

## High Impact Acrylic

### Do you know what you are asking for when requesting High Impact Acrylic

**Martyn Young, Cotswold Dental Laboratory, highlights the key factors when selecting a high impact denture base material**



As a lab owner, I am frequently asked to finish dentures in High Impact acrylic.

**But do you as dental surgeons really know what you are asking for?**

Do you specify the specific manufacturer's product, or do you just assume that the laboratory will use what is best.

**With so many high impact denture base acrylics on the market, how would you know which one to choose?**

Over the many years I have been running my laboratory I have used many different manufactures acrylics.

#### **Move towards private market**

Because of the growing private market, coupled with higher patient expectations, as a dental surgeon you probably assume that as you have requested a private quality denture you will be getting a High Impact denture base. You may have even asked for a finish in High Impact acrylic, but do you really know what you are asking for.

You probably do not want to get involved with what materials your laboratory is using but a little understanding of the materials may help.

#### **Flexural Strength and Impact Strength**

As a dental surgeon you realise that one of the most common reasons dentures break prematurely, while in use, is because of repeated slight flexing *resulting in stress fractures*. But did you know for instance that many high impact acrylics on the market sacrifice flexural strength in favour of high impact strength, thus exacerbating this problem.

#### **Increasing performance issues**

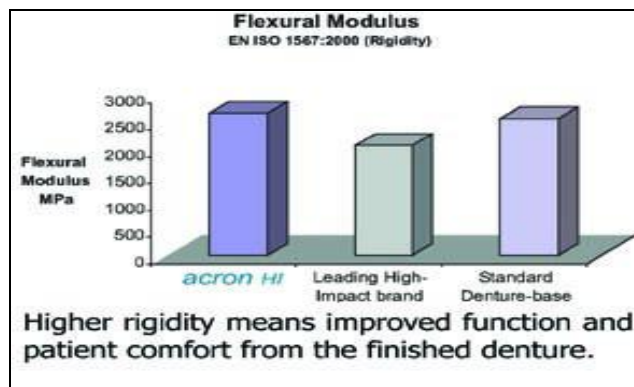
This is a problem that for many years and with many discussions with various manufacturers has been a major concern to me.

We had found it is difficult to acquire all the technical information we needed to make the right decisions. Obviously all manufacturers want to sell their materials and inform you of their best properties, but that is not always the complete picture.

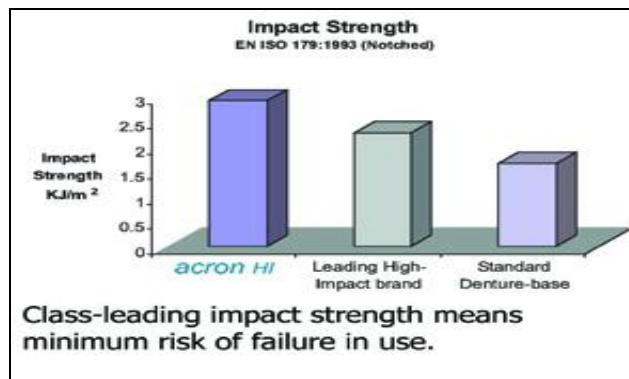
As a laboratory we made a list of the most important criteria to consider:-

- **strength – this must be as high as possible**
- **amount of residual monomer after curing – this must be as low as possible**
- **colour – this should be natural**
- **time taken to reach dough stage**
- **working time during the dough stage**
- **curing time**
- **cost**

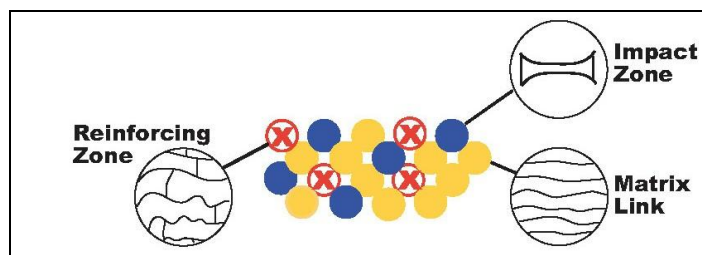
After looking at various materials over the years the one that met the criteria for me was **Acron HI**. This material combines a similar, if not slightly higher, flexural modulus strength (see graph 1) to standard base materials with a much higher impact strength (see graph 2) this the manufacturers explain is because of its special Multi Matrix technology (see graph3). Consequently it overcomes the problems frequently associated with other high impact denture base materials.



Graph 1



Graph 2



Graph 3

## High Impact Acrylics

After viewing trials and consideration of the data they (**Kemdent**) provided, we started to use the product. Today, we use it exclusively for all our private and independent cases. Once again, the manufacturer states that this acrylic is a true high impact based product, with the additional qualities of their unique Multi Matrix technology.

## The proof

Everything the manufacturer says about this product appears to be true. We now have the confidence in knowing, that by using this acrylic we can produce the high quality products demanded of us with the consistency and control we desire.

## Low Residual monomer content is preferable

As one of the criteria was low residual monomer the data provided proved to me another possible problem this time with all denture base acrylics.

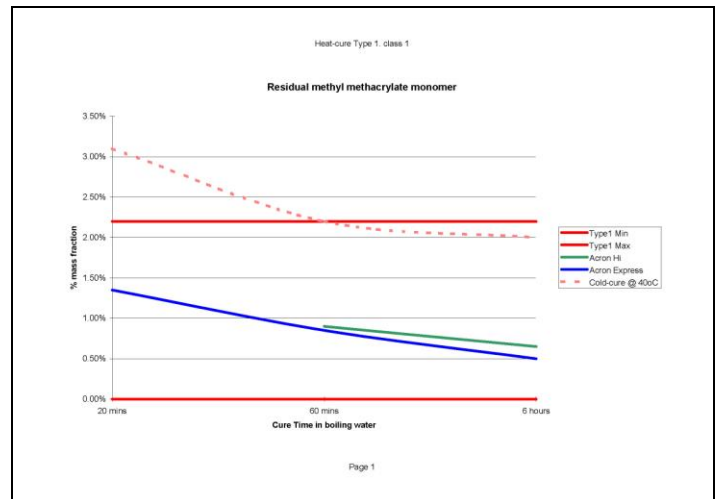
You may or may not know that there are many acrylics on the market that can be cured in 20 minutes.

Personally, I have always thought that to cure a denture, with a 20 minutes curing cycle, would surely produce an inferior product, especially in comparison to one that has a longer curing cycle. The graph below seem to bear witness to this assumption.

You should ask your laboratory how they process their acrylics. They have in their power, the ability to control to a lesser or greater extent the amount of residual monomer in the finished denture:

- By following the mixing instructions
- By selecting the correct product
- Controlling the curing cycle
- Curing for an even longer period and at a higher temperature if possible.

Notice how, on the graph (see graph 4) all the levels of residual monomer have reduced after 6 Hours of curing.



Graph 4

Martyn Young.

Has been a qualified Dental technician since 1971 and is Director of the Cotswold Dental Laboratory Ltd which is a specialist prosthetic laboratory in Cheltenham Gloucestershire. For more information.

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