

## **Effect of the curing temperature on the properties of epoxy adhesives at high temperatures**

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Epoxy adhesives are used in many structural applications in the automotive and aerospace industries, as well as in construction. The mechanical properties of an adhesive depend on the degree of curing of the adhesive and its  $T_g$  [1]. On the other hand, the properties of the adhesive and, therefore, the strength of the adhesive joint, also depend on the service temperature and bonding process. Carbas et al [2] studied the thermal and mechanical behavior of epoxy adhesives after curing at different temperatures, obtaining as a result that, increasing the curing temperature, increases the  $T_g$  and as well as strength and stiffness, until reaching a maximum value of curing temperature. Higher curing temperatures lead to a reduction of the mechanical properties.

During the last years the interest of high buildings built with laminated wood has increased remarkably, in spite of the debate generated due to its behavior in case of fire. In these buildings, the type of adhesive used has a significant impact on its structural strength as well as on the temperatures of the fire and its propagation [3]. The aim of this study is how the mechanical properties of the adhesive are affected by high temperatures, after curing at different temperatures, as well as its relationship with the  $T_g$ . Sikadur<sup>®</sup>-30, an epoxy adhesive with a ceramic filler was used in this study. This adhesive is used in construction applications, mainly for of structural reinforcement, composite bonding to concrete and wood bonding.

[1] da Silva, L. F. M., Öchsner, A., and Adams, R. A., Handbook of Adhesion Technology, Heidelberg (2011).

[2] R. J. C. Carbas, E. A. S. Marques, L. F. M. da Silva, A. M. Lopes. J Adhesion, 90, 104 (2014)

[3] Lineham, S. A, Thomson, D., Bartlett, A. I., Bisby, L. A., Hadden, R. M., Fire Safety J, 85, 22 (2016).