



LP Bulletin

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Bulletin 654 - 9/09 - Distillers Dried Grain - Worldwide

The Association frequently advises members on carriage of Distillers Dried Grain (DDG) or Distillers Dried Grain with Solubles (DDGS). Shippers declare these often as ordinary harmless bulk cargoes but at other times as hazardous under the provisions of IMO's Code of Safe Practice for Solid Bulk Cargoes (BC Code) for seed cake. In view of this discrepancy in declaration, it needs to be stressed that DDG and DDGS closely resembles seed cake products and it is the view of the Association that they should always be carried on board ships in accordance with the recommendations set out by IMO's Code of Safe Practice for Solid Bulk Cargoes (BC Code) in its provisions for this class of products. We shall explain.

DDG and DDGS are derived from grain and produced mainly in distilleries as co-products of ethanol for bio fuel use but also, although to a much lesser extent, by alcohol distilleries and breweries. The grain involved is mostly maize but other grains (barley, rice and rye) are also used. During fermentation the major component of the grain, which is starch, is converted to ethanol. The removal of starch results in concentration of other nutrients (protein, fibres, oils, minerals) about three-fold. The solid residual mass separated after fermentation from the aqueous distillate, forms the DDG product. As regards DDGS, the solids in solution are recovered from the aqueous fraction by drying and are blended with the DDG product. Consequently, in chemical composition DDG and DDGS are very similar. They are rich in nutrients and have a long history as valuable feed for livestock. Recent years has seen a sharp increase in the supply of DDG and DDGS resulting from the global drive to develop bio fuels as alternatives to fossil fuels. In the US, the world's leading producer of Distillers Dried Grains, annual production in 1998 was 1 mill tons, about 10 mill tons in 2006 and expected to further double within a few years. Only a very small portion originates from the beverage industry.

DDG and DDGS are oily products. Typical fat/oil contents are about 10% and moisture contents ranges from about 8 to 12%. From the point of view of chemical composition they therefore closely resemble oil rich seed cake products although, strictly speaking, they are not derived from normal oilseeds. But as oily plant products, and in common with normal seed cakes, they are liable to undergo dangerous oxidation in contact with air. In particular if wet or wetted, the microbiological heating associated with wetting may raise the cargo temperatures to levels at which direct air oxidation can take place and ultimately result in self-ignition and smouldering fires. It is therefore reiterated that the materials should be considered as seed cake and carried in accordance with the recommendations of IMO's BC Code for these materials. We add that prior to popular interest in bio fuel, the production of DDG was largely limited to the alcohol beverage industry where the co-product formed after fermentation commonly is referred to as Brewers Grain Pellets. This material is specifically included in the BC Code as seed cake.

The BC Code classifies seed cake products into four hazard rankings primarily according to oil and moisture content as follows:

- Seed Cake UN 1386 (a): Products containing more than 10% of oil or more than 20% of oil and moisture combined.
- Seed Cake UN 1386 (b): Products containing not more than 10% of oil and when the amount of moisture is higher than 10%, not more than 20% of oil and moisture combined.

- Seed Cake UN 2217: Products with not more than 1.5% oil and not more than 11% moisture. DDG and DDGS are relatively rich in oil and do not conform with this UN entry.
- Seed cake non-hazardous. Specific seed cake products exempt from classification as hazardous cargoes. Exemption does not include DDG or DDGS.

Before loading, under the provisions of the IMO Code the shipper is obliged to present a certificate from a recognized authority to the Master stating the oil and moisture contents of the seed cake cargo to be shipped. These parameters determine the category of hazard and thus provisions of carriage involved. As regards seed cake (including DDG and DDGS) cargoes falling under UN1386 (a), it should be stressed that IMO allows such products to be carried only with special permission from the competent authorities provided certain conditions are met. For this category, the competent authority in the country of shipment should therefore certify that those conditions are met when granting permission for shipment. Other than that, DDG and DDGS should be shipped according to the provisions set out under Seed Cake UN1386 (b).

Source of information: Carefully to Carry Committee
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