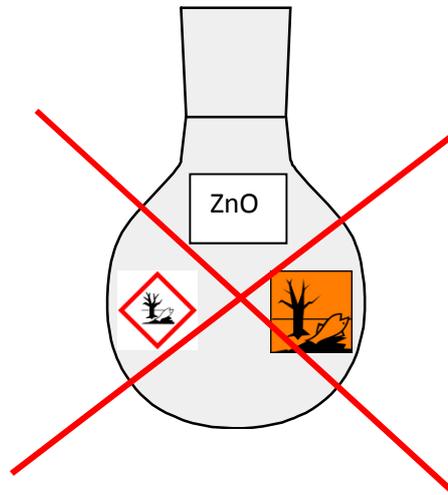


## Zinc oxide-free rubber compound !!!



### Background and problem:

Elastomers are used inter alia for seals, adhesives and molded flexible parts. Application areas for different types of rubbers are manifold and cover segments as diverse as tires, shoe soles, belts as well as dampening and insulating elements.

Vulcanized rubber compounds, in particular sulfur-vulcanized rubber compounds are used among other things for the production of tires or in particular of tire treads.

In the vulcanization process, usually several substances are added to control the Process, such as accelerators and/or activators which are used that help to regulate the vulcanization kinetics and develop its effectiveness, for example, shorten the vulcanization time or reduce the necessary vulcanization temperature. The activators are frequently metal oxides, in particular zinc oxide. Zinc compounds in rubbers, however, are falling into the discussion because zinc, in particular in the form of zinc oxide, was classified as environmentally hazardous and very toxic to aquatic organisms. It is feared that especially large amounts of zinc and zinc oxide may enter the environment by the abrasion of tires.

The impact of zinc oxide on human health and the environment is currently under review under REACH in 2016 as part of the substance evaluation. See also Substance evaluation - CoRAP (Community rolling action plan) of the ECHA (European Chemicals Agency) of the European Union.

## The Invention:

The present invention provides new compositions comprising **doped graphene-like materials** for the vulcanization of rubber with a reduced content of zinc oxide (ZnO), their uses and methods of producing such compositions. In addition, rubber products comprising the above mentioned compositions and objects built of said rubber products are provided.

## ADVANTAGES OF THE INVENTION:

- ➔ **Doped graphene-like compounds** are now available simply, partly from natural sources, therefore **at acceptable prices**
- ➔ No major conversions of the vulcanization process necessary, therefore **easy** and **fast to implement**
- ➔ **Partial exchange of zinc oxide** is also possible

## Concept for utilization:

Licensing/selling of the rights based on this invention (patent family PCT/EP2016/001314 and EP 15 180 823) is sought to a company that will implement the invention and bring the elastomer compositions according to the invention to the market.

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