

DEVULCANIZATION OF FKM, AND THE USE OF THE RECLAIM IN COMPOUNDS

Polycomp B.V. develops, tests, and manufactures high performance rubber compounds for demanding applications in e.g. automotive, oil & gas, food & pharma, and chemical process industries. Main focus is on compounds based on FKM, FFKM, and HNBR, as well as specialties based on most of the other elastomers. Polycomp is based in Vorden, The Netherlands. Polycomp is having its own laboratory and pilot plant for product development, as well as modern production machinery.

The use of devulcanized recycled rubber already is common practice in e.g. tyres and EPDM-roofing. Different technologies have been developed to devulcanize rubber. For high performance elastomers like FKM devulcanization technology and successful use of the reclaim is still in its infancy. It is a challenging task to identify the proper devulcanization technology for FKM, while maintaining the properties of the compound with reclaim.

Objective

The objective of this assignment is to make an overview of available devulcanization technologies for FKM, discuss with manufacturers, understand the devulcanization mechanisms, and to judge suitability for the use at Polycomp. Samples have to be mixed, and physical properties as well as processing have to be tested. All information will ultimately result in a set of guidelines on the use of recycled FKM.

Assignment

At the beginning of the assignment the student will make an overview of available techniques for FKM, and their mechanism of action. Toll manufacturers have to be identified. Thereafter, compounds will be mixed, and physical properties as well as processing will be tested, where possible in cooperation with customers. One of the devices that will be used is the Göttfert RCR, see also Fig. 2. The results obtained will be discussed based on mechanisms, and will ultimately lead to a set of guidelines on the use of these processing aids. Practical work will be performed at the laboratory of Polycomp, and optionally at ETE and/or customers.

Report

The report should contain: **1.** Overview of technologies, mechanisms and toll manufacturers; **2.** Guidelines for use of devulcanized FKM in view of type of FKM and processing method; **3.** Literature overview; **4.** Test results, their evaluation, discussion and conclusions.



Fig. 1 : FKM sealing plugs with different percentages of devulcanized FKM.

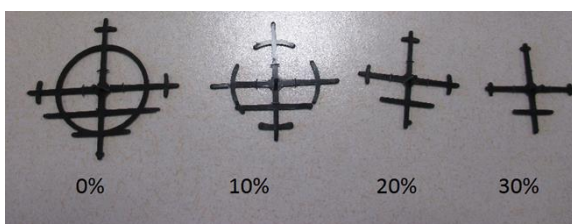


Fig. 2: Flow properties of FKM with different percentages of devulcanized FKM.

Partners

This project will be done in cooperation with Polycomp B.V., Handelsweg 7, 7251 JG Vorden. See www.polycomp.nl.

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