Physical Properties

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Overview

The Physical Properties Lab measures magnetic susceptibility, density, P-wave velocity, natural gamma radiation (NGR), moisture content, thermal conductivity, and visible spectral reflectance of rocks and sediments and captures a digital image of the split-core sections. Physical properties are indicators of composition, formation, tectonic regime, and environmental conditions of the deposits. Some properties can be measured rapidly at high spatial resolution and serve as proxies for processes such as paleoclimatic change.

Moisture and Density (MAD)

- Balances User Guide
- MAD Quick Start Guide
- MAD User Guide

Multisensor Loggers (WRMSL and STMSL)

The Whole-Round Multisensor Logger (WRMSL) and Special-Track Multisensor Logger (STMSL) are similar track systems for measuring the magnetic susceptibility, density, and P-wave velocity of whole-round core sections. WRMSL and STMSL used identical software and hardware from Expedition 371 up to Expedition 379. During Expedition 379 (January 2019), the P-wave velocity logger (PWL) was removed from WRMSL and replaced with an interchangeable X-ray system. STMSL is now the primary multisensor logger and WRMSL can be used either as an X-ray system or for additional measurement of magnetic susceptibility and density on expeditions that need those data for rapid stratigraphic correlation between drill holes.

- WRMSL and STMSL Quick Start Guide
- WRMSL and STMSL User Guide

Natural Gamma Radiation Logger (NGRL)

- NGR Quick Start Guide
- NGR User Guide

P-Wave Velocity Bayonet/Caliper Gantry (PWB/PWC)

- PWV Quick Start Guide
- PWV User Guide

Section Half Imaging Logger (SHIL)

- SHIL Quick Start Guide
- SHIL User Guide
- SHIL Light Array User Guide

Section Half Multisensor Logger (SHMSL)
Shear Strength Gantry with Automated Vane Shear (AVS)

- AVS Quick Start Guide
- Sediment Strength User Guide

TeKa TK-04 Thermal Conductivity Meter

- TK04 Quick Start Guide
- TK04 User Guide
- TK04 Manufacturer User Guide: Available to shipboard scientists upon request.
- TK04 Report: Comparison of TeKa TK04 and Hukseflux TPSYS02 systems. This could be useful to users and needs to be available somewhere.
  * A report by Rob Harris (currently in draft form only)