Nanocomposite Elastomers to withstand High Temperatures

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Exemplary elastomeric gasket

Technology Summary

Elevated temperatures increase the risk of polymer decomposition and degradation accompanying the formation of radial cracks and softening, which will consequently deteriorate the primary role of elastomers, zonal isolation. This method improves the thermal stability of cheap elastomers by adding certain low cost nanoadditives.

Application & Market Utility

Elastomers are often used for sealing the pipe connection and fixtures in the surface application in the oil and gas industry, however, when it comes to building
geothermal wells, these materials fail to provide hydraulic isolation at elevated temperature range of these reservoirs. This invention improves the thermal stability of nitrile butadiene rubber (NBR), silicone rubber (SR), and other cheap elastomers allowing them to hold up in temperatures beyond 250–300°F.

Next Steps

Seeking licensing and/or collaboration opportunities.

TECHNOLOGY READINESS LEVEL 1-3

Seeking

Licensing | Research

Keywords

- elastomer
- natural rubber
- silicone rubber
- acrylonite-butadiene
- nanoadditives

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