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How disperse filler particles affect the physics and mechanics of polymer composites

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A method has been developed to calculate the filler interparticle spacing and the matrix to filler contact area taking into account the filler's properties, namely the size and shape of particles and the volume fraction in the matrix. Assuming that the properties of polymer composites containing hard inelastic filler particles depend on the polymer's behaviour in the interparticle spaces, the effect of the filler's properties on some physical and mechanical composite parameters has been studied. The studies examined how the filler's shape, size and quantity affect the strength, elongation at break, shrinkage and linear expansion coefficient. Experimental testing of the assumptions has shown good repeatability of the calculation results.

Biography:

Born 2 December, 1961 in Volgograd, Russia. In 1984, graduated from Volgograd Technical University as a mechanical engineer, started his career at a structural steel plant as a manager and was promoted to production supervisor. In 1989, started teaching at Volgograd Technical University, in 1993 defended the Candidate of Technical Sciences thesis titled 'Residual stresses in metal polymer composites'. Since 1993, heads the company Constanta-2 LLC that develops novel composites and fabricates polymer and composite seals.