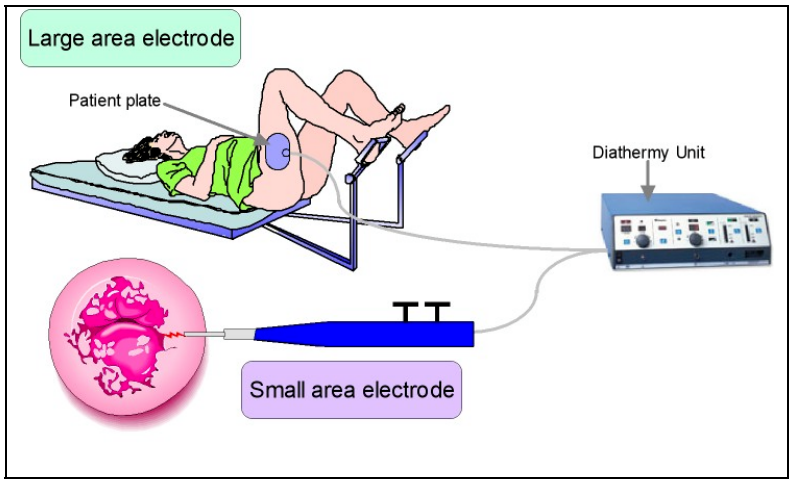
Customer Information Bulletin:

Diathermy & Insulated Vaginal Specula

We are frequently asked about the need for, and safety of, insulated specula when using diathermy for LLETZ or similar procedures.

To understand the various issues we need to review the basic concepts of electrosurgical diathermy:



The diathermy unit generates a high frequency current which passes between the active electrode, in this case the LLETZ loop or ball and the passive, patient plate electrode.

The patient plate electrode has a **large surface area**, typically >150cm$^{2.}$

This compares to LLETZ electrode with a **very small surface area**, typically less than 0.5cm^2

At the PASSIVE, patient plate electrode, the current is spread over a large surface and therefore has a very small *current density*, whereas at the ACTIVE electrode the current is confined to the tiny surface area of the wire loop and as a result has a *very high current density.* It is the high current density which causes intense heating in the local tissues and produces the surgical effects we associate with diathermy.

Problems can occur if the active wire loop is accidentally brought into contact with a metal Cusco speculum, normally this results in the loop suddenly burning out. There are also concerns for the electrical safety of the patient.

To reduce these perceived risks, users have moved from simple, stainless steel types to 'insulated' Cuscos. These are typically standard metal instruments which have been dipped in an acrylic coating.

Stainless Steel Cusco **Blue acrylic coated Cusco**

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When first delivered, these instruments offer a reduced risk of 'burn out' should the active loop come into contact with the Cusco. However, repeated washing and autoclaving will eventually cause the insulation to crack and flake where it is most vulnerable; along the outer edges. This will leave very small surface areas exposed.

A stainless steel, *uninsulated* speculum has a very large conductive area, typically >120cm^2 for a medium Cusco, it is also in close contact with the moist membranes of the vagina. In this case, if a live LLETZ loop is accidentally touched against the metal Cusco, there is minimal risk of localised heating over such a large, highly conductive area. This means there is a very low risk of burning the patient.

HIDDEN RISKS:

However, if an insulated Cusco, with a damaged edge, were to become active, through contact with a live LLETZ Loop, then there is a very high risk of small point contact causing a *high current density* at those points and associated tissue heating and burning in the vaginal fornix or side walls.

Remember, damage to insulation is often very difficult to detect and Clinics or CSSD units should have procedures and test equipment in place to ensure regular insulation testing of reusable diathermy instruments including insulated specula.

BLACKENED SPECULUM:

Blackened Cuscos are coated with a simple oxide layer and designed to prevent accidental reflection when using lasers.

They are NOT insulated.

If you have any further questions, please contact your nearest Customer Services Team for assistance:

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