Bunsen burners

Posted by Anonymous on Wed, 2016-03-02 13:04

Bunsen Burners: What are the gas tubing and other connection specifications, including material and length, for Bunsen burners used in a school setting? Furthermore, can old LPG Bunsen burners be converted to use natural gas?

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Showing 1-1 of 1 Responses

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Submitted by sat on 02 March 2016

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Material

Silicone is the material of choice for Bunsen tubing.

Many university departments and schools are changing from rubber tubing to silicone tubing for the following reasons: rubber tends to split, become brittle, or in some cases soft and sticky, and hence there is a risk of gas leaks. There is no directive as such to do this, but it is recommended when replacing rubber tubing to replace it with a suitable alternative. The following points should be considered.

- The statements in the SDSs for both LPG (liquefied petroleum gas) and LNG (liquefied natural gas) give instructions not to use natural rubber flexible hoses.
- It is important to have a flexible tubing adequate for the function.
- PVC tends to be rigid and has a memory for coiling, which can create a hazard of the Bunsen burner falling over.
- Silicon tubing appears to be a very suitable alternative to rubber tubing for use with Bunsen burners. Although more expensive, it has a much longer life span.
- All tubing should be checked periodically for cracks, hardening and other damage.
- See AIS: School science laboratory gas fitting requirements.

Length

A site-specific risk assessment needs to be conducted to determine the most suitable length. Science ASSIST suggests that this length would generally be between 60 and 100 cm. Some science suppliers sell 60 cm lengths and others sell it in 10 m rolls to be cut to suit. The hose must be as short as practicable to prevent kinking, damage or getting hooked and the Bunsen tipping over during use. Consideration must be given to the location of other services such as power points, and other potential hazards such as overhead cupboards, posters or other combustible materials in relation to the positioning of the Bunsen burner during use.

Gas Conversion

Conversion of the old LPG Bunsen burners to use natural gas (NG) may be possible, but it may be safer and more economical to simply purchase new Bunsen burners. If you are requiring several class sets, your school may be able to negotiate with a science supplier to get a very competitive pricing for a bulk purchase.

For safety reasons, it is vitally important to use the correct Bunsen for the type of gas being used. The difference between LPG and NG burners is related to the design of the jet. Whilst there are a number of differences between the actual gases, the two most relevant factors relate to the pressure at which the gas is delivered, and the air-to-gas ratio required for proper combustion. Natural gas operates at a lower pressure than LPG and also requires less oxygen than LPG.

To see if it is possible to obtain a replacement jet for your existing burners, it would first be necessary to approach the manufacturer or supplier of the Bunsen burner. Some Bunsen burners have a screw-in jet, and for these it may be possible to arrange for a competent person to replace the jet. Some manufacturers may refuse liability on their products if their burners have been modified. In addition, the name of the burner's preferred fuel is usually cast into the metal base, so, if the jets are changed, it may cause confusion and potentially the incorrect burner fuel being used, with unpredictable consequences.

From a cost point of view: if it is possible to replace the jet, the expense of the spare part and the time taken to replace these may be similar to the cost of a new Bunsen burner, so any savings may be minimal. By purchasing new Bunsen burners, you can be assured of the safety of staff and students by having the correct burner, for the relevant gas.

Therefore, it is the opinion of Science ASSIST that the benefits of purchasing good-quality, new, natural gas Bunsen burners outweigh any possible savings of converting the old LPG burners.

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