DENTAL FLUX
DENTAL FLUX

The Latin word for *flux* means “flow”

Flux is a compound applied to molten alloy that dissolves or prevents the formation of oxides and other undesirable substances that may reduce the quality or strength of a solder or alloy.
DENTAL FLUX

The function of a dental flux is to dissolve or prevent the formation of oxides during the melting of an alloy, therefore assisting in the flow of the alloy.

Fluxes come in paste, liquids or powders, but all serve the same purpose.
PURPOSE OF FLUX

Surface Protection; Covers the metal surface and prevents access to oxygen so no oxides can form.

Reducing Agent; Reduces any oxides present and exposes clean metal.

Solvent; Dissolves any oxides present and carries them away.
APPLICATION OF FLUX
APPLICATION OF FLUX

Fluxes can be applied in two ways:

Soldering

Casting dental alloy
Soldering Of Dental Alloys

Soldering alloys are designed to melt, wet the surface(s) of the parent alloy, and flow across a clean metal surface; they cannot wet oxidized surfaces without the use of flux.
Soldering Of Dental Alloys

The purpose of a flux when soldering is to eliminate any oxide coating on the parent alloy surface when the filler solder alloy is molten and ready to flow into place.
Soldering Of Dental Alloys

For a flux to be effective it must have a fusion temperature below that of the alloy being heated, but should not burn readily.
Casting Dental Alloys

Flame casting methods generally need flux

- **High palladium alloys** need no flux, but those with higher silver content will need some
- **Gold and Palladium alloys** need very little flux, as they don’t produce much oxide during melting
- **Silver and sterling silver** need a little more flux
Casting Dental Alloys

*Vacuum casting* methods need no flux, as long as the metal is clean.

*Induction casting* methods need no fluxing, as it is fast melting and has a protective argon gas cover. Again the metal needs to be clean.
IDEAL PROPERTIES OF FLUX
IDEAL PROPERTIES OF FLUX

• Easy to apply and stay where it is put
• Withstand heating without losing its protective properties
• Lower fusion temperature than the alloy being melted
IDEAL PROPERTIES OF FLUX

• Flow easily over the surface of the alloy when melted
• Prevent the formation of oxides
• Prevent the absorption of gases into the molten alloy
IDEAL PROPERTIES OF FLUX

- Aid in the flow properties of the alloy
- Burn away cleanly
- Non-toxic
- Inexpensive
COMPOSITION OF FLUX
COMPOSITION OF FLUX

Most fluxes are based on a glass structure. So during the heating process a low fusing glass is formed, this acts as the protective la
COMPOSITION OF FLUX

There are 3 basic types of fluxes used

- **Pure borax**: tends to be blown away by the gas flame before the melt is molten as it is a powder. It is best added when the metal is molten by removing the flame momentarily.
COMPOSITION OF FLUX

• *Borax 50% and boric acid 50%:* boric acid melts at a lower temperature to provide a sticky mass to hold the borax in place. It is ideally used when soldering components together.
COMPOSITION OF FLUX

• **Borax 50-60%**, *boric acid* 12%, *silica* 5% and a *fine carbon* 25%:- the silica makes the glass a little stiffer for use on higher melting metals. The fine carbon adds some carbon monoxide at melting temperatures to protect the metal.
ANTIFLUX
ANTIFLUX

Antiflux prevents the flow of solder and is used to confine the solder to the work area.

The most common antiflux is the mark of a soft graphite lead pencil, which works best on surfaces that do not have a high polish. It however is removed by oxidation at higher temperatures.
ANTIFLUX

Polishing rouge (iron oxide) suspended in chloroform can also be painted around the area of the solder joint to prevent undesired spread of the solder. It is ideal for prolonged heating or higher temperatures.