



Vehicle  
Certification  
Agency

# Dangerous Goods Guidance Note No. 001 Changes of Material, Manufacturer or Supplier of UN Approved Corrugated Fibreboard Boxes

# 1. Background

Corrugated fibreboard is widely used in the manufacture of shipping containers and boxes. The material is a 'sandwich' of special purpose papers which can be made up in many different grades, ranging from single wall, comprising one corrugated layer glued between two flat layers, through to triple and occasionally quadruple wall board, of 7 or 9 papers respectively. Corrugated fibreboard is characterised by the weight of a given area of the material, which in Europe and many other parts of the world is expressed in grams per square metre (g/m<sup>2</sup>). This is often referred to as the board 'grammage'.

The grammage of corrugated fibreboard may be defined in two ways:

- a). The 'component grammage', sometimes called the board 'make-up', which is the individual weight of each of the constituent papers.
- b). The 'combined grammage' which is the weight of the completed finished board. This is not simply the sum of the components, as a take-up or flute factor for the corrugated component(s) has to be taken into account along with the weight of the glue which binds the papers together.

The component grammage is the more informative of these and together with information on the type of paper used for each layer (e.g. Kraft, Test, Semi-Chem. etc) and the size of the corrugations (fluting), it defines the quality of the board. A complete specification will comprise this information together with the combined grammage of the board and when written is often abbreviated, for example:

175K / 100SC – B / 125T, 433 g/m<sup>2</sup>

This describes a board made up of a 175 g/m<sup>2</sup> Kraft outer face with a 100 g/m<sup>2</sup> semi-chemical 'B' flute corrugated component and a 125 g/m<sup>2</sup> 'Test' inner face with a combined grammage of 433 g/m<sup>2</sup>. Although sometimes quoted in isolation, the combined figure alone is insufficient to characterise the board, since many different combinations of papers could add up to the same combined weight.

## 2. Corrugated fibreboard boxes and dangerous goods

Corrugated fibreboard boxes are widely used in the carriage of dangerous goods, usually in conjunction with inner packagings such as bottles, jars or cartons. In most cases, samples of the complete package are required to pass tests specified by the United Nations in order to comply with national and international transport regulations. A successfully tested design will be certified and issued with a unique approval mark which should be displayed on the box. A typical mark issued by the UK will look like:



4G / Y12 / S / 08 / GB / 9999

The UN mark may only be applied to packaging which is constructed to the same specification as the samples that were tested to achieve certification. For every GB certified package, comprehensive design specifications are recorded at the time of test and for fibreboard boxes, these include details of the grade of corrugated board from which the tested package was made. This specification data forms the basis of the packaging approval and any substantial change or substitution of the paper or board materials used to make the box will invalidate its certification. Use of such packaging will then be in breach of the Carriage Regulations and UK law.

### 3. Changes of specification

It is recognised that small variations in paper weight will inevitably occur in production and in order to accommodate these within the scope of a UN approval, a tolerance on the material specification is permitted, providing that the packaging's performance is unaffected. The maximum deviation from the stated material grammages are:

- No greater than +/- 10% on any individual component grammage, and
- No greater than +10% or -5% on the combined board grammage

Any variation outside these limits must be validated by further testing before boxes made from the material can be used for dangerous goods.

### 4. Certificate holder duties

In recent years, paper makers and suppliers have been incrementally reducing the grammage of many papers used in the manufacture of corrugated board. The change has been largely invisible to package users, as materials are very often still called by their original grade weight, rather than their actual (reduced) weight. For example, paper makers have claimed that 200 g/m<sup>2</sup> Kraft paper has not been regularly available for some time and have commonly substituted paper of 186 g/m<sup>2</sup> and sometimes as little as 175 g/m<sup>2</sup> in its place. However, many still refer to the grade as '200 Kraft' leading purchasers to believe that is what they are getting. Similar discrepancies exist across all paper types and weights and this has caused a great deal of confusion amongst users. Ironically, 200 g/m<sup>2</sup> material is becoming more commonplace, as higher weight materials are reduced to the extent that they have dropped a complete grade.

The certificate holder has a duty to ensure that the packaging they supply, purchase or use conforms fully to the approved specification and that it is made from the right grade of material. Given the prevalence of misleading nomenclature, a duty holder is unlikely to be able to identify what is being supplied without exercising some form of quality control or independent checking of incoming materials. Where there is doubt about the compliance of any particular material the VCA Dangerous Goods Office may be consulted.

## CHANGE OF MANUFACTURER OR PRODUCTION SITE

The name and location of the manufacturer of each UN certified corrugated fibreboard packaging is identified on its performance certificate and only packaging of the approved specification, produced by the named manufacturer at the nominated production site may be marked with the associated UN marking. If a certificate holder wishes to source the packaging from an alternative supplier or from a different production site to that specified, this can usually be accommodated within the scope of the packaging approval, if the following conditions are met.

1. The certificate holder must apply to the VCA Dangerous Goods Office to register the proposed change, and notify the name and address of the alternative supplier
2. The alternative supplier must provide VCA DGO with a specimen of the box which he intends to supply to certificate holder, together with a written specification of the material, in the prescribed format.
3. Subject to the tolerances noted above, the specimen, which will be analysed, must comply with the specification of the approved packaging with respect to its construction and materials.

If the application is approved, an amended performance certificate will be issued to reflect the change.

There is normally no charge for registering an alternative corrugated box manufacturer. However, if an initial application has been rejected, for example, because the specimen supplied was out of specification, a fee may be charged to cover the cost of analysing any subsequent material submitted.

Application to register any change relating to a UN approved packaging should be addressed to:

**VCA Dangerous Goods Office, Wesley House, Bull Hill, Leatherhead, Surrey, KT22 7AH**