1.70 | 0.6 | 3080 | 130 | 180 | 1.2 | 0.14 | - | 188 | 240 | 338 | 462 | 36 | 65 | 77 | 496 |
| 24 M | 0.52 | 20.40 | 4.71 | 3.79 | 62.43 | 1.49 | 2.67 | 0.62 | 0.74 | 0.025 | 2.12 | 54.4 | 17.4 | 6.1 | 11.5 | 23.7 | 1.72 | 0.7 | 3050 | 125 | 175 | 1.2 | 0.14 | - | 189 | 244 | 334 | 446 | 38 | 58 | 72 | 498 |
| 25 S | 0.48 | 20.54 | 4.76 | 3.76 | 62.66 | 1.50 | 2.65 | 0.61 | 0.75 | 0.026 | 1.93 | 54.1 | 18.1 | 6.3 | 11.4 | 23.9 | 1.85 | 0.4 | 3170 | 130 | 180 | 1.3 | 0.17 | - | 193 | 253 | 359 | 463 | 40 | 63 | 76 | 499 |
| 30 M | 0.35 | 20.47 | 4.71 | 3.72 | 62.44 | 1.52 | 2.59 | 0.60 | 0.76 | 0.025 | 1.95 | 54.3 | 17.7 | 6.2 | 11.3 | 23.7 | 1.55 | 0.6 | 3080 | 135 | 190 | 1.1 | 0.11 | - | 192 | 243 | 341 | 454 | 35 | 53 | 72 | 509 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Avg | 0.42 | 20.45 | 4.67 | 3.77 | 62.80 | 1.48 | 2.66 | 0.66 | 0.72 | 0.025 | 2.13 | 55.9 | 16.5 | 6.0 | 11.5 | 23.5 | 1.80 | 0.6 | 3142 | 128 | 179 | 1.2 | 0.15 | - | 200 | 256 | 356 | 466 | 39 | 60 | 77 | - |
| Min | 0.31 | 20.20 | 4.55 | 3.71 | 62.43 | 1.44 | 2.50 | 0.60 | 0.66 | 0.024 | 1.77 | 52.6 | 14.2 | 5.7 | 11.3 | 22.8 | 1.50 | 0.4 | 3050 | 120 | 165 | 0.9 | 0.10 | - | 182 | 226 | 323 | 446 | 34 | 51 | 71 | - |
| Max | 0.55 | 20.67 | 4.89 | 3.83 | 63.20 | 1.52 | 2.85 | 0.70 | 0.76 | 0.026 | 2.54 | 58.0 | 19.5 | 6.6 | 11.7 | 24.6 | 1.95 | 0.8 | 3320 | 135 | 190 | 1.4 | 0.20 | - | 224 | 290 | 391 | 498 | 44 | 70 | 83 | - |
| S.D | 0.06 | 0.12 | 0.07 | 0.03 | 0.22 | 0.02 | 0.08 | 0.03 | 0.03 | 0.000 | 0.17 | 1.36 | 1.28 | 0.17 | 0.10 | 0.36 | 0.13 | 0.11 | 65.41 | 4.04 | 5.97 | 0.13 | 0.02 | - | 12.59 | 18.26 | 19.80 | 15.24 | 2.43 | 5.07 | 2.98 | - |

S : Silo M : Mill

مدیر کارخانه :

مدیرکنترل کیفی و آزمایشگاهها :

رئیس آزمایشگاهها :

کارشناس آزمایشگاه : اشرف مجیبان

شماره مدرک : LA-F-023-02

تاریخ : دی ۹۴ صفحه ۴ از ۴

# گزارش ماهانه کنترل کیفیت سیمان ممتازان کرمان

## نوع سیمان : پرتلند پوزولانی ویژه

### Chemical Compositions & Phases %

### Physical Test

| DAY | IR | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | $SO_3$ | $K_2O$ | $Na_2O$ | Cl | LOSS | C3S | C2S | C3A | C4AF | C4AF +2C3A | F.CaO | FINENESS | | SETTING TIME | | SOUNDNESS | | COMPRESSIVE STRENGTH ($kg/cm^2$) | | | | | BEND STRENGTH ($kg/cm^2$) | | | Lab.Code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | Sieve 90 mic | Blaine ($cm^2/gr$) | INIT (min) | FINAL (min) | LEACHTELIER (mm) | Auto Clave (%) | 1 DAY | 2 DAYS | 3 DAYS | 7 DAYS | 28 DAYS | 2 DAYS | 7 DAYS | 28 DAYS | |
| 6 S | - | 27.62 | 8.50 | 3.85 | 52.01 | 1.37 | 2.12 | 1.05 | 0.81 | 0.026 | 2.20 | - | - | - | - | - | 1.70 | 0.5 | 3840 | 130 | 185 | 1.2 | 0.14 | - | 149 | 193 | 311 | 430 | 32 | 56 | 72 | 465 |
| 11 S | - | 27.88 | 8.52 | 3.96 | 51.57 | 1.41 | 2.17 | 1.04 | 0.82 | 0.027 | 2.44 | - | - | - | - | - | 1.65 | 0.5 | 3820 | 125 | 175 | 0.9 | 0.11 | - | 174 | 217 | 319 | 424 | 38 | 53 | 75 | 474 |
| 11 M | - | 27.67 | 8.47 | 3.90 | 51.61 | 1.43 | 2.40 | 1.03 | 0.83 | 0.026 | 2.52 | - | - | - | - | - | 1.55 | 0.8 | 3670 | 135 | 190 | 0.8 | 0.11 | - | 156 | 201 | 283 | 389 | 35 | 51 | 74 | 475 |
| 12 M | - | 28.17 | 8.73 | 3.88 | 51.14 | 1.41 | 2.28 | 1.02 | 0.84 | 0.027 | 2.45 | - | - | - | - | - | 1.70 | 0.7 | 3690 | 130 | 185 | 0.9 | 0.14 | - | 157 | 191 | 275 | 381 | 34 | 52 | 68 | 476 |
| 16 S | - | 25.74 | 7.51 | 3.86 | 55.23 | 1.41 | 2.34 | 1.06 | 0.80 | 0.027 | 1.72 | - | - | - | - | - | 1.75 | 0.6 | 3590 | 135 | 190 | 1.2 | 0.14 | - | 173 | 219 | 294 | 404 | 38 | 56 | 79 | 483 |
| 21 S | - | 27.71 | 8.57 | 3.88 | 51.79 | 1.40 | 2.31 | 1.07 | 0.79 | 0.027 | 2.33 | - | - | - | - | - | 1.60 | 0.4 | 3790 | 135 | 185 | 0.9 | 0.11 | - | 158 | 203 | 282 | 387 | 32 | 56 | 66 | 491 |
| 24 S | - | 27.74 | 8.64 | 3.84 | 51.63 | 1.43 | 2.32 | 1.08 | 0.78 | 0.027 | 2.33 | - | - | - | - | - | 1.60 | 0.6 | 3790 | 130 | 185 | 1.1 | 0.14 | - | 165 | 207 | 295 | 394 | 37 | 54 | 63 | 497 |
| 25 M | - | 27.58 | 8.53 | 3.78 | 51.56 | 1.41 | 2.24 | 1.09 | 0.77 | 0.026 | 2.72 | - | - | - | - | - | 1.50 | 0.6 | 3820 | 130 | 185 | 1.2 | 0.11 | - | 163 | 199 | 282 | 383 | 36 | 52 | 69 | 500 |
| 26 M | - | 27.08 | 8.26 | 3.84 | 52.91 | 1.46 | 2.22 | 1.10 | 0.76 | 0.027 | 2.26 | - | - | - | - | - | 1.52 | 0.4 | 3770 | 135 | 190 | 1.1 | 0.14 | - | 166 | 205 | 289 | 408 | 37 | 52 | 63 | 501 |
| 28 S | - | 25.44 | 7.46 | 3.80 | 55.45 | 1.45 | 2.31 | 1.06 | 0.80 | 0.026 | 1.91 | - | - | - | - | - | 1.60 | 0.4 | 3720 | 130 | 180 | 1.1 | 0.11 | - | 179 | 231 | 316 | 419 | 36 | 57 | 78 | 504 |
| 30 S | - | 24.69 | 7.05 | 3.81 | 57.03 | 1.46 | 2.36 | 1.06 | 0.80 | 0.026 | 1.56 | - | - | - | - | - | 1.60 | 0.5 | 3590 | 125 | 180 | 1.0 | 0.14 | - | 185 | 231 | 328 | 426 | 33 | 59 | 75 | 508 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Avg | - | 27.03 | 8.20 | 3.85 | 52.90 | 1.42 | 2.28 | 1.06 | 0.80 | 0.027 | 2.22 | - | - | - | - | - | 1.62 | 0.5 | 3735 | 131 | 185 | 1.0 | 0.13 | - | 166 | 209 | 298 | 404 | 35 | 54 | 71 | - |
| Min | - | 24.69 | 7.05 | 3.78 | 51.14 | 1.37 | 2.12 | 1.02 | 0.76 | 0.026 | 1.56 | - | - | - | - | - | 1.50 | 0.4 | 3590 | 125 | 175 | 0.8 | 0.11 | - | 149 | 191 | 275 | 381 | 32 | 51 | 63 | - |
| Max | - | 28.17 | 8.73 | 3.96 | 57.03 | 1.46 | 2.40 | 1.10 | 0.84 | 0.027 | 2.72 | - | - | - | - | - | 1.75 | 0.8 | 3840 | 135 | 190 | 1.2 | 0.14 | - | 185 | 231 | 328 | 430 | 38 | 59 | 79 | - |
| S.D | - | 1.17 | 0.58 | 0.05 | 2.02 | 0.03 | 0.08 | 0.02 | 0.02 | 0.001 | 0.35 | - | - | - | - | - | 0.08 | 0.13 | 90.15 | 3.75 | 4.72 | 0.14 | 0.02 | - | 10.89 | 13.90 | 17.90 | 18.40 | 2.24 | 2.58 | 5.66 | - |

S . Silo M Mill

کارشناس آزمایشگاه: اشرف مجیبیان

رئیس آزمایشگاهها :

مدیرکنترل کیفی و آزمایشگاهها :

مدیر کارخانه: ۲-/۱۲/۱۳۹۴

شماره مدرک : LA-F-023-02

تاریخ : دی ۹۴ صفحه ۳ از ۴

# گزارش ماهانه کنترل کیفیت سیمان ممتازان کرمان

## نوع سیمان : پرتلند تیپ ۴۲۵-۱

### Chemical Compositions & Phases %

### Physical Test

| DAY | IR | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | $SO_3$ | $K_2O$ | $Na_2O$ | Cl | LOSS | C3S | C2S | C3A | C4AF | C4AF +2C3A | F.CaO | FINENESS | | SETTING TIME | | SOUNDNESS | | COMPRESSIVE STRENGTH ($kg/cm^2$) | | | | | BEND STRENGTH ($kg/cm^2$) | | | Lab.Code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | Sieve 90 mic | Blaine ($cm^2/gr$) | INIT (min) | FINAL (min) | LEACHTELIER (mm) | Auto Clave (%) | 1 DAY | 2 DAYS | 3 DAYS | 7 DAYS | 28 DAYS | 2 DAYS | 7 DAYS | 28 DAYS | |
| 8 S | 0.37 | 20.41 | 4.62 | 3.81 | 63.05 | 1.45 | 2.64 | 0.64 | 0.72 | 0.025 | 2.08 | 57.5 | 15.1 | 5.8 | 11.6 | 23.2 | 1.90 | 0.5 | 3170 | 125 | 175 | 1.1 | 0.14 | - | 211 | 270 | 379 | 494 | 40 | 65 | 84 | 469 |
| 14 S | 0.48 | 20.54 | 4.69 | 3.80 | 63.12 | 1.48 | 2.69 | 0.63 | 0.73 | 0.026 | 2.20 | 56.2 | 16.5 | 6.0 | 11.6 | 23.6 | 1.75 | 0.6 | 3140 | 125 | 180 | 1.2 | 0.14 | - | 212 | 269 | 361 | 464 | 38 | 66 | 85 | 479 |
| 22 S | 0.35 | 20.38 | 4.66 | 3.77 | 62.71 | 1.49 | 2.65 | 0.62 | 0.74 | 0.025 | 2.13 | 56.1 | 16.1 | 6.0 | 11.5 | 23.4 | 1.83 | 0.5 | 3200 | 120 | 170 | 1.2 | 0.17 | - | 214 | 266 | 361 | 472 | 43 | 63 | 87 | 493 |
| 29 S | 0.40 | 20.46 | 4.69 | 3.78 | 62.6 | 1.51 | 2.58 | 0.61 | 0.75 | 0.025 | 2.06 | 55.1 | 17.1 | 6.0 | 11.5 | 23.6 | 1.70 | 0.7 | 3170 | 120 | 165 | 1.1 | 0.14 | - | 219 | 300 | 395 | 494 | 43 | 68 | 83 | 506 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
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| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
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| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
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| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Avg | 0.40 | 20.45 | 4.67 | 3.79 | 62.87 | 1.48 | 2.64 | 0.63 | 0.74 | 0.025 | 2.12 | 56.3 | 16.2 | 5.9 | 11.5 | 23.4 | 1.80 | 0.6 | 3170 | 123 | 173 | 1.2 | 0.15 | - | 214 | 276 | 374 | 481 | 41 | 66 | 85 | - |
| Min | 0.35 | 20.38 | 4.62 | 3.77 | 62.60 | 1.45 | 2.58 | 0.61 | 0.72 | 0.025 | 2.06 | 55.1 | 15.1 | 5.8 | 11.5 | 23.2 | 1.70 | 0.5 | 3140 | 120 | 165 | 1.1 | 0.14 | - | 211 | 266 | 361 | 464 | 38 | 63 | 83 | - |
| Max | 0.48 | 20.54 | 4.69 | 3.81 | 63.12 | 1.51 | 2.69 | 0.64 | 0.75 | 0.026 | 2.20 | 57.5 | 17.1 | 6.0 | 11.6 | 23.6 | 1.90 | 0.7 | 3200 | 125 | 180 | 1.2 | 0.17 | - | 219 | 300 | 395 | 494 | 43 | 68 | 87 | - |
| S.D | 0.06 | 0.07 | 0.03 | 0.02 | 0.25 | 0.03 | 0.05 | 0.01 | 0.01 | 0.000 | 0.06 | 1.01 | 0.84 | 0.11 | 0.06 | 0.18 | 0.09 | 0.10 | 24.49 | 2.89 | 6.45 | 0.06 | 0.01 | - | 3.56 | 15.92 | 16.37 | 15.36 | 2.45 | 2.08 | 1.71 | - |

S : Silo M : Mill

کارشناس آزمایشگاه : اشرف مجیبیان

رئیس آزمایشگاهها : اظهر ایمانی

مدیرکنترل کیفی و آزمایشگاهها : سعید غریب حسینی

مدیر کارخانه : سید ضیاء ایمانش ۱۳۹۴/۱۲/۲