Product Profile

DNeasy® 96 PowerSoil® Pro Kit

For manual high-throughput isolation of microbial genomic DNA from all soil and stool samples

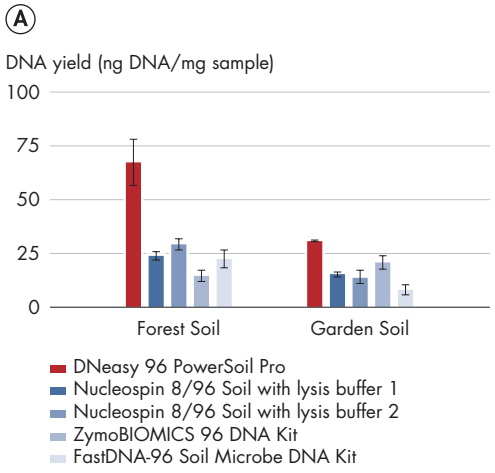
Using the DNeasy 96 PowerSoil Pro Kit, researchers can:

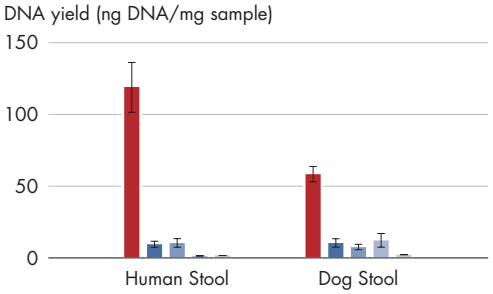
- Efficiently lyse bacteria and fungi in soil, stool and gut samples
- Manually scale up to a 96 well format for efficient homogenization and DNA isolation
- Recover inhibitor-free DNA, ready to use directly in downstream next-generation sequencing (NGS) applications
- Achieve unbiased results that accurately represent sample alpha and beta diversity
- Increase throughput with the same proven technology found in the DNeasy PowerSoil Pro Kit

Extracting microbial DNA from large amounts of soil and stool samples can be challenging. QIAGEN's DNeasy 96 PowerSoil Pro Kit uses our innovative Pro technology, increasing efficiency of the lysis process to enable isolation of high yields of pure microbial DNA from all soil types, including compost, clay and top soil, as well as stool and gut samples. This is a 96 well format kit for manual high-throughput purification.

QIAGEN's Pro technology involves new PowerBead Pro Plates, which are included in the kit for homogenization. The improved bead beating method and optimized chemistry enable more efficient lysis of bacteria and fungi. The kit also contains streamlined Inhibitor Removal Technology® (IRT) to eliminate the challenging inhibitors commonly found in stool, soil and environmental samples in even less time. Sequencing results reveal higher alpha diversity as measured by observed operational taxonomic units (OTUs) compared to other tested methods (Figure 1).

The DNeasy 96 PowerSoil Pro Kit provides higher DNA yields (Figure 1) and more efficient inhibitor removal (Figure 2) compared to the original DNeasy PowerSoil HTP 96. No difference in DNA yield or inhibitor removal is observed between the DNeasy 96 PowerSoil Pro Kit and the single-tube-format DNeasy PowerSoil Pro.





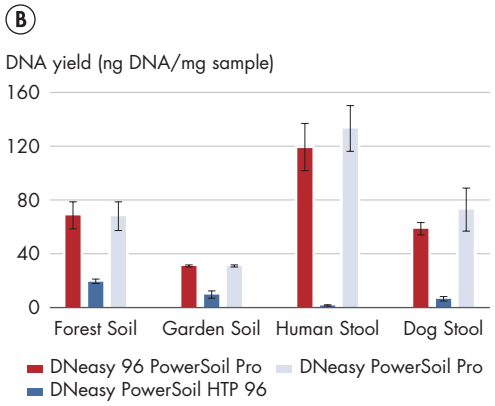


Figure 1. Significantly increased DNA yields and better quality compared to other suppliers, while offering comparable yields to other QIAGEN Power Pro products. **A** DNA was isolated using the following kits and starting amounts: DNeasy 96 PowerSoil Pro – 250 mg soil and 50 mg stool; NucleoSpin® 8/96 Soil (Macherey Nagel) – 250 mg soil and 200 mg stool, using either Lysis buffer 1 + enhancer or Lysis buffer 2 + enhancer; ZymoBIOMICS 96 DNA Kit (Zymo Research) – 100 mg soil and stool; FastDNA-96™ Soil Microbe DNA Kit (MP Biomedicals) – 130 mg soil and Stool DNA Isolation Kit (Norgen) – 200 mg stool. Four replicates of each sample were performed. The DNA yields were measured with a Qubit Fluorometer. The overall DNA yields were consistently higher using the DNeasy 96 PowerSoil Pro compared with kits from other suppliers. **B** DNA was isolated from 250 mg soil and 50 mg stool (4 replicates) using the DNeasy 96 PowerSoil Pro, DNeasy PowerSoil HTP 96 and DNeasy PowerSoil Pro (single column). The overall DNA yields were consistently higher using the DNeasy 96 PowerSoil Pro compared to the legacy kit.

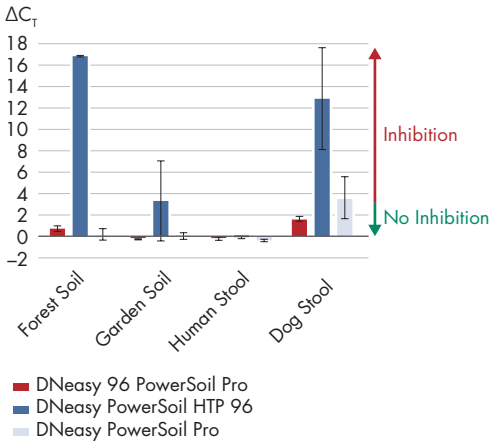


Figure 2. Significantly lower inhibitor co-isolation. DNA was isolated from 250 mg forest and garden soil, and 50 mg human and dog stool using the DNeasy 96 PowerSoil Pro, DNeasy PowerSoil HTP 96 and DNeasy PowerSoil Pro (single column) and used to determine the co-isolation of inhibitors. The internal control (IC) from the QuantiFast® Pathogen +IC Kit was spiked with 4 µl eluates of the resulting DNA (4 replicates). PCR-generated fluorescence, which is proportional to the product levels, was measured with a Rotor-Gene® Q and compared. Distilled water added to the IC was used as a control. The eluate from the DNeasy 96 PowerSoil Pro and DNeasy PowerSoil Pro Kit (single column) showed no inhibition.

DNA isolated using the DNeasy 96 PowerSoil Pro identified more OTUs for both bacteria (Figure 3) and fungi (Figure 4) compared with the legacy DNeasy PowerSoil HTP 96.

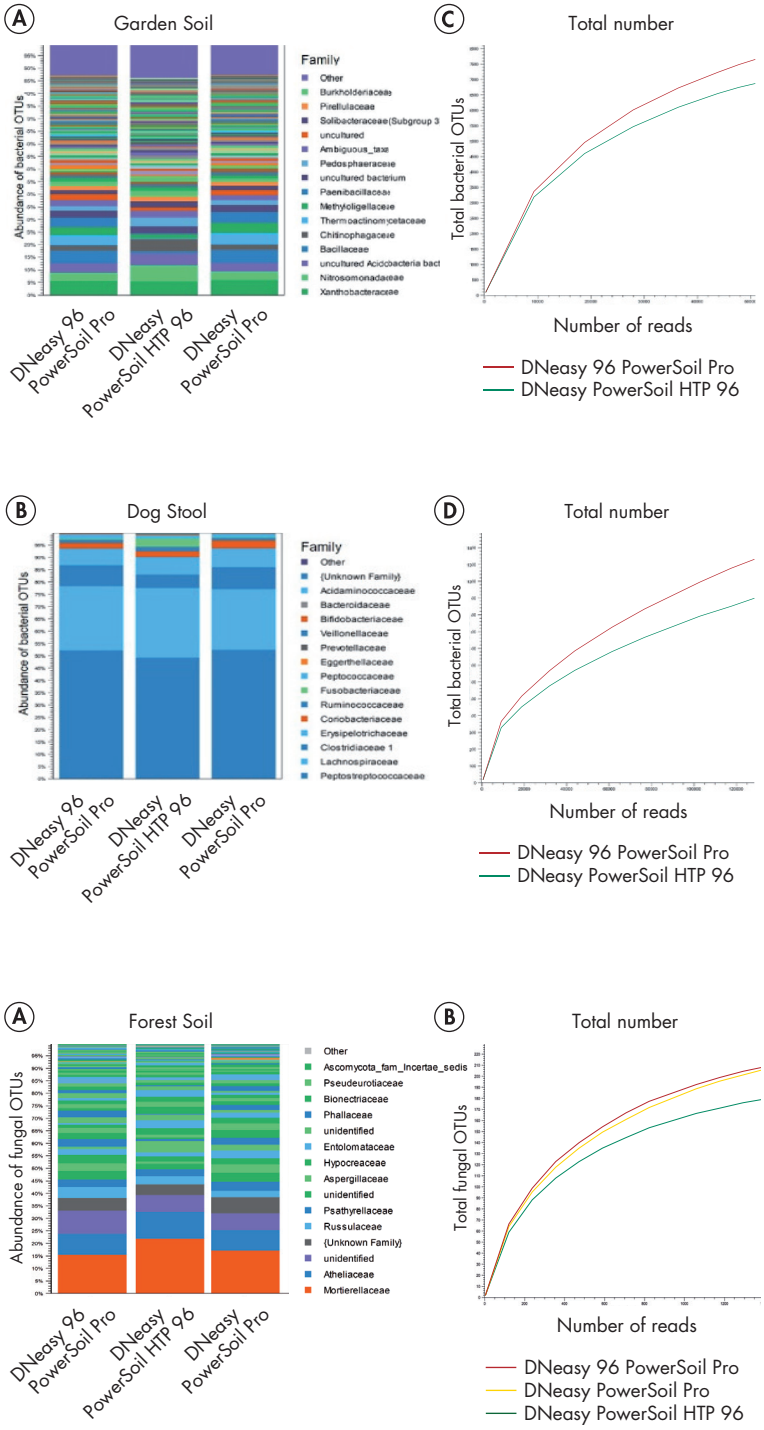


Figure 3. Increased bacterial representation. DNA prepared from soil and stool samples was isolated with DNeasy 96 PowerSoil Pro, DNeasy PowerSoil HTP 96 and DNeasy PowerSoil Pro (single column). Analysis of the 16S rRNA-genes was done using the 16S/ITS Region Panel (V4V5) and QIAseq® 16S/ITS Index Kit. Data analysis was performed with the Microbial Genomics Pro suite (CLC workbench) using the SILVA database. 16S v132 99%. Each result represents an aggregation of two data sets per sample. **A, B** The abundance of bacterial operational taxonomic units (OTUs) is visualized in the OTU table for soil and stool, respectively **C, D** Alpha diversity was determined by total number of OTUs in soil and stool. DNeasy 96 PowerSoil Pro and DNeasy PowerSoil Pro show very similar abundances (**A, B**). The DNeasy 96 PowerSoil Pro shows increased numbers of identified OTUs compared to the legacy DNeasy PowerSoil HTP 96 Kit (**C, D**)

Figure 4. Increased fungal representation. DNA prepared from soil samples was isolated with DNeasy 96 PowerSoil Pro, DNeasy PowerSoil HTP 96 and DNeasy PowerSoil Pro (single column). Analysis of the ITS regions was done using the 16S/ITS Region Panel and QIAseq 16S/ITS Index Kit. Data analysis was performed with the Microbial Genomics Pro suite (CLC workbench) using the UNITE fungal database. Each result represents an aggregation of two data sets per sample. **A** The abundance of fungal operational taxonomic units (OTUs) is visualized in the OTU table **B** Alpha diversity was determined by total number of OTUs. DNeasy 96 PowerSoil Pro and DNeasy PowerSoil Pro show very similar abundances (**A**), and increased numbers of identified OTUs compared to the legacy DNeasy PowerSoil HTP 96 Kit (**B**).

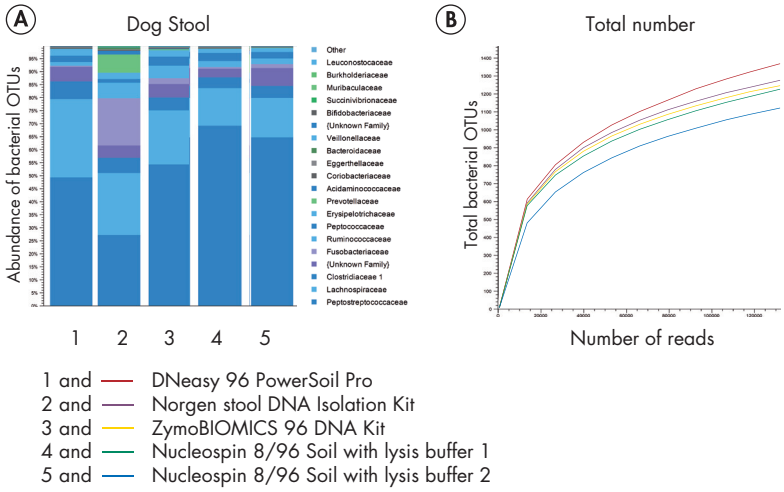


Figure 5. Increased bacterial representation compared to other suppliers. DNA prepared from stool samples was isolated with DNeasy 96 PowerSoil Pro and other technologies. 16S libraries of the 16S gene (V4 region) were prepared using barcoded 515fB and 806rB primers and the QIAGEN UCP Multiplex PCR Kit. Data analysis was performed with the Microbial Genomics Pro suite (CLC workbench) using the SILVA database. Each result represents an aggregation of two data sets per sample. **A** The abundance of bacterial operational taxonomic units (OTUs) is visualized in the OTU table **B** Alpha diversity was determined by total number of OTUs. The DNeasy 96 PowerSoil Pro shows increased numbers of identified OTUs compared to other technologies.

Ordering Information

Product	Contents	Cat. no.
DNeasy 96 PowerSoil Pro Kit (384)	For manual high-throughput isolation of microbial DNA from soil and stool	47017
Related Products		
TissueLyser II	For medium to high-throughput sample disruption for molecular analysis	85300
Plate Adapter Set	Required to assemble 2 96 well plates onto the Tissuelyser II	11990

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.