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## Thermal and mechanical properties of impregnation materials for HTS cables and coils

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In the growing field of HTS applications, finding an appropriate impregnation material for cables and coils remains a challenging task.

In HTS cables and coils, tapes have to be able to withstand mechanical loads during operation. Impregnation is playing a role of mechanical stabilization. However, material properties usually change significantly when going to low temperatures that can decrease performance of superconducting devices. For example, a large mismatch in thermal expansion between a conductor and impregnation material at low temperatures can lead to delamination and to degradation of critical current of the tapes. Impregnation materials can insulate tapes thermally that can lead to a damage of superconducting device in case of quench. Thus, thermal conductivity is an important property which is responsible for the temperature distribution in a superconducting cable or in a coil. Due to Lorentz forces acting on structural materials in a superconducting device, the mechanical properties of these materials should be investigated at operating temperatures of this device.

Therefore, it is important to identify an impregnation material meeting all specific requirements. In this report, thermal and mechanical properties of the impregnation material candidates are presented in a temperature range from 300 K to 4 K.

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