Whole Tyre Reclaim (WTR) can be successfully used to replace partially the virgin rubber in the case of NR, SBR and NBR. Short nylon fibers can be used to reinforce these blends. The properties of elastomer/WTR-short nylon fiber composites are different with respect to WTR content and short fiber loading. The effect of a urethane based fiber-matrix interfacial bonding agent on the performance of these composites is also found to be matrix dependent.

In short, the conclusions can be summarised as:

The replacement of natural rubber by reclaimed rubber improves its processability and tear resistance. The reclaimed rubber can replace up to 40 parts of NR without much affecting its tensile strength, resilience and abrasion resistance.

The presence of reinforcing nylon fibers in an 80/40 NR/WTR blend improves most of its mechanical properties. The tensile strength, tear strength, and abrasion resistance improve with increase in fiber content. The tensile strength-fiber content relationship is non-linear with a dip at 10 phr fiber. Anisotropy in mechanical properties are also exhibited by the composites. The tensile strength, tear strength and abrasion resistance are higher in the samples with longitudinal fiber orientation.

The urethane based resin system can improve the properties of a 20 phr fiber loaded 80/40 NR/WTR blend. The composite shows anisotropy in mechanical properties. The tensile strength, tear strength and abrasion resistance are improved in presence of bonding agent. The hysteresis loss and elastic properties are improved by the presence of bonding agent. The optimum properties are obtained with MDI/PEG ratio of 1:1.
In a non-crystallizing polar NBR matrix, the replacement by reclaimed rubber causes strengthening of the matrix. The tensile strength and elongation at break are improved in presence of reclaimed rubber. Reclaimed rubber can replace up to 20 parts of NBR without much affecting its properties.

In a 90/20 NBR/WTR blend the presence of reinforcing fibers improves its tensile strength, tear strength, resilience and abrasion resistance. Anisotropy in mechanical properties is also observed. The tensile strength-fiber loading relationship is linear.

The urethane resin system in a 90/20/20 NBR/WTR/short nylon fiber composite further improves its properties. The resin system increases tensile strength, tear strength and abrasion resistance. The optimum MDI/PEG ratio is 1:1.

Reclaimed rubber replaces up to 40 parts of SBR with improvement in its most properties. As in the case of NBR/WTR blends reclaimed rubber act as reinforcing filler in this case, resulting in improvement in tensile strength and tear strength.

An 80/40 SBR/WTR blend with different amounts of short fibers shows improvement in properties with increase in fiber content. The tensile strength, tear strength and abrasion resistance increase with fiber content. The anisotropy in mechanical properties is also shown by the composites.

In an 80/40/20 SBR/WTR-short nylon fiber composite the MDI/PEFG resin system acts as interfacial bonding agent. The tensile strength, tear strength and resilience are improved and the optimum resin ratio is 1:1.