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Surface texture effect in sliding contact of deformable bodies

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The models are developed to study the friction force in sliding contact of deformable bodies with regular surface microgeometry. The friction arises due to the cyclic deformation of the subsurface viscoelastic layer. For pure elastic materials the friction is caused by the energy dissipation in approach-separation cycles at elementary contact spots due to molecular attraction of the contacting surfaces. The periodic functions are used to describe the surface microgeometry (surface texture). The dependence of the friction force on the surface texture characteristics, mechanical properties of the contacting bodies, surface energy, as well as the load/velocity and gap conditions are analyzed.