sizing is achieved especially by keeping and monitoring the temperature. Lower viscosity enabled better deep sizing, but the size pick-up was lower, which is more prominent at all sizing temperatures. Higher viscosity causes a slower penetration of yarn interspaces, and yarn is sized more on the surface, causing lower abrasion resistance and uneven yarn, which is more prominent at lower sizing temperatures. In this case yarn has a seemingly higher strength. But by yarn abrasion the size pick-up formed can be removed easily, and the yarn is without necessary protection during weaving. New synthetic sizing agents have very high tackiness, but these events are rare.

By increasing the rate of shear, viscosity increases to a certain extent and then falls or rises slowly and continuously (***Figure 3-4***). A difference in viscosity among synthetic sizing agents is evident. Carboxymethyl cellulose (CMC) has a higher viscosity than polyvinyl alcohol (PVA) at the same rate of shear and same concentration (***Table 1***). This difference is more prominent if the temperature is lower. When mixing these two synthetic sizing agents with the same proportion in the size, no average value of viscosity was obtained, being substantially lower. Polyvinyl alcohol mixed with carboxymethyl cellulose probably progressively weakens intermolecular bonds of carboxymethyl cellulose.

PVA sized yarn has a higher breaking force than CMC sized yarns, but the abrasion resistance is lower (***Table 2***). CMC sized yarn has higher smoothness and elasticity, whereas PVA sized yarn is stronger and stiffer. Because of the variety of these polymers, it is possible to find their proportion in the size that will cause minimum end breakage during weaving and minimum yarn deformation. It may be concluded that these two agents are very different, and by combining them in the recipe a sized yarn with desired properties may be obtained that will have minimum yarn breakages and minimum yarn deformation during weaving.

A higher size concentration imparted higher viscosity during all examinations. A change in size temperature in the size box caused a change in viscosity, as well as in the breaking force and abrasion resistance of the yarn. Higher temperatures are more favourable as they provide better yarn properties.

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