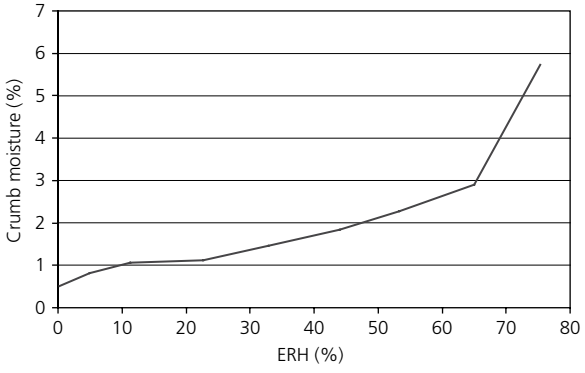

Figure 6.14 The relationship between the crumb moisture content and its equilibrium relative humidity (ERH).

This means that crumb of say 1% moisture can readily pick up more moisture in contact with typical room air of 50% RH. This is unlikely to occur when the crumb is stored in large bulk containers (with a small amount of air), but it can be an issue when it is being transported.

Finally, care should be taken in storing warm crumb in large bulk for long periods. There are a number of reactions going on in crumb which are exothermic and can lead to crumb spoilage. The Maillard reaction itself is exothermic and when the crumb temperature builds up other reactions follow:

- The sucrose and lactose invert to monosaccharides (see Chapter 4);
- The monosaccharides can then dehydrate;
- Finally at temperatures of 120 °C or above, the remaining lactose and sucrose can dehydrate.

The dehydration reactions particularly are highly exothermic, and serious damage can be caused to the crumb. Crumb which is destined for long term storage should be cooled to below 30 °C (86 °F).

Conclusion

There is very little to be found in the literature about chocolate crumb and its processing, indeed very few people outside of the industry know of its existence. It does however permit the manufacturer to make milk chocolate with a much wider variety of flavours. Many "house" flavours are produced by special crumb processes, which make them very difficult to copy. It is interesting to note that, in the United States, Hershey supplements the crumb flavour with milky butyric flavours by lipolysing the milk fat with the enzyme lipase (Hershey, 1931). It is perhaps interesting to conclude by noting that the market-leading milk chocolate tablets in the United States and United Kingdom are crumb chocolates, showing that the consumer appreciates their flavour and texture.

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