



SHELL CHEMICAL CORPORATION

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NEW YORK 17, N. Y.

October 3, 1956

Director
Forest Products Laboratory
U. S. Department of Agriculture
Madison 5, Wisconsin

Attention Mr. F. R. Truax, Chief
Division of Timber Processing

Gentlemen:

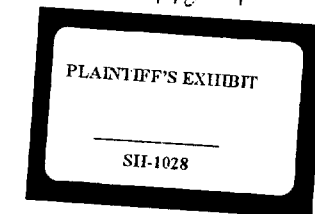
Please refer to your letter of September 6 (file: KP-PL WADC AF-4) which refers to the evaluation of epoxy resin adhesives.

We regret that the necessity to obtain further technical information on the X-131 resin has caused us to delay this reply to your letter. At this time we do not feel it desirable to recommend your evaluating adhesive systems based on this resin. Our work to date has shown that adhesives containing the X-131 resin have good resistance to ageing at 500°F in bonds to stainless steel. However, the initial tensile shear strengths at room temperature or at elevated temperatures are low in comparison to other available adhesives. Furthermore, the inherent brittleness of the cured resin results in low bend strength and peel strength and poor reproducibility of bond performance.

We are actively engaged in formulating EPOX adhesives based on the X-131 resin in order to improve overall adhesive performance. At this time, however, we feel that none of our adhesive formulations would be suitable for your testing.

Regarding EPOX Adhesive X, we have the following information to give concerning general application, curing and performance. In reviewing this data, a direct comparison of our technical bulletin on Adhesive VIII (copy attached) will prove helpful.

The CL Curing Agent (metaphenylenediamine) is incorporated in the adhesive as follows: The adhesive paste should be warmed to 125-150°F and 11-12% by weight of completely liquefied CL Curing Agent is added. The CL is melted at 150-160°F. The adhesive and curing agent should be stirred thoroughly to avoid local solidification of the CL.



SHELL DEVELOPMENT CO.	
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TFB to Forest Prod. Lab.*

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The recommended cure schedule for Adhesive X involves 1/2 hour heating at 240°F plus 1/2 hour at 330°F at contact pressure or at pressures up to 25 psi. A postcure of 3 hours at 330°F is essential for development of hot strength and peel resistance.

EPON Adhesive X should be handled warm (at 125-150°F) to give good spreading and the desired wetting properties. At lower temperatures the adhesive is more viscous than EPON Adhesive VIII. The pot life of the catalyzed adhesive is much shorter than that of EPON Adhesive VIII. In our work we have found that the shear strength of EPON Adhesive X at 300°F is significantly better than the strength of EPON Adhesive VIII. Comparative values are 2,000 psi vs. 500 psi.

We trust the above information will prove useful in your adhesive evaluation program. Please contact us if we can furnish additional information.

Yours very truly,

Original Signed By
F. S. SWACKHAMER

F. S. Swackhamer, Manager
Resins & Plastics Dept.

attach.

RAC

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cc: Shell Development Co./Dr. T. F. Bradley ←THIS-COPY-FOR→
UTSL, Director

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