

Resistance Recording Drills for Decay Assessments

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Figure 1: IML Resi™ resistograph



Resistance recording drills are tools used to evaluate decay and other defects in tree stems and branches as part of advanced tree risk assessments. These drills are sold commercially as Resistograph™ by Rinntech™ and as Resi™ by IML, Inc (Figure 1). These tools will be referred to generically as “resistographs” in this report.

Resistographs use a small diameter drilling needle (Figure 2) that is driven into the stem or branch at a constant speed. The device measures the electric power consumption necessary to drive the needle into the wood

which is highly correlated with wood density. As the drilling needle passes through bark and wood, the resistance that is encountered is measured and recorded. Low resistance values help identify decayed wood, hollows and cracks in the stem or trunk. Wood density varies considerably among species so resistograph measurements must be interpreted within the context of the species being assessed.

Each resistograph manufacturer produces several models that vary in their level of sophistication. Some models are powered by a battery operated drill while others have an integrated motor. Depending on the model, resistograph measurements are recorded on graph paper (Figures 3 and 4) or electronically for analysis with proprietary software. Other models differ in the length of the drilling needle which dictates drilling depth.

There are many factors that are considered and evaluated as part of an advanced tree risk assessment. The information provided by the resistograph

Figure 2: Close-up of drilling needle

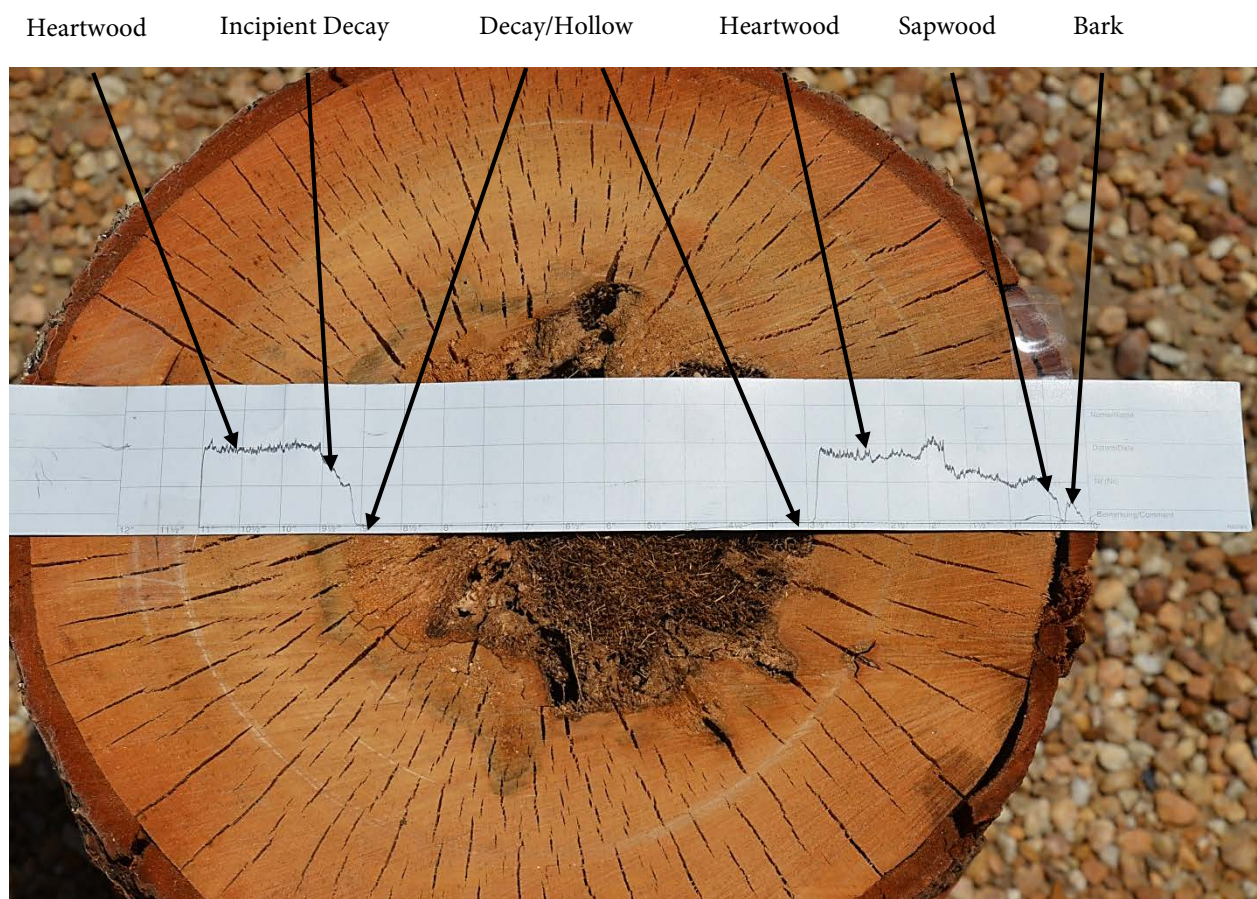


Figure 3: Graph paper that records measurements being loaded into the resistograph



assessment may be used as one such factor in determining the likelihood of branch and stem failures. Other factors to be considered include tree species characteristics, loads on the defective area of the stem or branch, adaptive growth (the tree's response to defects and loads over time), environmental factors that could influence loads and tree growth, likelihood of a failure impacting a specific "target" (people and property) and the consequences of the impact.

Figure 4: IML Resi™ assessment of a cut stem with decay column



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