

CROSS LINK DEGRADATION OF NATURAL RUBBER SULFUR VULCANIZATES IN THE PRESENCE OF FERRIC COMPLEXES

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In a world of dwindling supply of raw materials, re-use of unservicable articles is of prime importance. In the field of elastomers, several processes are known for reclaiming of vulcanized rubbers. The methods used at present are not only cumbersome, but also require lot of energy. Our main intention was therefore to find a suitable method for reclaiming of unservicable articles preferably at room temperature, using perhaps solar energy.

It is well known that transition metal compounds of Cu, Mn, Fe, Ti and Co act as pro-oxidants in both cross linked and raw elastomers. Several compounds containing iron were used in our investigation to assess their ability to devulcanize sulfur vulcanized rubbers. It was found that swelling of vulcanized rubbers in non polar solvents is a suitable technique to introduce some of these compounds into articles to be reclaimed. The efficiency of this process was studied.

It was also envisaged that once the reclaiming process is over metallic impurities left behind could act as pro-oxidants in reclaimed rubber. Studies were also made to find a suitable method by which this could at least be temporarily eliminated.