

# Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

## COMPANY

### KINGBOARD LAMINATES HOLDINGS LTD

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No. 3 On Yiu Street  
Shatin, Hong Kong

E123995

## Industrial laminates:

| Mtl<br>Dsg                               | ANSI<br>Type | Color  | Build up           | Flame<br>Class | R.T.I.       |              | H           |             |             |             | Meets<br>746E<br>Non-HAL | Meets<br>746E<br>DSR |
|------------------------------------------|--------------|--------|--------------------|----------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------------------|----------------------|
|                                          |              |        | Min<br>Thk<br>(mm) |                | Elec<br>(°C) | Mech<br>(°C) | H<br>W<br>I | H<br>A<br>I | V<br>T<br>R | C<br>T<br>I |                          |                      |
| Industrial laminates furnished as sheets |              |        |                    |                |              |              |             |             |             |             |                          |                      |
| KB-150                                   | XPC          | NC, BK | 0.71               | HB             | 130          | 130          | 2           | 0           | 0           | -           | -                        | Yes                  |
|                                          |              |        | 1.57               | HB             | 130          | 130          | 1           | 0           | 1           | 4           | -                        | Yes                  |
| KB-2150                                  | FR-2         | NC     | 1.45               | V-0            | 105          | 105          | 4           | 3           | 1           | 4           | -                        | Yes                  |
| KB-2150G                                 | FR-2         | TN     | 0.71               | V-0            | 75           | 75           | 0           | 3           | 6           | -           | -                        | Yes                  |
|                                          |              |        | 1.45               | V-0            | 105          | 105          | 0           | 3           | 6           | 3           | -                        | Yes                  |
| KB-3151S (with Adhesive)                 |              |        |                    |                |              |              |             |             |             |             |                          |                      |
|                                          | FR-1         | NC     | 1.45               | V-0            | 130          | 130          | 0           | 0           | -           | 0           | -                        | Yes                  |
|                                          |              |        | 0.71               | V-0            | 130          | 130          | 0           | 0           | -           | -           | -                        | Yes                  |
| KB-3151S (without Adhesive)              |              |        |                    |                |              |              |             |             |             |             |                          |                      |
|                                          | FR-1         | NC     | 1.45               | V-0            | 130          | 130          | 3           | 3           | 4           | 4           | -                        | Yes                  |
|                                          |              |        | 0.71               | V-0            | 130          | 130          | 3           | 3           | 4           | -           | -                        | Yes                  |
| KB-3152                                  | FR-1         | NC     | 0.71               | V-0            | 130          | 130          | 0           | 0           | -           | -           | -                        | Yes                  |
|                                          |              |        | 1.45               | V-0            | 130          | 130          | 0           | 0           | -           | 0           | -                        | Yes                  |
| KB-5150                                  | CEM-1        | NC     | 0.63               | V-0            | 130          | 140          | 3           | 2           | 4           | -           | -                        | Yes                  |
|                                          |              |        | 1.40               | V-0            | 130          | 140          | 1           | 2           | 4           | 3           | -                        | Yes                  |
| KB-5150&                                 | CEM-1        | NC     | 0.63               | V-0            | 130          | 140          | 1           | 3           | 4           | -           | -                        | Yes                  |
|                                          |              |        | 1.40               | V-0            | 130          | 140          | 1           | 3           | 4           | 0           | -                        | Yes                  |

|                     |        |    |      |     |     |     |   |   |   |   |     |     |
|---------------------|--------|----|------|-----|-----|-----|---|---|---|---|-----|-----|
| <b>KB-5252</b>      | CEM-1  | NC | 0.63 | V-0 | 130 | 140 | 3 | 2 | - | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 1 | 2 | - | 3 | -   | Yes |
| <b>KB-6160A</b>     | FR-4.0 | YL | 0.38 | V-0 | 130 | 130 | 0 | 0 | - | - | -   | Yes |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 3 | -   | Yes |
| <b>KB-6160C</b>     | FR-4.0 | NC | 0.38 | V-0 | 130 | 130 | 0 | 0 | - | - | -   | Yes |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 0 | -   | Yes |
| <b>KB-6160F</b>     | FR-4.0 | NC | 0.38 | V-0 | 130 | 130 | 0 | 1 | - | - | -   | Yes |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 3 | -   | Yes |
| <b>KB-6160LC(C)</b> | FR-4.0 | NC | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 0 | -   | Yes |
| <b>KB-6165</b>      | FR-4.0 | YL | 0.38 | V-0 | 130 | 130 | 2 | 0 | - | - | -   | Yes |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 3 | -   | Yes |
| <b>KB-6165C</b>     | FR-4.0 | NC | 0.05 | -   | -   | -   | - | - | - | - | -   | -   |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 0 | -   | Yes |
| <b>KB-6165G</b>     | FR-4.1 | NC | 0.05 | V-0 | 120 | 100 | 0 | 3 | - | - | Yes | Yes |
|                     |        |    | 0.38 | V-0 | 130 | 130 | 0 | 1 | - | - | -   | Yes |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 3 | -   | Yes |
| <b>KB-6165GC</b>    | FR-4.1 | NC | 0.05 | V-0 | 120 | 100 | 0 | 3 | - | - | Yes | Yes |
|                     |        |    | 0.38 | V-0 | 130 | 130 | 0 | 1 | - | - | -   | Yes |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 0 | -   | Yes |
| <b>KB-6165LE</b>    | FR-4.0 | NC | 0.38 | V-0 | 130 | 130 | 0 | 1 | - | - | -   | Yes |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 3 | -   | Yes |
| <b>KB-6168</b>      | FR-4.0 | NC | 0.38 | V-0 | 130 | 130 | 0 | 3 | - | - | -   | Yes |
|                     |        |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                     |        |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 3 | -   | Yes |

|                                                          |         |        |      |     |     |     |   |   |   |   |     |     |
|----------------------------------------------------------|---------|--------|------|-----|-----|-----|---|---|---|---|-----|-----|
| <b>KB-6169GT</b>                                         | FR-15.1 | NC     | 0.38 | V-0 | 140 | 140 | 0 | 1 | - | - | Yes | Yes |
|                                                          |         |        | 0.63 | V-0 | 150 | 150 | 0 | 1 | - | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 150 | 150 | 0 | 1 | - | 0 | -   | Yes |
| <b>KB-7150</b>                                           | CEM-3.0 | NC     | 0.63 | V-0 | 130 | 140 | 0 | 2 | 4 | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 3 | -   | Yes |
| <b>KB-7150C</b>                                          | CEM-3.0 | NC     | 0.63 | V-0 | 130 | 140 | 0 | 2 | 4 | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 0 | -   | Yes |
| <b>Industrial laminates furnished as sheets or rolls</b> |         |        |      |     |     |     |   |   |   |   |     |     |
| <b>FL-170</b>                                            | FR-4.0  | NC     | 0.38 | V-0 | 130 | 130 | 1 | 1 | - | - | -   | Yes |
|                                                          |         |        | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 3 | -   | Yes |
| <b>KB-5150A</b>                                          | CEM-1   | NC     | 0.63 | V-0 | 130 | 140 | 3 | 2 | 4 | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 1 | 2 | 4 | 2 | -   | Yes |
| <b>KB-5150G</b>                                          | CEM-1   | NC     | 0.63 | V-0 | 130 | 140 | 3 | 2 | 4 | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 1 | 2 | 4 | 0 | -   | Yes |
| <b>KB-5150H</b>                                          | CEM-1   | NC     | 0.63 | V-0 | 130 | 140 | 3 | 2 | 4 | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 1 | 2 | 4 | 2 | -   | Yes |
| <b>KB-5150L</b>                                          | CEM-1   | NC     | 0.63 | V-0 | 130 | 140 | 3 | 2 | 4 | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 1 | 2 | 4 | 3 | -   | Yes |
| <b>KB-616(X)</b>                                         | FR-4.0  | YL     | 0.38 | V-0 | 130 | 130 | 3 | 3 | - | - | -   | Yes |
|                                                          |         |        | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 3 | -   | Yes |
| <b>KB-6160LC</b>                                         | FR-4.0  | NC     | 0.38 | V-0 | 130 | 130 | 1 | 1 | - | - | -   | Yes |
|                                                          |         |        | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 3 | -   | Yes |
| <b>KB-6164F</b>                                          | FR-4.0  | NC     | 0.38 | V-0 | 130 | 130 | 0 | 4 | - | - | -   | -   |
|                                                          |         |        | 0.63 | V-0 | 130 | 140 | 0 | 2 | - | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 3 | -   | Yes |
| <b>KB-6165F</b>                                          | FR-4.0  | NC(YL) | 0.38 | V-0 | 130 | 130 | 3 | 3 | - | - | -   | Yes |
|                                                          |         |        | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                                                          |         |        | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 3 | -   | Yes |
| <b>KB-6167A</b>                                          | FR-4.0  | NC     | 0.38 | V-0 | 130 | 130 | 0 | 2 | - | - | -   | Yes |
|                                                          |         |        | 0.63 | V-0 | 130 | 140 | 0 | 2 | 4 | - | -   | Yes |

|                                                                |         |    |      |     |     |     |   |   |   |   |     |     |
|----------------------------------------------------------------|---------|----|------|-----|-----|-----|---|---|---|---|-----|-----|
|                                                                |         |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | 4 | 4 | -   | Yes |
| <b>KB-6167F</b>                                                | FR-4.0  | NC | 0.38 | V-0 | 130 | 130 | 0 | 3 | - | - | -   | Yes |
|                                                                |         |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                                                                |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 3 | -   | Yes |
| <b>KB-6167G</b>                                                | FR-4.1  | NC | 0.05 | V-0 | 120 | 100 | 0 | 3 | - | - | Yes | Yes |
|                                                                |         |    | 0.38 | V-0 | 130 | 130 | 0 | 1 | - | - | -   | Yes |
|                                                                |         |    | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                                                                |         |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 0 | -   | Yes |
| <b>KB-6167GMD</b>                                              | FR-4.1  | NC | 0.38 | V-0 | 130 | 130 | 0 | 1 | - | - | Yes | Yes |
|                                                                |         |    | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                                                                |         |    | 1.40 | V-0 | 130 | 140 | 0 | 0 | - | 0 | -   | Yes |
| <b>KB-6168LE</b>                                               | FR-4.0  | NC | 0.38 | V-0 | 130 | 130 | 1 | 1 | - | - | -   | Yes |
|                                                                |         |    | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                                                                |         |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 3 | -   | Yes |
| <b>KB-7150T</b>                                                | CEM-3.0 | NC | 0.63 | V-0 | 130 | 140 | 0 | 2 | 4 | - | -   | Yes |
|                                                                |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 0 | -   | Yes |
| <b>Industrial laminates furnished as sheets, rods or tubes</b> |         |    |      |     |     |     |   |   |   |   |     |     |
| <b>HF-140</b>                                                  | FR-4.1  | NC | 0.38 | V-0 | 130 | 130 | 0 | 2 | - | - | Yes | Yes |
|                                                                |         |    | 0.63 | V-0 | 130 | 140 | 0 | 2 | - | - | -   | Yes |
|                                                                |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | - | 3 | -   | Yes |
| <b>HF-170</b>                                                  | FR-4.1  | NC | 0.38 | V-0 | 130 | 130 | 0 | 3 | - | - | Yes | Yes |
|                                                                |         |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | - | - | -   | Yes |
|                                                                |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | - | 3 | -   | Yes |
| <b>KB-3150N</b>                                                | FR-1    | NC | 0.71 | V-0 | 130 | 130 | 0 | 0 | - | - | -   | Yes |
|                                                                |         |    | 1.45 | V-0 | 130 | 130 | - | - | - | 3 | -   | Yes |
| <b>KB-3150NU %</b>                                             | FR-1    | NC | 0.71 | V-0 | 130 | 130 | 3 | 3 | 4 | - | -   | Yes |
|                                                                |         |    | 1.45 | V-0 | 130 | 130 | 3 | 3 | 4 | 4 | -   | Yes |
| <b>KB-3151HS</b>                                               | FR-1    | NC | 0.71 | V-0 | 130 | 130 | 0 | 0 | 4 | - | -   | Yes |
|                                                                |         |    | 1.45 | V-0 | 130 | 130 | 0 | 0 | 4 | 0 | -   | Yes |
| <b>KB-3153*</b>                                                | FR-1    | NC | 0.71 | V-0 | 130 | 130 | 0 | 0 | 4 | - | -   | Yes |
|                                                                |         |    | 1.45 | V-0 | 130 | 130 | 0 | 0 | 4 | 0 | -   | Yes |
| <b>KB-5152</b>                                                 | No ANSI | NC | 0.60 | V-0 | -   | -   | - | - | - | - | -   | -   |
|                                                                |         |    | 1.40 | V-0 | -   | -   | - | - | - | - | -   | -   |

|                                    |         |    |      |     |     |     |   |   |   |   |     |     |
|------------------------------------|---------|----|------|-----|-----|-----|---|---|---|---|-----|-----|
| <b>KB-6150</b>                     | FR-4.0  | NC | 0.10 | V-0 | 120 | 125 | 0 | 3 | - | - | -   | Yes |
|                                    |         |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |
|                                    |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 4 | -   | Yes |
|                                    |         |    | 0.38 | V-0 | 130 | 130 | 0 | 3 | - | - | -   | Yes |
| <b>KB-6162</b>                     | No ANSI | NC | 0.63 | V-0 | -   | -   | - | - | - | - | -   | -   |
|                                    |         |    | 1.40 | V-0 | -   | -   | - | - | - | - | -   | -   |
| <b>KB-6167GLD</b>                  | FR-4.1  | NC | 0.38 | V-0 | 130 | 130 | 0 | 3 | - | - | Yes | Yes |
|                                    |         |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | - | - | -   | Yes |
|                                    |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | - | 3 | -   | Yes |
| <b>P-138</b>                       | FR-4.0  | YL | 0.38 | V-0 | 130 | 130 | 0 | 0 | - | - | -   | -   |
|                                    |         |    | 0.64 | V-0 | 130 | 140 | 0 | 0 | - | - | -   | -   |
|                                    |         |    | 1.40 | V-0 | 130 | 140 | 0 | 0 | 2 | 3 | -   | -   |
| <b>Industrial laminates</b>        |         |    |      |     |     |     |   |   |   |   |     |     |
| <b>EEL-128</b>                     | FR-4.0  | NC | 0.38 | V-0 | 130 | 130 | 3 | 0 | - | - | -   | -   |
|                                    |         |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | - | - | -   | Yes |
|                                    |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | - | 3 | -   | Yes |
| <b>EEL-145</b>                     | FR-4.0  | NC | 0.38 | V-0 | 130 | 130 | 3 | 0 | - | - | -   | -   |
|                                    |         |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | - | - | -   | Yes |
|                                    |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | - | 3 | -   | Yes |
| <b>KB-3151C (with Adhesive)</b>    |         |    |      |     |     |     |   |   |   |   |     |     |
|                                    | FR-1    | NC | 0.71 | V-0 | 130 | 130 | 0 | 0 | - | - | -   | Yes |
|                                    |         |    | 1.45 | V-0 | 130 | 130 | - | - | - | 0 | -   | Yes |
| <b>KB-3151C (without Adhesive)</b> |         |    |      |     |     |     |   |   |   |   |     |     |
|                                    | FR-1    | NC | 0.71 | V-0 | 130 | 130 | 3 | 3 | 4 | - | -   | Yes |
|                                    |         |    | 1.45 | V-0 | 130 | 130 | 3 | 3 | 4 | 4 | -   | Yes |
| <b>KB-3151C175 (with Adhesive)</b> |         |    |      |     |     |     |   |   |   |   |     |     |
|                                    | FR-1    | NC | 0.71 | V-0 | 130 | 130 | 0 | 0 | - | - | -   | Yes |
|                                    |         |    | 1.45 | V-0 | 130 | 130 | - | - | - | 3 | -   | Yes |
| <b>KB-3200G</b>                    | FR-4.1  | NC | 0.38 | V-0 | 130 | 130 | 0 | 0 | - | - | Yes | Yes |
|                                    |         |    | 0.63 | V-0 | 130 | 140 | 0 | 0 | - | - | -   | Yes |
|                                    |         |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 3 | -   | Yes |
| <b>KB-6155</b>                     | FR-4.0  | NC | 0.38 | V-0 | 130 | 130 | 0 | 3 | - | - | -   | Yes |
|                                    |         |    | 0.63 | V-0 | 130 | 140 | 0 | 3 | 4 | - | -   | Yes |

|                   |         |    |      |     |     |     |   |   |   |   |     |     |
|-------------------|---------|----|------|-----|-----|-----|---|---|---|---|-----|-----|
|                   |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 4 | -   | Yes |
| <b>KB-6165GMD</b> | FR-4.1  | NC | 0.38 | V-0 | 130 | 130 | 0 | 0 | - | - | Yes | Yes |
|                   |         |    | 0.63 | V-0 | 130 | 140 | 0 | 1 | - | - | -   | Yes |
|                   |         |    | 1.40 | V-0 | 130 | 140 | 0 | 1 | - | 2 | -   | Yes |
| <b>KB-7152</b>    | CEM-3.0 | NC | 0.63 | V-0 | 130 | 140 | 0 | 2 | 4 | - | -   | Yes |
|                   |         |    | 1.40 | V-0 | 130 | 140 | 0 | 2 | 4 | 3 | -   | Yes |

**Ultrathin build ups:**

| Build Up               |           |              |         |         | Laminate         |           |         | Prepreg          |           |         |
|------------------------|-----------|--------------|---------|---------|------------------|-----------|---------|------------------|-----------|---------|
| Mtl Dsg                | ANSI Type | Min Thk (mm) | TI Elec | TI Mech | Mtl Dsg          | Thk (mic) | TI Elec | Mtl Dsg          | Thk (mic) | TI Elec |
| <b>EEL-128</b>         | FR-4.0    | 0.38         | 130     | 130     | EEL-128          | 50        | 90      | EP               | 50        | 90      |
| <b>EEL-145</b>         | FR-4.0    | 0.38         | 130     | 130     | EEL-145          | 50        | 90      | ETP              | 50        | 90      |
| <b>FL-170</b>          | FR-4.0    | 0.38         | 130     | 130     | FL-170           | 50        | 90      | PP-FL170         | 50        | 90      |
|                        |           | 0.45         | 130     | 130     | FL-170           | 50        | 90      | PP-FL170         | 50        | 90      |
|                        |           | 0.63         | 130     | 140     | FL-170           | 50        | 90      | PP-FL170         | 50        | 90      |
|                        |           | 1.40         | 130     | 140     | FL-170           | 50        | 90      | PP-FL170         | 50        | 90      |
| <b>HF-140</b>          | FR-4.1    | 0.38         | 130     | 130     | HF-140           | 50        | 90      | PP-HF140         | 50        | 90      |
| <b>HF-170/PP-HF170</b> | FR-4.1    | 0.38         | 130     | 130     | HF-170           | 65        | 90      | PP-HF170         | 50        | 90      |
| <b>KB-3200G</b>        | FR-4.1    | 0.38         | 130     | 130     | KB-3200G         | 65        | 90      | PP-KB-3200G      | 50        | 90      |
| <b>KB-6155</b>         | FR-4.0    | 0.38         | 130     | 130     | KB-6155          | 50        | 90      | KB-6055          | 50        | 90      |
| <b>KB-616(X)</b>       | FR-4.0    | 0.38         | 130     | 130     | KB-6160, KB-6164 | 100       | 120     | KB-6060, KB-6064 | 50        | 90      |
| <b>KB-6160A</b>        | FR-4.0    | 0.38         | 130     | 130     | KB-6160A         | 50        | 90      | KB-6060A         | 50        | 90      |
| <b>KB-6160C</b>        | FR-4.0    | 0.38         | 130     | 130     | KB-6160C         | 50        | 90      | KB-6060C         | 50        | 90      |
| <b>KB-6160F</b>        | FR-4.0    | 0.38         | 130     | 130     | KB-6160F         | 50        | 90      | KB-6060F         | 50        | 90      |
|                        |           | 0.45         | 130     | 130     | KB-6160F         | 50        | 90      | KB-6060F         | 50        | 90      |
|                        |           | 0.63         | 130     | 140     | KB-6160F         | 50        | 90      | KB-6060F         | 50        | 90      |
|                        |           | 1.40         | 130     | 140     | KB-6160F         | 50        | 90      | KB-6060F         | 50        | 90      |
| <b>KB-6160LC</b>       | FR-4.0    | 0.38         | 130     | 130     | KB-6160LC        | 50        | 90      | KB-6060LC        | 50        | 90      |
|                        |           | 0.45         | 130     | 130     | KB-6160LC        | 50        | 90      | KB-6060LC        | 50        | 90      |
|                        |           | 0.63         | 130     | 140     | KB-6160LC        | 50        | 90      | KB-6060LC        | 50        | 90      |
|                        |           | 1.40         | 130     | 140     | KB-6160LC        | 50        | 90      | KB-6060LC        | 50        | 90      |
| <b>KB-6164F</b>        | FR-4.0    | 0.38         | 130     | 130     | KB-6164F         | 50        | 90      | KB-6064F         | 50        | 90      |

|            |         |      |     |     |            |     |     |            |    |    |
|------------|---------|------|-----|-----|------------|-----|-----|------------|----|----|
| KB-6165    | FR-4.0  | 0.38 | 130 | 130 | KB-6165    | 50  | 90  | KB-6065    | 50 | 90 |
| KB-6165C   | FR-4.0  | 0.63 | 130 | 130 | KB-6165C   | 50  | 90  | KB-6065C   | 50 | 90 |
| KB-6165F   | FR-4.0  | 0.38 | 130 | 130 | KB-6165F   | 50  | 90  | KB-6065F   | 50 | 90 |
| KB-6165G   | FR-4.1  | 0.38 | 130 | 130 | KB-6165G   | 50  | 90  | KB-6065G   | 50 | 90 |
|            |         | 0.63 | 130 | 140 | KB-6165G   | 50  | 90  | KB-6065G   | 50 | 90 |
| KB-6165GC  | FR-4.1  | 0.38 | 130 | 130 | KB-6165GC  | 50  | 90  | KB-6065GC  | 50 | 90 |
|            |         | 0.63 | 130 | 140 | KB-6165GC  | 50  | 90  | KB-6065GC  | 50 | 90 |
| KB-6165GMD | FR-4.1  | 0.38 | 130 | 130 | KB-6165GMD | 65  | 90  | KB-6065GMD | 50 | 90 |
| KB-6165LE  | FR-4.0  | 0.38 | 130 | 130 | KB-6165LE  | 50  | 90  | KB-6065LE  | 50 | 90 |
|            |         | 0.45 | 130 | 130 | KB-6165LE  | 50  | 90  | KB-6065LE  | 50 | 90 |
|            |         | 0.63 | 130 | 140 | KB-6165LE  | 50  | 90  | KB-6065LE  | 50 | 90 |
|            |         | 1.40 | 130 | 140 | KB-6165LE  | 50  | 90  | KB-6065LE  | 50 | 90 |
| KB-6167A   | FR-4.0  | 0.38 | 130 | 130 | KB-6167A   | 100 | 120 | KB-6067A   | 50 | 90 |
| KB-6167F   | FR-4.0  | 0.38 | 130 | 130 | KB-6167F   | 100 | 90  | KB-6067F   | 50 | 90 |
| KB-6167G   | FR-4.1  | 0.38 | 130 | 130 | KB-6167G   | 50  | 90  | KB-6067G   | 50 | 90 |
| KB-6167GLD | FR-4.1  | 0.38 | 130 | 130 | KB-6167GLD | 65  | 90  | KB-6067GLD | 50 | 90 |
| KB-6167GMD | FR-4.1  | 0.38 | 130 | 130 | KB-6167GMD | 65  | 90  | KB-6067GMD | 50 | 90 |
| KB-6168    | FR-4.0  | 0.38 | 130 | 130 | KB-6168    | 50  | 90  | KB-6068    | 50 | 90 |
| KB-6168LE  | FR-4.0  | 0.38 | 130 | 130 | KB-6168LE  | 50  | 90  | KB-6068LE  | 50 | 90 |
|            |         | 0.45 | 130 | 130 | KB-6168LE  | 50  | 90  | KB-6068LE  | 50 | 90 |
|            |         | 0.63 | 130 | 140 | KB-6168LE  | 50  | 90  | KB-6068LE  | 50 | 90 |
|            |         | 1.40 | 130 | 140 | KB-6168LE  | 50  | 90  | KB-6068LE  | 50 | 90 |
| KB-6169GT  | FR-15.1 | 0.38 | 140 | 140 | KB-6169GT  | 50  | 90  | KB-6069GT  | 50 | 90 |
|            |         | 0.63 | 150 | 150 | KB-6169GT  | 50  | 90  | KB-6069GT  | 50 | 90 |
| P-138      | FR-4.0  | 0.38 | 130 | 130 | P-138      | 100 | 120 | PP-138     | 50 | 90 |

Metal clad industrial laminates:

| Metal<br>Clad<br>Dsg                                                                                                              | Lam-<br>inate<br>Dsg | Pre-<br>preg<br>Dsg | ANSI<br>Type | Bld<br>up | Clad  | Cond  | Thk   | Max  |       | Max  | Assembly | Solder  | Solder | Lts   |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|--------------|-----------|-------|-------|-------|------|-------|------|----------|---------|--------|-------|
|                                                                                                                                   |                      |                     |              | Min       | Min   | Max   | Max   | Area | Oper  |      |          |         |        |       |
|                                                                                                                                   |                      |                     |              | Thk       | Ext   | Ext   | Int   | Dia  | Flame | Temp | Process  | Process | Temp   | Time  |
| Dsg                                                                                                                               | Dsg                  | Dsg                 | Type         | (mm)      | (mic) | (mic) | (mic) | (mm) | Class | (°C) | Temp(°C) | Cycles  | (°C)   | (sec) |
| Metal clad industrial laminates for use in multilayer printed wiring boards with copper on one or both sides, furnished as sheets |                      |                     |              |           |       |       |       |      |       |      |          |         |        |       |
| FL-170                                                                                                                            | FL-170               | PP-FL170            | FR-4.0       | 0.38      | 9     | 102   | 68    | 50.8 | V-0   | 130  | -        | -       | 288    | 30    |

|                          |           |           |         |      |    |     |     |      |     |     |     |   |     |    |
|--------------------------|-----------|-----------|---------|------|----|-----|-----|------|-----|-----|-----|---|-----|----|
|                          |           |           |         | 0.45 | 9  | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6160A</b>          | KB-6160A  | KB-6060A  | FR-4.0  | 0.38 | 12 | 102 | 70  | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6160C</b>          | KB-6160C  | KB-6060C  | FR-4.0  | 0.38 | 12 | 102 | 60  | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6160F</b>          | KB-6160F  | KB-6060F  | FR-4.0  | 0.38 | 9  | 102 | 68  | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
|                          |           |           |         | 0.45 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6160LC</b>         | KB-6160LC | KB-6060LC | FR-4.0  | 0.38 | 9  | 102 | 68  | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
|                          |           |           |         | 0.45 | 9  | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6164F</b>          | KB-6164F  | KB-6064F  | FR-4.0  | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6165</b>           | KB-6165   | KB-6065   | FR-4.0  | 0.38 | 12 | 102 | 54  | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6165C (ASP 1)</b>  |           |           |         |      |    |     |     |      |     |     |     |   |     |    |
|                          | KB-6165C  | KB-6065C  | FR-4.0  | 0.63 | 12 | 102 | 102 | 50.8 | V-0 | 130 | 260 | 4 | 288 | 60 |
| <b>KB-6165F</b>          | KB-6165F  | KB-6065F  | FR-4.0  | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
|                          |           |           |         | 0.63 | 12 | 102 | 204 | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6165G</b>          | KB-6165G  | KB-6065G  | FR-4.1  | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6165GC</b>         | KB-6165GC | KB-6065GC | FR-4.1  | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6165LE</b>         | KB-6165LE | KB-6065LE | FR-4.0  | 0.38 | 9  | 102 | 68  | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
|                          |           |           |         | 0.45 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6167F</b>          | KB-6167F  | KB-6067F  | FR-4.0  | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6167G/KB-6067G</b> |           |           |         |      |    |     |     |      |     |     |     |   |     |    |
|                          | KB-6167G  | KB-6067G  | FR-4.1  | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6168</b>           | KB-6168   | KB-6068   | FR-4.0  | 0.38 | 12 | 102 | 70  | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6168LE</b>         | KB-6168LE | KB-6068LE | FR-4.0  | 0.38 | 9  | 102 | 68  | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
|                          |           |           |         | 0.45 | 9  | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6169GT</b>         | KB-6169GT | KB-6069GT | FR-15.1 | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | -   | - | 288 | 20 |



|                                                                                                                                                         |                                              |                                                |        |      |    |     |     |      |     |     |   |   |     |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------|--------|------|----|-----|-----|------|-----|-----|---|---|-----|----|
| <b>P-138</b>                                                                                                                                            | P-138                                        | PP-138                                         | FR-4.0 | 0.63 | 12 | 102 | -   | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>Metal clad industrial laminates for use in multilayer printed wiring boards with copper on one or both sides, furnished as sheets or rolls</b>       |                                              |                                                |        |      |    |     |     |      |     |     |   |   |     |    |
| <b>KB-616(X)</b>                                                                                                                                        | KB-6160, KB-6164                             | KB-6060, KB-6064                               | FR-4.0 | 0.38 | 17 | 102 | 35  | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>KB-6167A</b>                                                                                                                                         | KB-6167A                                     | KB-6067A                                       | FR-4.0 | 0.38 | 17 | 102 | 35  | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>Metal clad industrial laminates for use in multilayer printed wiring boards with copper on one or both sides, furnished as sheets, rods or tubes</b> |                                              |                                                |        |      |    |     |     |      |     |     |   |   |     |    |
| <b>HF-140</b>                                                                                                                                           | HF-140                                       | PP-HF140                                       | FR-4.1 | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>HF-170/PP-HF170</b>                                                                                                                                  | HF-170                                       | PP-HF170                                       | FR-4.1 | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>KB-6167GLD/KB-6067GLD, KB-6165GMD/KB-6065GMD, KB-3200G/PP-KB3200G and KB-6167GMD/KB-6067GMD</b>                                                      |                                              |                                                |        |      |    |     |     |      |     |     |   |   |     |    |
|                                                                                                                                                         | KB-6167GLD, KB-6165GMD, KB-3200G, KB-6167GMD | KB-6067GLD, KB-6065GMD, PP-KB3200G, KB-6067GMD | FR-4.1 | 0.38 | 12 | 102 | 102 | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>Metal clad industrial laminates for use in multilayer printed wiring boards with copper on one or both sides,</b>                                    |                                              |                                                |        |      |    |     |     |      |     |     |   |   |     |    |
| <b>EEL-128</b>                                                                                                                                          | EEL-128                                      | EP                                             | FR-4.0 | 0.38 | 17 | 102 | 68  | 38.1 | V-0 | 130 | - | - | 288 | 30 |
|                                                                                                                                                         |                                              |                                                |        | 0.63 | 17 | 102 | 68  | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>EEL-145</b>                                                                                                                                          | EEL-145                                      | ETP                                            | FR-4.0 | 0.38 | 17 | 102 | 170 | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>Metal clad industrial laminates for use in single layer printed wiring boards with copper on one or both sides, furnished as sheets</b>              |                                              |                                                |        |      |    |     |     |      |     |     |   |   |     |    |
| <b>FL-170</b>                                                                                                                                           | FL-170                                       | -                                              | FR-4.0 | 0.38 | 9  | 102 | -   | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>KB-2150G</b>                                                                                                                                         | KB-2150G                                     | -                                              | FR-2   | 0.71 | 35 | 102 | -   | 50.8 | V-0 | 75  | - | - | 265 | 15 |
|                                                                                                                                                         |                                              |                                                |        | 1.45 | 35 | 102 | -   | 38.1 | V-0 | 105 | - | - | 265 | 15 |
| <b>KB-3152</b>                                                                                                                                          | KB-3152                                      | -                                              | FR-1   | 0.71 | 35 | 102 | -   | 50.8 | V-0 | 130 | - | - | 288 | 10 |
| <b>KB-5150</b>                                                                                                                                          | KB-5150                                      | -                                              | CEM-1  | 0.63 | 17 | 102 | -   | 38.1 | V-0 | 130 | - | - | 288 | 20 |
| <b>KB-5252</b>                                                                                                                                          | KB-5252                                      | -                                              | CEM-1  | 0.63 | 17 | 102 | -   | 13   | V-0 | 130 | - | - | 260 | 10 |
| <b>KB-6150</b>                                                                                                                                          | KB-6150                                      | -                                              | FR-4.0 | 0.63 | 17 | 102 | -   | 50.8 | V-0 | 130 | - | - | 288 | 20 |

|                         |                     |   |         |      |    |     |   |      |     |     |     |   |     |    |
|-------------------------|---------------------|---|---------|------|----|-----|---|------|-----|-----|-----|---|-----|----|
| <b>KB-616(X)</b>        | KB-6160,<br>KB-6164 | - | FR-4.0  | 0.38 | 17 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6160A</b>         | KB-6160A            | - | FR-4.0  | 0.38 | 12 | 140 | - | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6160C</b>         | KB-6160C            | - | FR-4.0  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6160F</b>         | KB-6160F            | - | FR-4.0  | 0.38 | 9  | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6160LC</b>        | KB-6160LC           | - | FR-4.0  | 0.38 | 9  | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6160LC(C)</b>     | KB-6165C            | - | FR-4.0  | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6164F</b>         | KB-6164F            | - | FR-4.0  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6165</b>          | KB-6165             | - | FR-4.0  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6165C (ASP 1)</b> |                     |   |         |      |    |     |   |      |     |     |     |   |     |    |
|                         | KB-6165C            | - | FR-4.0  | 0.63 | 12 | 102 | - | 50.8 | V-0 | 130 | 260 | 4 | 288 | 60 |
| <b>KB-6165F</b>         | KB-6165F            | - | FR-4.0  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6165G</b>         | KB-6165G            | - | FR-4.1  | 0.05 | 17 | 102 | - | 50.8 | V-0 | 100 | -   | - | 288 | 20 |
|                         |                     |   |         | 0.38 | 17 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6165GC</b>        | KB-6165GC           | - | FR-4.1  | 0.05 | 17 | 102 | - | 50.8 | V-0 | 100 | -   | - | 288 | 20 |
|                         |                     |   |         | 0.38 | 17 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6165LE</b>        | KB-6165LE           | - | FR-4.0  | 0.38 | 9  | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6167A</b>         | KB-6167A            | - | FR-4.0  | 0.38 | 17 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6167F</b>         | KB-6167F            | - | FR-4.0  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6167G</b>         | KB-6167G            | - | FR-4.1  | 0.05 | 17 | 102 | - | 50.8 | V-0 | 100 | -   | - | 288 | 20 |
|                         |                     |   |         | 0.38 | 17 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 20 |
| <b>KB-6168</b>          | KB-6168             | - | FR-4.0  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 60 |
| <b>KB-6168LE</b>        | KB-6168LE           | - | FR-4.0  | 0.38 | 9  | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 30 |
| <b>KB-6169GT</b>        | KB-6169GT           | - | FR-15.1 | 0.38 | 17 | 102 | - | 50.8 | V-0 | 130 | -   | - | 288 | 20 |

|                                                                                                                                                           |                                                       |   |         |      |    |     |   |      |     |     |   |   |     |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---|---------|------|----|-----|---|------|-----|-----|---|---|-----|----|
| <b>KB-7150</b>                                                                                                                                            | KB-7150                                               | - | CEM-3.0 | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 290 | 20 |
| <b>KB-7150C</b>                                                                                                                                           | KB-7150C                                              | - | CEM-3.0 | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 20 |
| <b>KB-7150T</b>                                                                                                                                           | KB-7150T                                              | - | CEM-3.0 | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 20 |
| <b>P-138</b>                                                                                                                                              | P-138                                                 | - | FR-4.0  | 0.63 | 12 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>Metal clad industrial laminates for use in single layer printed wiring boards with copper on one or both sides, furnished as sheets, rods or tubes</b> |                                                       |   |         |      |    |     |   |      |     |     |   |   |     |    |
| <b>HF-140</b>                                                                                                                                             | HF-140                                                | - | FR-4.1  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>HF-170</b>                                                                                                                                             | HF-170                                                | - | FR-4.1  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>KB-3153*</b>                                                                                                                                           | KB-3153                                               | - | FR-1    | 0.71 | 34 | 102 | - | 50.8 | V-0 | 130 | - | - | 260 | 10 |
| <b>KB-6167GLD,KB-6165GMD,KB-3200G,KB-6167GMD</b>                                                                                                          |                                                       |   |         |      |    |     |   |      |     |     |   |   |     |    |
|                                                                                                                                                           | KB-6167GLD,<br>KB-6165GMD,<br>KB-3200G,<br>KB-6167GMD | - | FR-4.1  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>Metal clad industrial laminates for use in single layer printed wiring boards with copper on one or both sides,</b>                                    |                                                       |   |         |      |    |     |   |      |     |     |   |   |     |    |
| <b>EEL-128</b>                                                                                                                                            | EEL-128                                               | - | FR-4.0  | 0.38 | 17 | 102 | - | 38.1 | V-0 | 130 | - | - | 288 | 30 |
|                                                                                                                                                           |                                                       |   |         | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>EEL-145</b>                                                                                                                                            | EEL-145                                               | - | FR-4.0  | 0.38 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| <b>KB-3151C*</b>                                                                                                                                          | KB-3151C                                              | - | FR-1    | 0.71 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 260 | 10 |
| <b>KB-3151S</b>                                                                                                                                           | KB-3151S                                              | - | FR-1    | 0.71 | 17 | 102 | - | 38.1 | V-0 | 130 | - | - | 260 | 10 |
| <b>KB-5150A</b>                                                                                                                                           | KB-5150A                                              | - | CEM-1   | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 20 |
| <b>KB-5150H</b>                                                                                                                                           | KB-5150H                                              | - | CEM-1   | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 20 |
| <b>KB-5150L</b>                                                                                                                                           | KB-5150L                                              | - | CEM-1   | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 260 | 10 |
| <b>KB-6155</b>                                                                                                                                            | KB-6155                                               | - | FR-4.0  | 0.38 | 12 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 60 |
| <b>KB-7152</b>                                                                                                                                            | KB-7152                                               | - | CEM-3.0 | 0.63 | 17 | 102 | - | 50.8 | V-0 | 130 | - | - | 288 | 20 |

| Metal clad industrial laminates for use in single layer printed wiring boards with copper on one side only, furnished as sheets                |             |         |        |      |    |     |    |      |     |     |   |   |     |    |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------|--------|------|----|-----|----|------|-----|-----|---|---|-----|----|
| <b>KB-1150</b>                                                                                                                                 | KB-150      | -       | XPC    | 0.71 | 35 | 117 | -  | 25.4 | HB  | 130 | - | - | 260 | 10 |
| <b>KB-5150</b>                                                                                                                                 | KB-5150     | -       | CEM-1  | 0.63 | 35 | 102 | -  | 50.8 | V-0 | 130 | - | - | 260 | 10 |
| <b>KB-5150G</b>                                                                                                                                | KB-5150G    | -       | CEM-1  | 0.63 | 17 | 102 | -  | 50.8 | V-0 | 130 | - | - | 288 | 10 |
| <b>KB-5252</b>                                                                                                                                 | KB-5252     | -       | CEM-1  | 0.63 | 17 | 102 | -  | 50.8 | V-0 | 130 | - | - | 288 | 10 |
| <b>P-138</b>                                                                                                                                   | P-138       | -       | FR-4.0 | 0.63 | 12 | 102 | -  | 50.8 | V-0 | 130 | - | - | 288 | 30 |
| Metal clad industrial laminates for use in single layer printed wiring boards with copper on one side only, furnished as sheets, rods or tubes |             |         |        |      |    |     |    |      |     |     |   |   |     |    |
| <b>KB-3150N</b>                                                                                                                                | KB-3150NU % | -       | FR-1   | 0.71 | 17 | 102 | -  | 50.8 | V-0 | 130 | - | - | 260 | 10 |
| <b>KB-3151HS</b>                                                                                                                               | KB-3151HS   | -       | FR-1   | 0.71 | 34 | 102 | -  | 50.8 | V-0 | 130 | - | - | 260 | 10 |
| Metal clad industrial laminates for use in multilayer printed wiring boards with copper on one or both sides,                                  |             |         |        |      |    |     |    |      |     |     |   |   |     |    |
| <b>KB-6155</b>                                                                                                                                 | KB-6155     | KB-6055 | FR-4.0 | 0.38 | 12 | 102 | 70 | 50.8 | V-0 | 130 | - | - | 288 | 60 |

**Metal clad industrial laminates (Flammability Only Recognition):**

|                                                                                                                                     |         |      |         | Bld up | Clad  | Cond  | Thk   | Max  | Max   | Assembly | Solder   | Solder  | Lts  |       |
|-------------------------------------------------------------------------------------------------------------------------------------|---------|------|---------|--------|-------|-------|-------|------|-------|----------|----------|---------|------|-------|
| Metal                                                                                                                               | Lam-    | Pre- |         | Min    | Min   | Max   | Max   | Area |       | Oper     |          |         |      |       |
| Clad                                                                                                                                | inate   | preg | ANSI    | Thk    | Ext   | Ext   | Int   | Dia  | Flame | Temp     | Process  | Process | Temp | Time  |
| Dsg                                                                                                                                 | Dsg     | Dsg  | Type    | (mm)   | (mic) | (mic) | (mic) | (mm) | Class | (°C)     | Temp(°C) | Cycles  | (°C) | (sec) |
| Metal clad industrial laminates for use in single layer printed wiring boards with copper on one or both sides, furnished as sheets |         |      |         |        |       |       |       |      |       |          |          |         |      |       |
| KB-5152                                                                                                                             | KB-5152 | -    | No ANSI | 0.60   | -     | -     | -     | -    | V-0   | -        | -        | -       | 260  | 10    |
| KB-6162                                                                                                                             | KB-6162 | -    | No ANSI | 0.63   | -     | -     | -     | -    | V-0   | -        | -        | -       | 288  | 30    |

% - Corresponds to Unclad values without adhesive. For declad values (single sided) see corresponding grade "KB-3150N"

& - Corresponds to Declad values with adhesive. For Unclad values see corresponding grade designation.

(ASP 1) - Assembly solder process evaluated to IPC-TM-650, 2.6.27 Thermal Stress Assembly Simulation.

\* - With adhesive

X - may be 0, 4

Marking: Company name, material designation on container or wrapper.

Last Updated on 2025-07-31

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