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IMPROVEMENTS IN AND RELATING TO INCANDESCENT MANTLES.

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Description

This invention relates to incandescent mantles for use in gas fired lanterns. A mantle for these purposes consists essentially of a bag which is secured over a gas supply jet, combustion taking place on the surface of the mantle, the structure of which is raised to white hot temperatures very rapidly.

Mantles are made from fibres which have good resistance to high temperatures, such as asbestos or glass. It will be noted that structural integrity is important, although it is normally accepted that after its first use, a mantle becomes extremely brittle and/or fragile. However, at the time of installation it is a loose, floppy bag and it is usual to provide a tie yarn in the form of a drawcord which can be used to secure the mantle in place.

The traditional material for the tie yarn was an asbestos based cord. Substitutes for asbestos have included glass fibre yarns with an outer layer of cotton. However, these have poor knot strength and poor performance at elevated temperatures.

A continuous filament glass fibre yarn with organic fibres such as acrylic, viscose and aramid staple fibres bonded to it in a generally parallel arrangement has also been tried, the organic component burning off in service to leave the glass core. However, knot strength is still a problem and aramid fibres are costly.

According to this invention a mantle tie cord comprises a continuous multi-filament core of refractory fibre with a cellulosic outer sheath of staple fibres and a continuous filament yarn. Refractory fibre for present purposes means a fibre which will not ordinarily fuse together at the working temperature of a naturally aspirated liquefied petroleum gas (LPG) flame. Working temperatures in the range of about 750°C to about 900°C are typical of such LPG flames. A particularly preferred refractory fibre is silica. The staple fibres and the continuous filament yarn are preferably of regenerated cellulose; they are applied to the refractory fibre yarn by winding and/or wrapping them onto the refractory fibre core, for example by use of the DREF spinning process. The cord may be treated with a binder to reduce hairiness. The binder may be an aqueous polyvinyl acetate ethylene oxide copolymer solution or dispersion.

Starch or acrylic polymer dispersions may also be used. Viscose is a preferred regenerated cellulose material.

The tie cord of this invention can be coloured, for example by including a dyestuff in the binder, though it is also possible to dye the staple fibres. Colouring the tie cord facilitates its identification by a user.

It has been found that the tie cord of this invention has sufficient integrity to hold a mantle in place until its shape is effectively fixed by the heat developed in use, even though the regenerated cellulose carbonises to a very weak or even non-existent state after a fairly short time.

In order that the invention be better understood a preferred embodiment of it will now be described by way of example.

Example

A continuous filament core of two-ply 68 tex silica yarn was wrapped with 68 tex staple viscose (38 mm 1.7 dtex fibres) and a 122 tex continuous filament viscose strand to form a sheath. The wrapping was carried out on a DREF spinning machine. A polyvinyl acetate binder containing a dye was applied to the finished cord, which had the following composition by weight.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>40%</td>
</tr>
<tr>
<td>Viscose</td>
<td>32%</td>
</tr>
<tr>
<td>Fibres</td>
<td>18%</td>
</tr>
<tr>
<td>Binder</td>
<td>9%</td>
</tr>
<tr>
<td>Dye</td>
<td>1%</td>
</tr>
</tbody>
</table>

The cord thus produced had good handling properties and could be knotted without significant damage to the silica.

Claims

1. A mantle tie cord comprising a continuous multi-filament core of refractory fibre with a cellulosic outer sheath of staple fibres and a continuous filament yarn.

2. A mantle tie cord according to claim 1 wherein the refractory fibre is silica.

3. A mantle tie cord according to claim 1 or claim 2 wherein the sheath comprises regenerated cellulose fibres.
4. A mantle tie cord according to claim 3 wherein the regenerated cellulose is viscose.

5. A mantle tie cord according to any of claims 1-4 further comprising a binder composition.

6. A mantle tie cord according to claim 5 wherein the binder is a polyvinyl acetate composition, or starch, or acrylic polymer dispersions.

7. A mantle tie cord according to claim 5 or claim 6 wherein the binder further comprises a dye.