

## WHA ROD PRODUCTS MATERIAL DATA SHEET

Elmet Technologies manufactures high quality WHA rods and machined parts for use in ballast weights, radiation shielding, boring bars, and ordnance components. Standard rod sizes range from 0.250" to 0.625" (6.35 mm to 15.9 mm) in diameter in lengths up to 24" (610 mm).

### CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES

#### STANDARD GRADES

Grade	ET90	ET93	ET93S
W content	90 wt.%	93 wt.%	93 wt.%
Ni content	7.0 wt.%	5.6 wt.%	5.6 wt.%
Fe content	3.0 wt.%	1.4 wt.%	1.4 wt.%
Density	17.1 g/cm <sup>3</sup>	17.7 g/cm <sup>3</sup>	17.7 g/cm <sup>3</sup>
Tensile strength	≥ 110 ksi (760 MPa)	≥ 110 ksi (760 MPa)	≥ 180 ksi (1240 MPa)
Yield strength	≥ 75 ksi (520 MPa)	≥ 75 ksi (520 MPa)	≥ 160 ksi (1100 MPa)
Elongation	≥ 5%	≥ 5%	≥ 5%
Hardness	≤ 32 HRC	≤ 33 HRC	≥ 40 HRC

Other alloy compositions and properties may be available as special order

All WHA products are compliant with EU RoHS Directive 2002/95/EC, 2011/65/EU and  
with REACH Regulation (EC) No. 1907/2006  
All raw materials for Elmet's WHA rod products are obtained from certified conflict-free sources

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