

**M/s. KAIZEN ENTERPRISES, WAGALE ESTATE, THANE 400604**

| Sr.No | Process         | Base metal         |                    |                                |                  | Filler metal    |      |            |              |         |        |        | Min.hard<br>face thk-<br>mm | Hardness<br>5kg/1kg<br>Vickers<br>/(BHN) | WPS No. & date                            | PQR No. & date                            | WPQ No.<br>&date        | Welders<br>name          | Qualified<br>by         | Remarks(I<br>ndiacte<br>details of<br>first layer |
|-------|-----------------|--------------------|--------------------|--------------------------------|------------------|-----------------|------|------------|--------------|---------|--------|--------|-----------------------------|------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------|--------------------------|-------------------------|---------------------------------------------------|
|       |                 | Generic            | P-No /<br>Group No | grade for<br>qualificati<br>on | Thick.<br>range  | Generic         | F no | AWS No     | Mfrs's grade |         |        |        |                             |                                          |                                           |                                           |                         |                          |                         |                                                   |
|       |                 |                    |                    |                                |                  |                 |      |            | Colmonoy     | Hoganas | Delero | Shield |                             |                                          |                                           |                                           |                         |                          |                         |                                                   |
| 1     | GTAW            | DUPLEX             | 10H                | UNS S<br>32550                 | Min.25 mm        | Nickel<br>Alloy | 72   | ER-Ni-Cr-C | Col.6        | *       | *      | NI-106 | 0.7mm                       | HV 666,<br>677                           | 09 dt.18/08/06                            | 09 dt.26/8/06                             | 09<br>dt.26/8/06        | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 2     | GTAW            | Carbon<br>steel    | 1 Gr. N. 2         | ASTMA<br>A216, WCB             | 12.5 to 25<br>mm | Nickel<br>Alloy | 72   | Er-Ni-Cr-A | Col.4        | *       | *      | NI-104 | 1.6mm                       | 41,41,41<br>HRC                          | SSV/WPS/NPCIL/<br>COL.4/01<br>dt.15/02/06 | SSV/PQR/NPCIL/<br>COL.4/01<br>dt.15/02/06 | *                       | Mr. K.<br>Bhasker<br>Rao | NICCO/<br>NPCIL<br>MUM. |                                                   |
| 3     | GTAW            | Carbon<br>steel    | 1 G. N. 2          | ASTMA<br>A216, WCB             | 12.5 to 25<br>mm | Nickel<br>Alloy | 72   | Er-Ni-Cr-B | Col.5        | *       | *      | NI-105 | 1.6mm                       | 45-50 HRc                                | SSV/WPS/NPCIL/<br>COL.5/01<br>dt.15/02/06 | SSV/PQR/NPCIL/<br>COL.5/01<br>dt.15/02/06 | *                       | Mr. K.<br>Bhasker<br>Rao | NICCO/<br>NPCIL<br>MUM. |                                                   |
| 4     | GTAW            | Stainless<br>steel | 8 G. N. 1          | ASME<br>A240, 316              | 25mm             | Cobalt<br>Alloy | 71   | ER-Co-Cr-B | *            | *       | St-12  | Co-112 | 0.7mm                       | HV 528,523                               | 07<br>dt. 16/10/06                        | 07<br>dt. 16/10/06                        | 07<br>dt.16/10/06       | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 5     | GTAW            | Stainless<br>steel | 8 G. N.1           | ASME<br>A240, 316              | 5mm to<br>25mm   | Cobalt<br>Alloy | 71   | ER-Co-Cr-A | *            | *       | St.6   | Co-106 | 0.6mm                       | 43,44,45<br>HRC                          | KE/WPS/07<br>dt.24/06/04                  | KE/PQR/07<br>dt.24/06/04                  | *                       | Mr. K.<br>Bhasker        | CEIL,<br>MUM.           |                                                   |
| 6     | GTAW            | Carbon<br>steel    | 1 G. N. 2          | ASTM<br>A216, WCB              | 25mm             | Cobalt<br>Alloy | 71   | ER-Co-Cr-A | *            | *       | St.6   | Co-106 | 2.5mm                       | 41,43,43<br>HRC                          | KE/WPS/01<br>dt 20/05/03                  | KE/PQR/01<br>dt 20/05/03                  | *                       | Mr. K.<br>Bhasker        | BHEL<br>MUM.            |                                                   |
| 7     | GTAW            | Stainless<br>steel | 1 G. N. 1          | ASME<br>A240, 316              | 25mm             | Cobalt<br>Alloy | 71   | ER-Co-Cr-C | *            | *       | St.1   | Co-101 | 0.7mm                       | HV 610,609                               | 06 dt<br>16/10/06                         | 06dt 16/10/06                             | 06dt<br>16/10/06        | Mr. K.<br>Bhasker        | SPIL,<br>MUM.           |                                                   |
| 8     | Spray &<br>Fuse | Stainless<br>steel | 8 G. N. 1          | ASME<br>A240, 316              | 7.0mm<br>Ground  | Nickel<br>Alloy | 72   | ER-Ni-Cr-C | Col-63       | 1060    | *      | *      | 0.6mm                       | 62.63,63<br>HRC                          | KE/WPS/06<br>dt.24/06/04                  | KE/PQR/06<br>dt.24/06/04                  | *                       | Mr.<br>Rajkumar<br>Gupta | CEIL,<br>MUM.           |                                                   |
| 9     | GTAW            | DUPLEX             | 10H                | UNS S<br>32550                 | Min.25 mm        | Cobalt<br>Alloy | 71   | ER-Co-Cr-A | *            | *       | St.6   | Co-106 | 0.8mm                       | HV 468,470                               | 23 dt.02/02/07                            | 23 dt.02/02/07                            | 23<br>dt.02/02/07       | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 10    | GTAW            | DUPLEX             | 10H                | UNS S<br>32550                 | Min.25 mm        | Cobalt<br>Alloy | 71   | ER-Co-Cr-B | *            | *       | St.12  | Co-112 | 0.8mm                       | HV 666,<br>677                           | 22 dt.02/02/07                            | 22 dt.02/02/07                            | 22<br>dt.02/02/07       | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 11    | GTAW            | DUPLEX             | 10H                | UNS S<br>32550                 | Min.25 mm        | Cobalt<br>Alloy | 71   | ER-Co-Cr-C | *            | *       | St.1   | Co-101 | 0.8mm                       | HV 666,<br>677                           | 21 dt.02/02/07                            | 21 dt.02/02/07                            | 21<br>dt.02/02/07       | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 12    | GTAW            | DUPLEX             | 10H                | ASTM A<br>GR.<br>Cu5MCu        | Min.25 mm        | Nickel<br>Alloy | 72   | Er-Ni-Cr-C | *            | *       | COL.6  | Ni-204 | 3.2mm                       | 52-53 HRc                                | KE/WPS/30<br>dt.06/06/16                  | KE/PQR/30<br>dt.06/06/16                  | 30                      | Mr. K.<br>Bhasker<br>Rao | KE THANE                |                                                   |
| 13    | GTAW            | DUPLEX             | 10H                | ASTM A<br>GR.<br>Cu5MCu        | Min.25 mm        | Nickel<br>Alloy | 72   | Er-Ni-Cr-B | *            | *       | COL.5  | Ni-203 | 3.2mm                       | 47-48 HRc                                | KE/WPS/31<br>dt.06/06/16                  | KE/PQR/31<br>dt.06/06/16                  | 31                      | Mr. K.<br>Bhasker<br>Rao | KE THANE                |                                                   |
| 14    | GTAW            | SUPER<br>DUPLEX    | 10H GR.<br>N.1     | SUPER<br>DUPLEX<br>5A          | MIN 24.2<br>MM   | BARE<br>RODS    | 71   | ER-Co-Cr-A | *            | *       | ST.6   |        | 1.0 MM                      | HV 417,<br>413 , 413                     | 40 dt.25/12/2021                          | 40 dt.25/12/2021                          | 40<br>dt.25/12/20<br>21 | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 15    | GTAW            | Carbon<br>steel    | 6 GR. N.-          | CA15 (SS<br>410)               | MIN 24.2<br>MM   | BARE<br>RODS    | 71   | ER-Co-Cr-A | *            | *       | ST.6   |        | 1.0 MM                      | HV 413 ,<br>413 , 417                    | 41 dt.25.01.2022                          | 41 dt.25.01.2022                          | 41<br>dt.25.01.20<br>22 | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 16    | GTAW            | Carbon<br>steel    | 6                  | SA487<br>TP CA6NM              | 30MM             | Cobalt<br>Alloy | 71   | ER-Co-Cr-B | *            | *       | St.12  |        | 1.0 MM                      | 46, 47,<br>48HRc                         | 42<br>dt. 10/08/09                        | 42<br>dt. 10/08/09                        | 42<br>dt. 10/08/09      | Mr. K.<br>Bhasker<br>Rao | KEPL                    |                                                   |
| 17    | GTAW            | SUPER<br>DUPLEX    | 10H GR.<br>N.1     | SUPER<br>DUPLEX<br>5A          | MIN.25 MM        | BARE<br>RODS    | 71   | ER-Co-Cr-B | *            | *       | ST.12  |        | 1.0 MM                      | HV 435,<br>435, 429                      | 44 dt. 25/02/2022                         | 44 dt. 25.02.2022                         | 44<br>dt.25.02.20<br>22 | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 18    | GTAW            | Carbon<br>steel    | 6 GR N.1           | A276<br>SS410                  | MIN.25 MM        | BARE<br>RODS    | 71   | ER-Co-Cr-B | *            | *       | ST.12  |        | 1.0 MM                      | HV 446,<br>446, 441                      | 45 dt. 25.02.2022                         | 45 dt. 25.02.2022                         | 45 dt.<br>25.02.2022    | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 19    | GTAW            | DUPLEX             |                    | A890<br>GR3A                   | MIN.25 MM        | BARE<br>RODS    | 71   | ER-Co-Cr-A | *            | *       | ST.6   |        | 1.0 MM                      | HV 437,<br>437, 437                      | 46 dt. 03.03.2022                         | 46 dt. 03.03.2022                         | 46 dt.<br>03.03.2022    | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |
| 20    | GTAW            | DUPLEX             |                    | A890 GR3A                      | MIN.25 MM        | BARE<br>RODS    | 71   | ER-Co-Cr-B | *            | *       | ST.12  |        | 1.0 MM                      | HV 441 ,<br>441 , 441                    | 47 dt. 03.03.2022                         | 47 dt. 03.03.2022                         | 47 dt.<br>03.03.2022    | Mr. K.<br>Bhasker<br>Rao | SPIL,<br>MUM.           |                                                   |

|    |              |                 |            |                      |              |              |    |            |           |      |       |         |        |                    |                   |                   |                   |                    |            |  |
|----|--------------|-----------------|------------|----------------------|--------------|--------------|----|------------|-----------|------|-------|---------|--------|--------------------|-------------------|-------------------|-------------------|--------------------|------------|--|
| 21 | GTAW         | Stainless steel | 8 GR. N. 1 | 316L                 | MIN 25.0 MM  | BARE RODS    | 71 | ER-Co-Cr-A | *         | *    | ST.6  |         | 3.2 MM | HV 454 , 454 , 450 | 42 dt.25.02.2022  | 42 dt.25.02.2022  | 42 dt.25.02.2022  | Mr. K. Bhasker Rao | SFIL, MUM. |  |
| 22 | GTAW         | Stainless steel | 8 GR. N. 1 | 316L                 | MIN. 25 MM   | BARE RODS    | 71 | ER-Co-Cr-B | *         | *    | ST.12 |         | 1.0 MM | HV 429 , 429 , 429 | 43 dt.25.02.2022  | 43 dt.25.02.2022  | 43 dt.25.02.2022  | Mr. K. Bhasker Rao | SFIL, MUM. |  |
| 23 | GTAW         | DUPLEX          |            | A890 GR.1B           | MIN 25 MM    | BARE RODS    | 71 | ER-Co-Cr-A | *         | *    | ST.6  |         | 1.0 MM | HV 446, 446, 446   | 48 dt.30.04.2022  | 48 dt.30.04.2022  | 48 dt.30.04.2022  | Mr. K. Bhasker Rao | SFIL, MUM. |  |
| 24 | GTAW         | DUPLEX          |            | A890 GR.1B           | MIN 25 MM    | BARE RODS    | 71 | ER-Co-Cr-B | *         | *    | ST.12 |         | 1.0 MM | HV 450, 454, 454   | 49 dt.30.04.2022  | 49 dt.30.04.2022  | 49 dt.30.04.2022  | Mr. K. Bhasker Rao | SFIL, MUM. |  |
| 25 | PTA          | Stainless steel | 8          | ASTM A743 Gr CF3M    | MIN 25 MM    | Nickel Alloy | 72 | Er-Ni-Cr-C | *         | *    | COL.6 | Ni260FP | 1.5 MM | HV 724, 738, 801   | 50 DT. 17.08.2023 | 50 DT. 17.08.2023 | 50 DT. 17.08.2023 | Mr. BALIRAM RAY    | SGS, THANE |  |
| 26 | PTA          | Stainless steel | 8          | ASTM A743 Gr CF3M    | MIN 25 MM    | Nickel Alloy | 72 | Er-Ni-Cr-B | *         | *    | COL.5 | Ni250FP | 1.5 MM | HV 655, 600, 624   | 51 DT. 17.08.2023 | 51 DT. 17.08.2023 | 51 DT. 17.08.2023 | Mr. BALIRAM RAY    | SGS, THANE |  |
| 27 | PTA          | SUPER DUPLEX    | 10 H       | SUPER DUPLEX 5A      | MIN 25 MM    | Cobalt Alloy | 72 | ER-Co-Cr-A | *         | *    | ST.6  |         | 1.5 MM | HV 569,572, 555    | 52 DT. 17.08.2023 | 52 DT. 17.08.2023 | 52 DT. 17.08.2023 | Mr. BALIRAM RAY    | SGS, THANE |  |
| 28 | PTA          | SUPER DUPLEX    | 10 H       | SUPER DUPLEX 5A      | MIN 25 MM    | Cobalt Alloy | 72 | ER-Co-Cr-B | *         | *    | ST.12 |         | 1.5 MM | HV 586, 602, 615   | 53 DT. 17.08.2023 | 53 DT. 17.08.2023 | 52 DT. 17.08.2023 | Mr. BALIRAM RAY    | SGS, THANE |  |
| 29 | Spray & Fuse | Stainless steel | 8          | ASME A240, 316L /316 | 7.0mm Ground | Nickel Alloy | 72 | ER-Ni-Cr-B | Col-53    | *    | *     | *       | 1.0 MM | HV 579, 566, 566   | 54 dt.07.02.2025  | 54 dt.07.02.2025  | *                 | Mr. Kailas kamble  | DNV        |  |
| 30 | Spray & Fuse | Stainless steel | 8          | ASME A240, 316L /316 | 7.0mm Ground | Nickel Alloy | 72 | ER-Ni-Cr-C |           | 1060 | *     | *       | 1.0 MM | HV 724, 706, 743   | 55 dt.07.02.2025  | 55 dt.07.02.2025  | *                 | Mr. Kailas kamble  | DNV        |  |
| 31 | Spray & Fuse | Stainless steel | 8          | ASME A240, 316L /316 | 7.0mm Ground | Nickel Alloy | 72 | ER-Ni-Cr-A |           | 1040 | *     | *       | 1.0 MM | HV 441, 433, 429   | 56 dt.07.02.2025  | 56 dt.07.02.2025  | *                 | Mr. Kailas kamble  | DNV        |  |
| 32 | Spray & Fuse | Stainless steel | 8          | ASME A240, 316L /316 | 7.0mm Ground | Nickel Alloy | 72 | ER-Ni-Cr-A | Col.-43 F | *    | *     | *       | 0.7 MM | HV 433, 420, 420   | 60 dt.05.12.2025  | 60 dt.05.12.2025  | *                 | Mr. Kailas kamble  | KE THANE   |  |
| 33 | Spray & Fuse | Stainless steel | 8          | ASME A240, 316L /316 | 7.0mm Ground | Nickel Alloy | 72 | ER-Ni-Cr-B | Col-53F   | *    | *     | *       | 0.7 MM | HV 563, 563,553    | 61 dt.05.12.2025  | 61 dt.05.12.2025  | *                 | Mr. Kailas kamble  | KE THANE   |  |
| 34 | Spray & Fuse | Stainless steel | 8          | ASME A240, 316L /316 | 7.0mm Ground | Nickel Alloy | 72 | ER-Ni-Cr-C | Col-63F   | *    | *     | *       | 0.7 MM | HV 756, 744, 739   | 62 dt.05.12.2025  | 62 dt.05.12.2025  | *                 | Mr. Kailas kamble  | KE THANE   |  |