model network

Polymer network synthesized using a reactant or reactants of known molar mass or masses and chemical structure.

Notes:

1. A model network can be prepared using a non-linear polymerization or by crosslinking of existing polymer chains.
2. A model network is not necessarily a perfect network. If a non-linear polymerization is used to prepare the network, non-stoichiometric amounts of reactants or incomplete reaction can lead to network containing loose ends. If the crosslinking of existing polymer chains is used to prepare the network, then two loose ends per existing polymer chain result. In the absence of chain entanglements, loose ends can never be elastically active network chains.
3. In addition to loose ends, model networks usually contain ring structures as network imperfections.
4. Loose ends and ring structures reduce the concentration of elastically active network chains and result in the shear modulus and Young´s modulus of the rubbery networks being less than the values expected for a perfect network structure.
5. Physical entanglements between network chains can lead to an increase in the concentration of elastically active network chains and, hence, increases in the shear modulus and the Young´s modulus above the values expected for a perfect network structure.

Source:

PAC, 2007, *79*, 1801 *(Definitions of terms relating to the structure and processing of sols, gels, networks, and inorganic-organic hybrid materials (IUPAC Recommendations 2007))* on page 1814