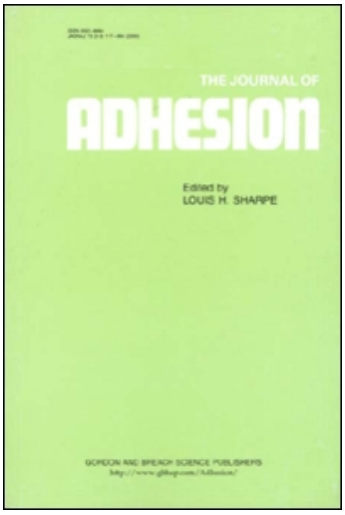

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Reply to Comments on "Fatigue Performance of Two Structural Adhesives" [*J. Adhesion* 26, 273-291 (1988)]

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Reply to Comments on "Fatigue Performance of Two Structural Adhesives" [*J. Adhesion* 26, 273–291 (1988)]

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We are grateful to Dr Kinloch for his alternative interpretation of our experimental observations.

Since our hypothesis was expressly declared to be speculative, we would not wish to defend it in the face of clear counter-evidence. Dr. Kinloch is far more knowledgeable than we are in this area and he is correspondingly more likely to provide the correct explanation. Nevertheless, our original ideas may not be wholly wrong.

Kinloch and Young[1] point out that crazing has been clearly established as an important toughening mechanism in many rubber-modified polymers. Stevens[2] explains that this is unlikely in epoxy resin networks with sufficiently high crosslink densities. However, he goes on to say that epoxy networks "may be non-ideal and inhomogeneous" and that "nominally highly crosslinked but non-ideal networks could also exhibit craze-like deformation behaviour". Our purpose in drawing attention to these statements is not to challenge Dr Kinloch's assertion, but to caution readers against assuming that the picture is quite as clear as might be inferred from a simple reading of his comments. It is by no means simple for users of commercial products to satisfy themselves that ideal curing conditions will be achieved merely by following the manufacturer's instructions. We understand that manufacturers sometimes deliberately produce adhesives which do not achieve maximum crosslinking, the purpose being to enhance other desirable properties.

The authors of the original paper are civil engineers attempting to assess the performance of materials likely to be used in the construction industry. In this context, it is perhaps worth admitting a much greater ignorance than the above. We were surprised to find that an adhesive which outperformed another in fatigue

could nevertheless have a far lower resistance to fracture. Such behaviour is not common in our industry.

References

1. A. J. Kinloch and R. J. Young, *Fracture Behaviour of Polymers* (Applied Sci., London, 1983), p. 431.
2. G. L. Stevens, in *Structural Adhesives*, A. J. Kinloch, Ed. (Elsevier Appl. Sci., London, 1986), p. 257.