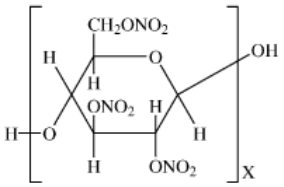
Nitrocellulose

Ingredient synonym names

Celex
Celloidin
Cellulose nitrate, Cellulose tetranitrate
Collodion, collodion cotton, collodion wool
Colloxylin, Colloxylin VNV
Corial RM finish F
Daicel RS 1
Fulmicoton
Guncotton
Nitrocel S, Nitrocotton, Nitron
Parlodion
Pirossilina
Piroxilina
Pyralin
Pyroxylin, Pyroxyline, Pyroxylinium
Shadolac MT
Synpor
Xyloidin

IDENTIFIER DETAILS

Ingredient chemical structure



CAS Number	FEMA Number	Additive Number	Ingredient EC Number
9004-70-0	-	-	-

CAS Additional Number	FL Number	CoE Number
124362-83-0 1339-76-0 152264-12-5 188626-79-1 246848-29-3 353274-56-3 37228-31-2 37317-48-9 60649-57-2 72026-64-3 72026-68-7 8050-69-9 8050-70-2 88386-25-8 909342-54-7	-	-

Chemical formula [~C6H7O2(OH)3-x(ONO2)x~] n

Ingredient CLP Classification

Ingredient REACH Registration Number

Nitrocellulose

-

Acute Oral Toxicity	Eye Damage/Irritation	Carcinogenity
0	0	0
Acute Dermal Toxicity	**Respiratory Sensitisation**	**Reproductive Toxicity**
0	0	0
Acute Inhalation Toxicity	**Skin Sensitisation**	**Aspiration Toxicity**
0	0	0
Skin Corrosive/Irritant	**Mutagenicity/ Genotoxicity**	**Specific Target Organ Toxicity**
0	0	0

SPECIFICATIONS

Melting Point	160–170 °C (ignites)	Boiling Point	No data provided

STATUS IN FOOD AND DRUG LAWS

Acceptable Daily Intake (ADI, mg/kg)	-
Acceptable Daily Intake (ADI) comments	In 2018 The EFSA ANS Panel concluded that there was no need for a numerical ADI and that there would be no safety concern at the reported uses and use levels for the unmodified and modified celluloses. The Panel considered an indicative total exposure of around 660–900 mg/kg bw per day for microcrystalline, powdered and modified celluloses.
FDA Status	175.105 & 175.300: Indirect food additives: Adhesives & components of coatings 177.1200: Indirect food additives: Polymers 179.45: Irradiation in the production, processing and handling of food 181.30: Substances used in the manufacture of paper and paperboard products used in food packaging 358.103 & 358.503: Miscellaneous external drug products for over-the-counter human use

CoE limits - Beverages (mg/kg)	-	CoE limits - Food (mg/kg)	-	CoE limits - Exceptions (mg/kg)	-

HUMAN EXPOSURE

Ingredient Natural Occurence (if applicable)

-

References - Ingredient Natural Occurence

-

Ingredient Reported Uses

Nitrocellulose is used in the manufacture of lacquers, inks, adhesives, in electrotechnics, galvanoplasty, explosives, rocket propellant, leather finishing, embedding sections in microscopy. Nitrocellulose is also used as support in diagnostic/scientific applications where antigen-antibody binding occur, e.g., pregnancy tests, U-Albumin tests, western/northern/southern blotting [HSDB, 2003]

References - Ingredient Reported Uses

HSDB Hazardous Substances Databank Number: 1973 (search carried out 09/09/09). Last revision date 2003/02/14. Obtained from http://toxnet.nlm.nih.gov.

TOXICITY DATA

In Vivo Data

Acute Toxicity Data

> 5000mg/kg, Rat, Oral
> 5000mg/kg, Mouse, Oral

ChemIDplus Chemical Identification/Dictionary (2009): Pyroxylin RN: 9004-70-0 (search carried out 09/09/09). Obtained from http://chem.sis.nlm.nih.gov

In Vivo Carcinogenicity/Mutagenicity

In 2018 the EFSA ANS Panel concluded that their structural, physicochemical and biological similarities, allows for read-across between all the celluloses. Despite the limitations of some of the studies, the available data do not indicate a genotoxic concern for microcrystalline cellulose, methyl cellulose and carboxy methyl cellulose, and by read-across, of the other modified and unmodified celluloses [EFSA ANS, 2018].

References - In Vivo Carcinogenicity/Mutagenicity

EFSA ANS (2018). Re-evaluation of celluloses E 460(i), E 460(ii), E 461, E 462, E 463, E 464, E 465, E 466, E 468 and E 469 as food additives. EFSA Journal 2018, 16(1)5047.

Dermal Toxicity

A man with no allergies injured his left forefoot. His foot was strapped with Collodion (nitrocellulose)-soaked lint. Twelve days later, the skin beneath the dressing was erythematous, vesicular and scaly; the plantar surface was covered by a large bulla. Tests were done on Colophony (open & closed). Since the results of open test were negative, it was commented that occlusion by nitrocellulose enhanced colophony penetration of the skin and

hence sensitisation [Barth, 1981].

A case report of a 45 year old woman presented with contact sensitivity to 2 nail varnish products she was using was recommended a varnish, designed for patients allergic to nail varnishes. The patient used this new varnish and experienced an acute contact eczema at the application area. Patch testing revealed contact sensitivity was due to nitrocellulose. The purity of the sample was assessed by chromatography and did not detect triphenyl phosphate, a potential irritant contaminant. Adams & Maibach published a survey of the American experience of contact allergy to cosmetics over 5 years (1977-1983). Only 1 case of allergy to nitrocellulose is mentioned among 13,126 patients with contact sensitivity, no other case has previously been reported to the author's knowledge. It was concluded contact sensitivity is very rare, but as nitrocellulose is rarely tested as a potential allergen it would be appropriate to test in suspected allergy to nail varnishes [Castelain, 1997].

References - Dermal Toxicity

Barth, (1981). Colophony sensitivity -a regional variant. Contact Dermatitis 7 (3): 165-6 .

Castelain et al., (1997). Contact dermatitis from nitrocellulose in a nail varnish. Contact Dermatitis 36: 266.

Reproductive/ Developmental Toxicity

Concerning reproductive and developmental toxicity, data are available for microcrystalline cellulose, methyl cellulose, hydroxypropyl cellulose and sodium carboxy methyl, cellulose. The substances were tested in mice, rats, hamsters and/or rabbits with oral dosing via gavage. Adverse effects on reproductive performance or developmental effects were not observed with modified and unmodified celluloses at doses greater than 1000 mg/kg bw by gavage (often the highest dose tested). Specific toxicity data were not always available for all the celluloses for all endpoints. In general, the most complete data sets were available for microcrystalline cellulose and sodium carboxy methyl cellulose. Given the similarities in their structure, relevant physicochemical, metabolic and toxicological properties, the EFSA ANS Panel considered it possible to read-across between all the celluloses [EFSA ANS, 2018].

References - Reproductive/ Developmental Toxicity

EFSA ANS (2018). Re-evaluation of celluloses E 460(i), E 460(ii), E 461, E 462, E 463, E 464, E 465, E 466, E 468 and E 469 as food additives. EFSA Journal 2018, 16(1)5047.

Inhalation Toxicity

Chemical analyses of the four bulk Cellulose insulation (CI) samples revealed only minor differences in additives. For all four CI samples, less than 0.1% by weight was collected as the small respirable particle fraction. The fractions consisted mainly of fire retardants and smaller quantities of clays and did not contain cellulose material. The respirable fraction from one CI sample was administered by intratracheal instillation to male Fischer 344 rats at doses of 0, 0.625, 1.25, 2.5, 5, or 10 mg/kg body weight; the bronchoalveolar lavage (BAL) fluid cellularity was evaluated 3 days later. Based upon the relatively mild severity of the inflammatory response, a dose of 5 mg/kg body weight was selected for use in a subsequent 28-day study. Rats received CI, titanium dioxide (particle controls), or sterile saline (controls). BAL fluid was evaluated 1, 3, 7, 14, and 28 days after instillation, and lung histopathology was evaluated 14 and 28 days after treatment. CI caused a greater influx of inflammatory cells than titanium dioxide and caused significant increases in BAL fluid protein and lactate dehydrogenase. These CI-induced changes in BAL fluid parameters were transient and by day 14 were not significantly different than those observed in rats treated with titanium dioxide or phosphate-buffered saline. Unlike titanium dioxide, CI treatment caused a minimal to mild nonprogressive, minimally fibrosing granulomatous pneumonitis characterized by nodular foci of macrophages and giant cells. These results indicated that few respirable particles or fibers are likely generated during the CI application and that the acute pulmonary toxicity is minimal [Morgan, 2006].

References - Inhalation Toxicity

Morgan DL. (2006) NTP Toxicity Study Report on the atmospheric characterization, particle size, chemical composition, and workplace exposure assessment of cellulose insulation (CELLULOSEINS). Toxic Rep Ser. 74:1-62.

Cardiac Toxicity

No data identified

References - Cardiac Toxicity

No data identified

Addictive Data

No data identified

References - Addictive Data

No data identified

Behavioral data

No data identified

References - Behavioral data

No data identified

In Vivo - Other Relevant Studies

No data identified

References - In Vivo - Other Relevant Studies

No data identified

In Vitro Data

In Vitro Carcinogenicity/Mutagenicity

No data identified

References - In Vitro Carcinogenicity/Mutagenicity

No data identified

In Vitro - Other Relevant Studies

No data identified

References - In Vitro - Other Relevant Studies

No data identified

Nitrocellulose

Emissions and Associated Toxicity Data

No data identified

References - Emissions and Associated Toxicity Data

No data identified