

## NSW Flexible Duct, Thermal and Fire Rating Requirements from 1 May 2011

### Domestic Applications

BCA 2011 is mandatory for all Class 1 + 10 domestic buildings in NSW issued with a building permit from May 1 2011:

BCA 2011 specifies;

- Material R Values (R Value of insulation only) must be used on flexible duct and fittings tested to AS/NZS 4859.1. It is not acceptable to quote an insulation thickness and/or weight instead of a total R Value(Rm).
- All duct in a heating systems that is ignited by a flame must be fire rated to AS 4254
- Rm 0.4 for fittings in all installations
- Rm 0.6 insulation can only be used on duct within 'the insulated building envelope' e.g In riser shafts and in between floors
- Rm 1.0 for duct in all heating only refrigerated cooling only and evaporative cooler only systems (except zone 8, Rm 1.5 is required)
- Rm 1.5 for duct in all reverse cycle and add on cooling systems, except in climate zones 2 and 5 where Rm 1.0 is acceptable. (see note).

**Note: Rm 1.0 may be used in reverse cycle and add on cooling systems in climate zones 4, 6 and 7 if the ducts are;**

- Under a suspended floor within an enclosed perimeter or
  - In a roof space that has insulation of not less than R 0.5 directly beneath the roofing i.e. above the duct. NB Sarking / reflective foils alone are not sufficient.
- Dependant on building class and sub class BASIX requirements may also apply.

### Commercial Applications

BCA 2011 is mandatory for most classes of commercial buildings in NSW issued with a building permit from May 1 2011 including;

Building classes 3, 5, 6, 7, 8, 9.

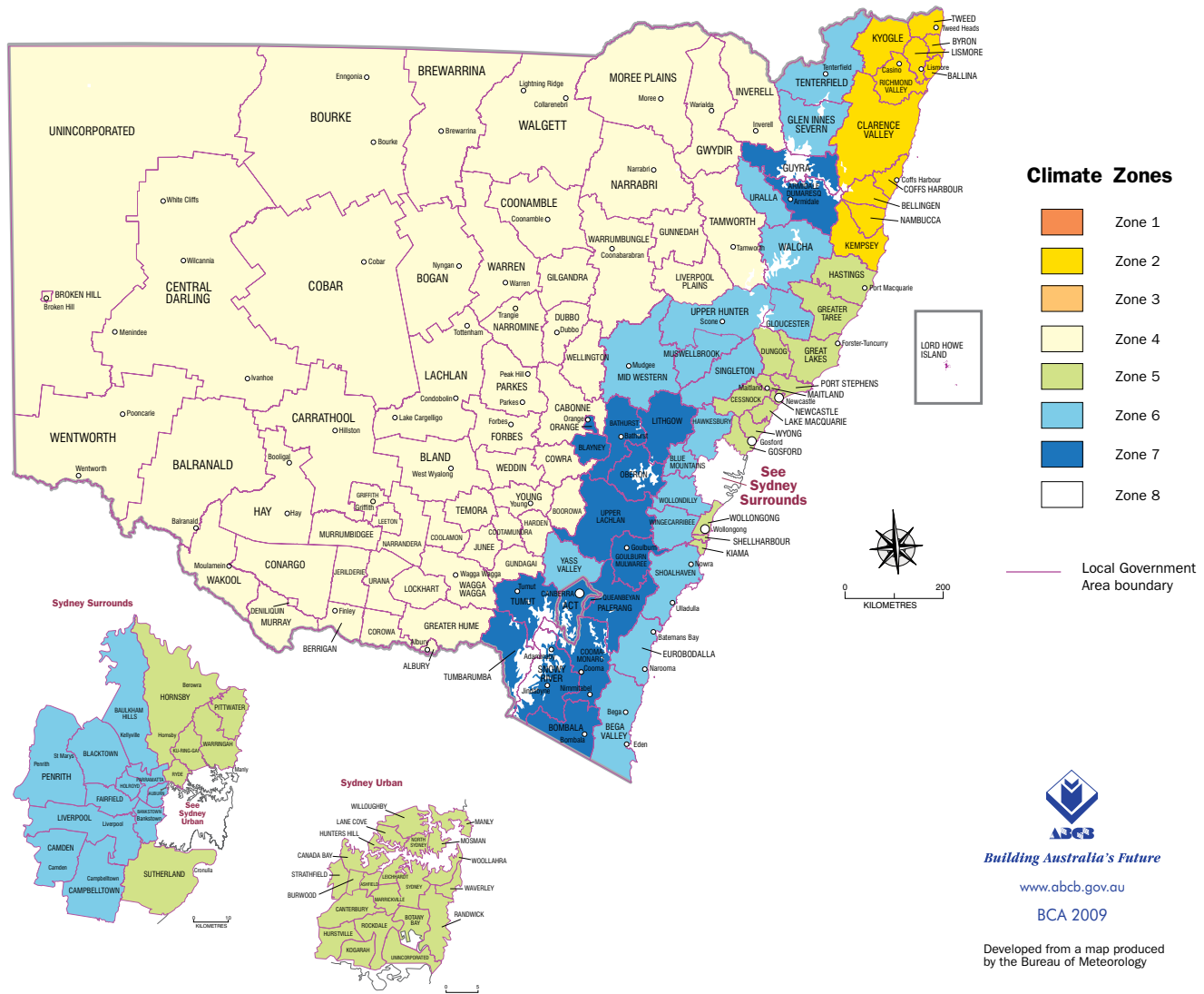
Note: Class 2 and a class 4 are subject to Basix but still use section J for flexible duct.

BCA 2011 specifies;

- "Material R Values" (Rm) (R Value of insulation only) must be used on flexible duct and fittings, tested to AS/NZS 4859.1." Total R Values" (R) are not acceptable nor is quoting insulation thickness and or weight instead of a Material R-value (Rm).
- All duct in all systems must be fire rated to AS 4254.
- Rm 2.0 duct and fittings must be used on all in heating, cooling and evaporative installations unless;
  - Duct is no more than 3 meters in length to an outlet or from an inlet then Rm 1.0 is acceptable.
  - Duct and fittings are installed within a "conditioned space" which require, Zones 2 and 5 - Rm 1.2, Zones 4, 6 and 7- Rm 1.2 and zone 8 - Rm 1.6.
  - Duct and fittings are installed in Zone 8 which requires Rm R 2.4.
- Dependant on building class and sub class BASIX requirements may also apply.

Contractors/homeowners need to ensure that only duct with a designated and appropriate Material R-Value (Rm) or Total R Value (Rt) is installed and that documentary evidence is available to demonstrate that required thermally rated duct has been ordered, supplied and installed by the duct supplier. The supply of a "letter of certification", "letter of compliance", or equivalent, by a builder that indicates compliance, demonstrates that regulatory standards have been followed. The failure to install thermally and fire rated compliant product may breach state or local regulations, builders' guarantees, or the Trade Practices Act, possibly triggering make-good provisions, and may extend for some years depending on local regulations and building contracts.

**For (BCA) thermal and fire rating requirements in other states of Australia current as of 1 May 2011, refer to pages 91 in the Flexible Duct section.**



In the advanced world today, many different materials and systems have been developed as an alternative to the galvanized sheet metal traditionally used. One of the simplest, effective and economical alternatives is TD Pre-Insulated Aluminium Duct. It specialises in the air distribution fields as well as other insulation purposes. TD Pre-Insulated Duct is the solution to your needs.

TD Pre-Insulated duct is a double skin pre-insulated sandwich panel, made with two main materials (PU - Polyurethane & PIR - Polyisocyanurate) which are composed of three layers. The top and bottom layers are made up of embossed aluminium foil of 80 microns in thickness.

There are two alternatives for the middle layer of foam insulation material.

1. TD Pre-Insulated Duct Board - PU - Polyurethane 20mm Thick (R1.0 & 4 zero)
2. TDi Pre-Insulated Duct Board - PIR - Polyisocyanurate 20mm Thick (R1.5 & 4 Zero)

Both these solutions have been fully tested to comply with all relevant standards by both VIPAC & AWTA.

TD Pre-Insulated Aluminium Duct offers extremely good consistency of density throughout the sheet. The TD Pre-Insulated Aluminium Duct also has the foil applied in the initial manufacturing process ensuring an even and consistent application across the whole sheet & ensuring that the foil does not delaminate.

The tables below outline the key properties for both types of board.

## Key properties of the TD Pre-Insulated Aluminium Duct

| TDB4000 (R1.0) 20mm Thick Polyurethane |                 | TDiB4000 (R1.5) 20mm Thick Polyisocyanurate |                  |
|--|-----------------|---|------------------|
| Sheet Size                             | 4000mm x 1200mm | Sheet Size                                  | 4000mm x 1200mm  |
| Thickness Of Panel                     | 20mm            | Thickness Of Panel                          | 20mm             |
| Density Of Polyurethane                | 70.3Kg/m3 +/- 2 | Density Of Polyisocyanurate                 | 71.49Kg/m3 +/- 2 |
| Compressive Strength                   | 200N/mm2        | Compressive Strength                        | 200N/mm2         |
| Thermal Conductivity                   | 0.021 W/m C     | Thermal Conductivity                        | 0.0117 W/m C     |
| Flame Retardant                        | B1              | Flame Retardant                             | Class 0          |
| Friction Coefficient                   | 0.0135          | Friction Coefficient                        | 0.0135           |
| Working Temperature                    | -60 + 80 Deg C  | Working Temperature                         | -60 + 80 Deg C   |
| Humidity Range                         | 0-100%          | Humidity Range                              | 0-100%           |
| Max Pressure Drop In Duct              | 2000pa          | Max Pressure Drop In Duct                   | 2000pa           |
| Max Airflow                            | 12m/s           | Max Airflow                                 | 12m/s            |

## TD R1.0 Pre-Insulated Duct/Box

| Product Code | Perimeter Range | Height |     |     |     |     |     |     |     |     |     |
|--------------|-----------------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|              |                 | 160    | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 |
| 20100        | 0-800           |        |     |     |     |     |     |     |     |     |     |
| 20101        | 801-1200        |        |     |     |     |     |     |     |     |     |     |
| 20102        | 1201-1600       |        |     |     |     |     |     |     |     |     |     |
| 20103        | 1601-2000       |        |     |     |     |     |     |     |     |     |     |
| 20104        | 2001-2400       |        |     |     |     |     |     |     |     |     |     |
| 20105        | 2401-2800       |        |     |     |     |     |     |     |     |     |     |
| 20106        | 2801-3200       |        |     |     |     |     |     |     |     |     |     |
| 20107        | 3201-3500       |        |     |     |     |     |     |     |     |     |     |
| 20108        | 3501-3800       |        |     |     |     |     |     |     |     |     |     |
| 20109        | 3801-4100       |        |     |     |     |     |     |     |     |     |     |
| 20110        | 4101-4400       |        |     |     |     |     |     |     |     |     |     |
| 20111        | 4401-4700       |        |     |     |     |     |     |     |     |     |     |
| 20112        | 4701-5000       |        |     |     |     |     |     |     |     |     |     |
| 20113        | 5001-5300       |        |     |     |     |     |     |     |     |     |     |
| 20114        | 5301-5600       |        |     |     |     |     |     |     |     |     |     |

### BOX – Manufactured

- Please specify Size (Dia), location & number of spigots (price includes a maximum of two spigots).
- All opening dimensions will be assumed as internal sizes unless otherwise stated.
- All heights will be assumed as overall unless otherwise stated
- No extrusions will be supplied unless requested. If required, H Extrusion is standard for all boxes unless specified otherwise.
- The allowance for spigots will be based on ovalised spigots (where required) unless specified.
- If spigot sizes required do not fit in the specified box size the box will automatically be made as a blown box & the price adjusted accordingly.
- All blown boxes will have central openings.



## TD R1.0 Pre-Insulated V-Box 1-Way

| Product Code | Perimeter Range | Price Std Box | Price Blown Box |
|--------------|-----------------|---------------|-----------------|
| 20200        | 1800-2000       |               |                 |
| 20201        | 2001-2200       |               |                 |
| 20202        | 2201-2400       |               |                 |
| 20203        | 2401-2600       |               |                 |
| 20204        | 2601-2800       |               |                 |
| 20205        | 2801-3000       |               |                 |
| 20206        | 3001-3200       |               |                 |
| 20207        | 3201-3400       |               |                 |
| 20208        | 3401-3600       |               |                 |

## TD R1.0 Pre-Insulated V-Box 2-Way

| Product Code | Perimeter Range | Price Std Box | Price Blown Box |
|--------------|-----------------|---------------|-----------------|
| 20220        | 1800-2000       |               |                 |
| 20221        | 2001-2200       |               |                 |
| 20222        | 2201-2400       |               |                 |
| 20223        | 2401-2600       |               |                 |
| 20224        | 2601-2800       |               |                 |
| 20225        | 2801-3000       |               |                 |
| 20226        | 3001-3200       |               |                 |
| 20227        | 3201-3400       |               |                 |
| 20228        | 3401-3600       |               |                 |

## TD R1.0 Pre-Insulated V-Box 3-Way

| Product Code | Perimeter Range | Price Std Box | Price Blown Box |
|--------------|-----------------|---------------|-----------------|
| 20400        | 1800-2000       |               |                 |
| 20401        | 2001-2200       |               |                 |
| 20402        | 2201-2400       |               |                 |
| 20403        | 2401-2600       |               |                 |
| 20404        | 2601-2800       |               |                 |
| 20405        | 2801-3000       |               |                 |
| 20406        | 3001-3200       |               |                 |
| 20407        | 3201-3400       |               |                 |
| 20408        | 3401-3600       |               |                 |



### VBox – Manufactured

- Please specify Size (Dia), location & number of spigots eg VB1, VB2 & VB3 (For larger supply plenums please enquire).
- All opening dimensions will be assumed as internal sizes unless otherwise stated.
- All boxes will have a 50mm skirt before taper.
- No extrusions will be supplied unless requested. If required, H Extrusion is standard for all boxes unless specified otherwise.
- The allowance for spigots will be based on ovalised spigots (where required) unless specified.
- If spigot sizes required do not fit in the specified box size the box will automatically be made as a blown box & the price adjusted accordingly.
- All blown boxes will have central openings.