

## Haxonite

## (Fe, Ni)<sub>23</sub>C<sub>6</sub>

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**Crystal Data:** Cubic. *Point Group:* n.d. As spiky plates and irregular patches, to 1 mm; in intricate intergrowths with taenite, schreibersite, and kamacite.

**Physical Properties:** Hardness = n.d. VHN = 850(50) D(meas.) = n.d. D(calc.) = 7.70 Strongly magnetic.

**Optical Properties:** Opaque. *Color:* Brilliant white; dark gray under reflected light.

*Optical Class:* Isotropic.

R: n.d.

**Cell Data:** *Space Group:* n.d.  $a = 10.55$   $Z = [4]$  (by analogy to Mn<sub>23</sub>C<sub>6</sub> and Cr<sub>23</sub>C<sub>6</sub>).

**X-ray Powder Pattern:** Toluca meteorite.

2.356 (s), 2.151 (s), 1.863 (m), 1.242 (m), 1.755 (m/w), 1.218 (m/w), 1.060 (m/w)

### Chemistry:

	(1)
Fe	89.5
Co	0.18
Ni	4.91
C	[5.4]
Total	[100.0]

(1) Canyon Diablo meteorite; by electron microprobe, C by difference, Cr and Cu each less than 0.05%.

**Occurrence:** In iron meteorites and carbonaceous chondrites.

**Association:** Kamacite, taenite, schreibersite, cohenite, pentlandite, magnetite.

**Distribution:** From the Toluca, Canyon Diablo, Edmonton (Kentucky), Tazewell, and many other iron meteorites, characteristic of group I and group IIIC-IIID; and in the Allan Hills carbonaceous chondrite ALHA 77307.

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**Type Material:** n.d.

**References:** (1) Scott, E.R.D. (1971) New carbide, (Fe, Ni)<sub>23</sub>C<sub>6</sub>, found in iron meteorites. *Nature, Physical Science*, 229, 61–62. (2) (1972) *Mineral. Abs.*, 23, 49 [haxonite] (abs. ref. 1). (3) (1974) *Amer. Mineral.*, 59, 209 (abs. ref. 1). (4) Buchwald, V. (1975) Iron meteorites, Univ. of Calif. Press, 101–103. (5) Scott, E.R.D. and R.H. Jones (1990) Disentangling nebular and asteroidal features of CO3 carbonaceous chondrite meteorites. *Geochim. Cosmochim. Acta*, 54, 2485–2502.