

## Re: 1.7 vs 1.53 refractive index in glasses ??

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*Source:* <http://sci.tech--archive.net/Archive/sci.optics/2007-03/msg00092.html>

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- *From:* Salmon Egg <[salmonegg@xxxxxxxxxxxxxx](mailto:salmonegg@xxxxxxxxxxxxxx)>
  - *Date:* Sun, 25 Mar 2007 01:57:16 GMT
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On 3/24/07 10:39 AM, in article 2\_mdnVz2oZ3n\_5jbnZ2dnUVZ\_q-vnZ2d@xxxxxxx, "Richard F.L.R.Snashall" <[rflrs@xxxxxxxxxxxxxx](mailto:rflrs@xxxxxxxxxxxxxx)> wrote:

Salmon Egg wrote:

These days, with fancy materials such as rare earth glasses and who knows what kind of plastics, the relationship between density and index can be more obscure. Can anyone supply a link that will clarify these relationships?

You don't need to go that far. For example, look at the difference between the densities of Schott F2 (3.61) and Schott N-F2 (2.65).

My decades old Schott catalog did have F2 in it but I did have to Google N-F2. The six digit numbers describing index and dispersion were the same for the two glasses.

A little more reading indicated that the reformulation was to get rid of arsenic and lead. That probably is why the density is lower. My guess is that the inner electrons of the atoms forming the glass are tightly bound and do not interact strongly with visible light. I do not plan to pursue the matter much further.

In plastics, the index will be greatly affected by the kinds of bonds in the polymer. Again, I do not plan to investigate how that affects the relationship between density and index for common polymers. But if such information is readily available, I am likely to read it.

Bill

-- Fermez le Bush--about two years to go.

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