



ASSESSMENT REPORT

09(C)0844

REPORT ON. Assessment of the electrostatic hazards associated with cork granules

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REGISTRATION No. 6466

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Where values of uncertainty of measurement are given, these are expressed at the 95% confidence level unless otherwise stated.

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Baseefa tests	
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The signatures, date and other information on the cover sheet apply to all the above.

Those signing the front sheet of this report do so on behalf of Baseefa Ltd.

<u>Annexed Documents</u>	<u>No. of Pages</u>
Baseefa reports and Baseefa subcontractors reports with own cover	
None	
Manufacturer supplied reports and information	
None	
Other reports and information	
None	

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1. **Relevant hazard.**

The only hazard considered here is that of the ignition of spilled petrol or diesel by electrostatic discharges (often referred to simply as “sparks”) resulting from the use of cork as a sorbent material. As I (we) understand it, cork is a naturally occurring plant material with a resistivity between dissipative and non-conductive depending upon the relative humidity.

2. **Ignition by electrostatic discharges.**

For electrostatic charging to lead to an accidental ignition of a flammable atmosphere we need the following circumstances:

- One or more charging mechanism and surfaces for charge to accumulate;
- Electrostatic discharges (sparks) with sufficient energy to ignite the relevant flammable atmosphere;
- Circumstances which enable the sparks to take place within an ignitable mixture of the relevant flammable atmosphere;

2.1 **Electrostatic charging**

Pouring (scattering, shovelling, etc.,) granules or small particles of any material from a container can lead to electrostatic charging of the particles, the container and, if not suitably earthed, the person doing the pouring. However, it is reasonable to point that this activity is not normally a prolific source of charging.

2.2 **Electrostatic discharges and ability to cause an ignition.**

There are only two types of discharge relevant to this assessment; sparks and brush discharges:

- Sparks are often incendive and they take place between two conducting objects at different voltages. Metals are the most common conductors but people (and some liquids) are sufficiently conducting to give rise to sparks.
- Brush discharges are less incendive than spark discharges. They can occur when an earthed conductor approaches a highly charged surface of non-conductive objects (normally plastics).

2.3 **Factors relevant ignition risks**

1. Individually charged granules or particles of a size relevant to this assessment are not capable of causing incendive discharges;
2. However, a large number of such granules collecting inside an insulated metal container (or on an insulated metal plate) could lead to incendive sparks – irrespective of whether the particles were conductive or not;
3. Pouring particles from a non-conductive (plastic) bag or container could give rise to brush discharges – for example, to a person’s hand;
4. Unless suitably earthed, a person pouring or handling the granules could become charged and be capable of producing an incendive spark;
5. Unless suitably earthed, a conducting container from which granules were poured could become charged and be capable of producing an incendive spark.

2.4 Comments on risk factors (2.3)

In **item 2**, a bucket resting on a plastic bag could be the insulated metal container and it could acquire charged granules but, I suspect, the risk of this happening is low.

In **item 3**, any brush discharge is unlikely to be in a flammable location. In any case they could easily be prevented by avoiding plastics by, for example, using a paper bag.

The highest risk is associated with having an unearthed person in a location where there may be a flammable atmosphere (**items 4 and 5**).

3. General comments

I (we) can think of no reason why the use of cork granules as a sorbent make it more likely to cause an ignition of spilled fuel due to electrostatic charging. Being a "natural" material it has some advantages over "man-made" materials in that its resistivity will tend to be dissipative. However, I (we) recommend that the granules be dispensed from dissipative bags or containers, (e.g. paper) to avoid the slight risk of brush discharges.

Unless the person carrying out the work is suitably earthed the process of soaking up a fuel spill introduces a small risk of ignition. But this risk would be the same whichever sorbent was used. The problem is whether it is reasonable to expect personnel to wear dissipative footwear for the relatively rare event of clearing up a fuel spill.