

## **Particle size distribution of materials (25-100 cm)**

The classification of materials by particle size (a criterion applied at the family level) represents the particle size distribution, including the coarse fraction, for the whole of a soil control section (as a rule between 25 and 100 cm deep). The surface layer (0 - 25 cm) is excluded from this evaluation. Five particle size classes are distinguished (Table 1) on the basis of the proportion of fine earth ( $\leq 2$  mm) and its texture (sand, silt or clay) (SCWG 1998).

**Table 1. Definition of particle size classes**

<b>Particle size class</b>	<b>Definition</b>
Skeletal	Particles $>2$ mm occupy more than 35% of the soil volume, with enough fine earth (particles $\leq 2$ mm) to fill interstices $\geq 1$ mm (e.g. Sainte-Julie series).
Sandy	Particles $>2$ mm occupy less than 35% (by volume). The texture of the fine earth includes sands and loamy sands, exclusive of very fine sands and very fine loamy sands (e.g. Massueville series).
Loamy	Particles $>2$ mm occupy less than 35% (by volume). The texture of the fine earth includes very fine sands, loamy very fine sands and finer textures with less than 35% clay (e.g. Saint-Aimé series).
Clayey	Particles $>2$ mm occupy less than 35% (by volume). The texture of the fine earth contains 35% or more clay (e.g. Providence series).
Organic	Soil containing 17% or more organic carbon (e.g. Cousineau series).

SCWG 1998

The particle size distribution of the soil control section (25-100 cm) and the surface (0-25 cm) texture of soils are the most widely used characteristics for purposes of interpretation models. Sandy soils, for example (containing much coarse to medium sand), usually display good permeability, and consequently are more subject to leaching, whereas soils rich in silt tend to be vulnerable to smearing. Clays attract and fix chemical elements, foster soil particle aggregation and provide good water-retention capacity (Magny and Baur 1962, Brady 1974). In interpretation models, particle size distribution data afford a means of computing the water reserve that is usable by plants, determining fertility groups and estimating the soil's vulnerability to compaction, subsurface drain clogging, and ditch and watercourse bank instability, and also its vulnerability to the upward migration of coarse fragments as a result of human action. Particle size distribution data can help users locate fill materials and estimate a soil's ability to tolerate the passage of vehicles, its frost susceptibility or its tendency to settle.

The map shows the surface (25 to 75 cm) over the underlying material ( $\geq 75$  cm), where the particle size distribution pattern displays contrast. Looking at the map, we find that clay soils predominate as far as the area is concerned (43.8%). These soils are found mainly in Chambly and Verchères Counties. Sandy soils come second, with 29.7%; these soils are concentrated in Richelieu and Saint-Hyacinthe Counties and in the Bois de Verchères. Loamy soils (24.4%) occur mainly in Saint-Hyacinthe and Richelieu Counties. Skeletal soils (1%), for their part, tend to occur on the Monteregian Hills of Saint-Bruno and Yamaska, and in a number of glaciofluvial deposits in Verchères and Chambly Counties.