# Vinylcarbazole

MAK value	– see Section IV of the List of MAK and BAT Values
Peak limitation	-
Absorption through the skin	-
Sensitization (1997)	Sh
Carcinogenicity	-
Prenatal toxicity	-
Germ cell mutagenicity	-
BAT value	-
Synonyms	9-ethenyl-9 <i>H</i> -carbazole <i>N</i> -ethenylcarbazole <i>N</i> -vinylcarbazole
Chemical name (CAS)	9-vinylcarbazole
CAS number	1484-13-5

# **1 Allergenic Effects**

Unlike in earlier times, vinylcarbazole is only rarely used today as a copolymer for plastics, e.g. for coating electrical components.

# 2 Effects in Man

In 14 of about 30 women who impregnated electrical devices with monomeric vinylcarbazole before thermal polymerization, acute dermatitis was observed 14 days after the beginning of this activity. The shortest period between the beginning of the contact and the occurrence of skin reactions was 5 days, the longest 3 weeks. Tests were apparently not carried out (Tabershaw and Skinner 1944).

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In addition, contact dermatitis was observed in 2 workers who handled the substance. Testing of vinylcarbazole in cyclohexane, butanol or alcohol in dilutions up to 1:10000 produced ++ or +++ skin reactions; positive results were obtained with the cyclohexane solution even after dilution to 1:1 million, and with the alcoholic solution after dilution to 1:100000. Unlike monomeric vinylcarbazole, polymerized vinylcarbazole seems to have only very weak sensitizing effects (Gockell 1955). In 2 reviews, allergic dermatitis caused by vinylcarbazole is reported, first in 46 patients and later in 57 patients; no details of the tests are given (Goldmann 1963, 1972). Two of these cases are probably identical to those described by Gockell. The same applies for 60 patients described by Thiess, which probably include those reported by Goldmann (Thiess 1979).

## **3 Animal Experiments**

Animal experiments have only been described in a lecture (Zeller 1957) and the methods used are considered not to produce very meaningful results (Graul and Kalkoff 1948). A concentration of the test substance just high enough to produce skin irritation was painted three times on the chemically depilated flank skin (defatted with ether) of guinea pigs (strain not specified) and provocation carried out after 10 to 14 days with about a tenth of the irritating concentration. The total number of animals, the incidence of positive results and the behaviour of any controls were not given.

### 4 Manifesto (sensitization)

The observations in man indicate that vinylcarbazole is a highly potent contact allergen. Positive results in animal experiments suggest the same. Vinylcarbazole is therefore designated with "Sh" (for substances capable of causing sensitization of the skin).

### **5** References

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- Goldmann PJ (1963) Betriebsbedingte Hauterkrankungen in der chemischen Industrie. Z Hautkr Geschlechtskr 34: 355–368
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Graul EH, Kalkoff KW (1948) Experimentelle Studien über den Vorgang der epidermalen Sensibilisierung. Arch Dermatol Syph 187: 417–430

Tabershaw IR, Skinner JB (1944) Dermatitis due to vinyl carbazole. J Ind Hyg 26: 313–315

- Thiess AM (1979) Chemie und Allergie (Werksärztliche Beobachtungen in der Großchemie BASF von 1955–1983). Lecture on the occasion of a consultation between representatives from science and industry at the VCI, Frankfurt/Main, 29.3.1979, 2–13
- Zeller H (1957) Zur Prüfung epidermal sensibilisierender Stoffe im Tierversuch. Arch Exp Pathol Pharmakol 232: 239–240

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