



PO Box 31126  
Dayton, OH 45437  
Tel: 937.252.2989 Fax: 937.258.3937  
E-mail: [info@exciton.com](mailto:info@exciton.com)  
[www.exciton.com](http://www.exciton.com)

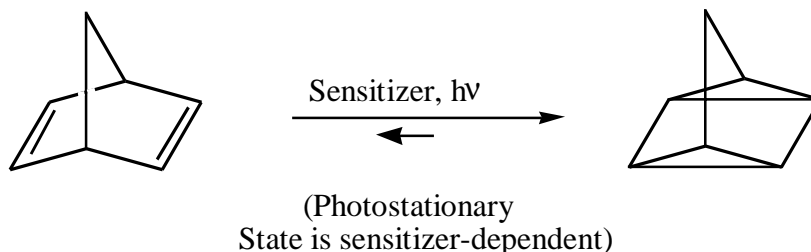
## QUADRICYCLANE

Tetracyclo[3.2.0.0<sup>2,7</sup>.0<sup>4,6</sup>]heptane CASRN [278-06-8]

This unusual, highly strained molecule has found uses as a high energy rocket fuel and as a co-monomer in polymers for photolithography and optical data recording. The compound is now available for sale in quantities from 25 grams to > 25 kg.

### Technical Information:

Quadricyclane is prepared by UV-irradiation of a sensitized solution of norbornadiene, either with a solvent such as diethyl ether<sup>1</sup>, or neat. Conversions of up to about 99% are possible; Exciton offers 96.0% purity material by GC. Impurities include those retained from the starting norbornadiene, such as C<sub>12</sub> and C<sub>14</sub> components from the reaction of cyclopentadiene with norbornadiene and/or norbornadiene itself, norbornadiene, and toluene, the aromatic isomer of these C<sub>7</sub>H<sub>8</sub> hydrocarbons.



Property	Norbornadiene	Quadricyclane
◆ Ionization Potential:	8.69	8.56
◆ Boiling Point:	89.5°C	108-111 °C
◆ Density:	0.9064	0.982
◆ Flash Point:	-11°C	+2°C
◆ Freezing Point:	-19°C	-44°C
◆ Increase in heat of combustion:		+110 kJ/mol (1200J/g)

### Shipping and Hazard Information:

Packing Group I, UN3384, Toxic by Inhalation Liquid, Flammable, n.o.s. (quadricyclane), Hazard Zone B, LC<sub>50</sub> (rat, 4 hours) 0.78 mg/L = 206 ppm (mL of vapor per m<sup>3</sup>).<sup>2</sup>

### References:

1. C. D. Smith, *Organic Syntheses, Coll. Vol. 6*, p. 962, 1988; *Vol. 51*, p. 133 (1971); <http://www.orgsyn.org/orgsyn/orgsyn/prepContent.asp?prep=cv6p0962>
2. Wolfe, R. E.; Kinkead, E. R.; Feldman, M. L.; Leahy, H. F.; Narayanan, L; Eggers, J. S., *Acute, Subchronic and Reproductive Toxicity of Quadricyclane Vapor on Sprague-Dawley Rats*, TR-1996-0128, AL/OE, Mantech Environmental Technology, Inc., Dayton, OH, Aug 1996.

**Please inquire for pricing and availability.**