

# Specification Sheet

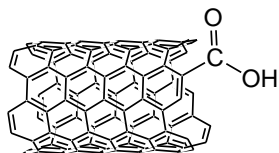


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## P33-SWNT

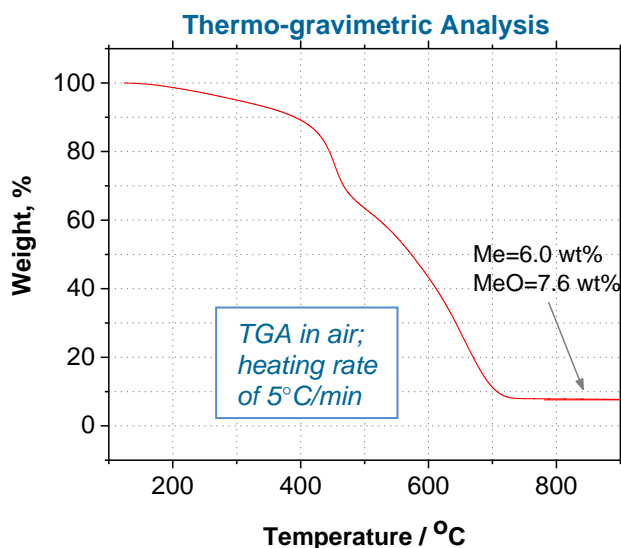
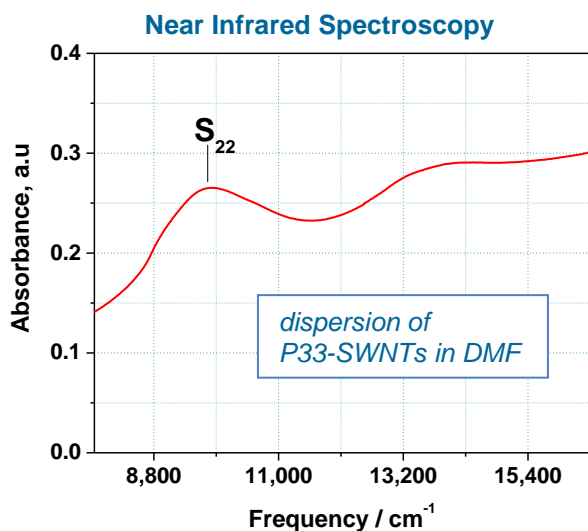
**Product Description:** Ultra high purity SWNTs with 1–3 atomic% carboxylic acid groups, which can be derivatized with a variety of functional groups.



<b>Carbonaceous Purity*:</b>	>95%
<b>Metal Content **:</b>	4–6%
<b>Typical Bundle Length:</b>	500 nm – 1.5 $\mu$ m
<b>Typical Bundle Diameter:</b>	4–5 nm
<b>Typical Diameter of Individual SWNT:</b>	1.55 $\pm$ 0.1 nm

\* Determined according to procedure described in *Nano Lett.* **2003**, 3, 309-314; and NIST Recommended Practice Guide "Measurement Issues in Single Wall Carbon Nanotubes": [http://www.nist.gov/customcf/get\\_pdf.cfm?pub\\_id=852726](http://www.nist.gov/customcf/get_pdf.cfm?pub_id=852726)

\*\* Weight % estimated from the residual of the thermal gravimetric analysis in air at 900°C, corrected for metal oxide.



### References:

1. Worsley, K. A.; Kalinina, I.; Bekyarova, E.; Haddon, R. C., Functionalization and Dissolution of Nitric Acid Treated Single-Walled Carbon Nanotubes. *J. Am. Chem. Soc.* **2009**, 131, 18153-18158.
2. Jha, N.; Palanisamy, R.; Itkis, M. E.; Haddon, R. C., Construction of a Carbon-Nanotube-Based Fuel Cell which Exceeds 2015 DoE Targets. *Scientific Reports* **2013**, 3, 2257.