Dictionary of Contact Allergens

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Zu Inhaltsverzeichnis

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1.1 Introduction

This chapter has been written in order to familiarize the reader with the chemical structure of chemicals implicated in contact dermatitis, mainly as haptens responsible for allergic contact dermatitis. For each molecule, the principal name is used for classification. We have also listed the most important synonym(s), the Chemical Abstract Service (CAS) Registry Number that characterizes the substance, and its chemical structure. The reader will find one or more relevant literature references. As it was not possible to be exhaustive, some allergens have been omitted since they were obsolete, extremely rarely implicated in contact dermatitis, their case reports were too imprecise, or they are extensively treated in other chapters of the textbook. From a practical chemical point of view, acrylates, cyanoacrylates and (meth)acrylates, cephalosporins, and parabens have been grouped together.

1. Abietic acid

CAS Registry Number [514–10–3]
Abietic acid is probably the major allergen of colophony, along with dehydroabietic acid, by way of oxidation products. Its detection in a material indicates that allergenic components of colophony are present.

Suggested Reading

2. Acetaldehyde

Acetic Aldehyde, Ethanal, Ethylc Aldehyde

CAS Registry Number [75–07–0]

Acetaldehyde, as its metabolite, is responsible for many of the effects of ethanol, such as hepatic or neurological toxicity. A case of contact allergy was reported in the textile industry, where dimethoxane was used as a biocide agent in textiles and its degradation led to acetaldehyde.

Suggested Reading

3. Acrylamide

CAS Registry Number [79–06–1]
Acrylamide is used in the plastic polymers industry, for water treatments, soil stabilization, and to prepare polyacrylamide gels for electrophoresis. This neurotoxic, carcinogenic, and genotoxic substance is known to have caused contact dermatitis in industrial and laboratory workers.

**Suggested Reading**


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### 4. Acrylates, Cyanoacrylate, and Methacrylates

**Acrylic Acid and Acrylates**

**CAS Registry Number**

[79–10–7]

Acrylates are esters from acrylic acid. Occupational contact allergies from acrylates have frequently been reported and mainly concern workers exposed to the glues based on acrylic acid, as well as dental workers and beauticians.

**Bisphenol A Diglycidylether Diacrylate**

2,2-bis[4-(2-Hydroxy-3-Acryloxypropoxy)phenyl]-Propane (Bis-GA)

**CAS Registry Number** [8687–94–9]

Bis-GA is an epoxy diacrylate. It caused contact dermatitis in a process worker, being contained in ultraviolet-light-curable acrylic paints.
Suggested Reading

Bisphenol A Glycidyl Methacrylate
Bis-GMA

CAS Registry Number [1565–94–2]

Bis-GMA is an epoxy-methacrylate. Sensitization occurs in dentists, in beauticians, and in consumers with sculptured photopolymerizable nails.

Suggested Reading

1,4-Butanediol Diacrylate

CAS Registry Number [1070–70–8]

A positive patch test was observed in a male process worker in a paint factory, sensitized to an epoxy diacrylate contained in raw materials of ultraviolet-light-curable paint. The positive reaction was probably due to a cross-reactivity.

Suggested Reading
1,4-Butanediol Dimethacrylate

CAS Registry Number
[141–32–2]

Sensitization to 1,4-butanediol dimethacrylate was reported in dental technicians, with cross-reactivity to methyl methacrylate.

Suggested Reading

n-Butyl Acrylate

CAS Registry Number
[141–32–2]

Sensitization to n-butyl acrylate can occur in the dental profession.

Suggested Reading

tert-Butyl Acrylate

CAS Registry Number
[1663–39–4]

Sensitization may affect dental workers.

Suggested Reading
Cyanoacrylic Acid and Cyanoacrylates

2-Cyanoacrylic Acid

CAS Registry Number [15802–18–3]

Cyanoacrylates, particularly 2-ethyl cyanoacrylate, are derived from cyanoacrylic acid. They are used as sealants.

Suggested Reading

Diethylene glycol Diacrylate

CAS Registry Number [4074–88–8]

Diethylene glycol diacrylate was positive in a painter sensitized to his own acrylate-based paint.

Suggested Reading

Ethyl Acrylate

CAS Registry Number [140–88–5]

Ethyl acrylate is a sensitizer in the dental profession.
Suggested Reading

Ethyl Cyanoacrylate

Ethyl-2-Cyanoacrylate

CAS Registry Number [7085–85–0]

Ethyl cyanoacrylate is contained in instant glues for metal, glass, rubber, plastics, textiles, tissues, and nails. It polymerizes almost instantaneously in air at room temperature and bonds immediately and strongly to surface keratin. Beauticians are exposed to contact dermatitis from nail glues.

Suggested Reading

Ethleneglycol Dimethacrylate

CAS Registry Number [97–90–5]

Ethleneglycol dimethacrylate (EGDMA) is a cross-linking agent of acrylic resins and is employed to optimize the dilution of high-viscosity monomers and to link together the macromolecules constituting the polymer. It caused contact dermatitis in dental technicians and dental assistants. A case was also reported in a manufacturer of car rearview mirrors.
Suggested Reading

2-Ethylhexyl Acrylate
2-EHA

CAS Registry Number [1322–13–0]

2-EHA was contained in a surgical tape and caused allergic contact dermatitis in a patient.

Suggested Reading

Ethyl Methacrylate

CAS Registry Number [97–63–2].

Ethyl methacrylate is used in dental prostheses or in photobonded sculptured nails.

Suggested Reading