

CPC**COOPERATIVE PATENT CLASSIFICATION****A62D****CHEMICAL MEANS FOR EXTINGUISHING FIRES OR FOR COMBATING OR PROTECTING AGAINST HARMFUL CHEMICAL AGENTS; CHEMICAL MATERIALS FOR USE IN BREATHING APPARATUS****WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

A62D 1/02 covered by [A62D 1/0007](#), [A62D 1/0071](#)

A62D 1/04 covered by [A62D 1/0071](#)

A62D 1/08 covered by [A62D 1/0007](#) to [A62D 1/0028](#), [A62D 1/0057](#), [A62D 1/0092](#)

A62D 1/00

Fire-extinguishing compositions; Use of chemical substances in extinguishing fires (fireproof paints [C09D 5/18](#); fireproofing materials [C09K 21/00](#))

- A62D 1/0007 . {Solid extinguishing substances}
- A62D 1/0014 . . {Powders; Granules}
- A62D 1/0021 . . {Microcapsules}
- A62D 1/0028 . {Liquid extinguishing substances ([A62D 1/0092](#) takes precedence)}
- A62D 1/0035 . . {Aqueous solutions}
- A62D 1/0042 . . . {"Wet" water, i.e. containing surfactant}
- A62D 1/005 . . {Dispersions; Emulsions}
- A62D 1/0057 . . {Polyhaloalkanes ([A62D 1/005](#) takes precedence)}
- A62D 1/0064 . {Gels; Film-forming compositions}
- A62D 1/0071 . {Foams}
- A62D 1/0078 . . {containing proteins or protein derivatives}
- A62D 1/0085 . . {containing perfluoroalkyl-terminated surfactant}
- A62D 1/0092 . {Gaseous extinguishing substances, e.g. liquefied gases, carbon dioxide snow ([freons](#) or [halons](#) [A62D 1/005](#))}
- A62D 1/06 . containing gas-producing, chemically-reactive components

A62D 3/00

Processes for making harmful chemical substances harmless or less harmful, by effecting a chemical change in the substances ([consuming noxious gases by combustion](#) [F23G 7/06](#))

NOTES

1. This group does not cover:
 - chemical or physico-chemical type processes where eradicating or diminishing the dangerousness of harmful chemical substances produces useful products (e.g. cement). These types of processes are covered by the appropriate subclass for making the specific product. However,

A62D 3/00
(continued)

in situations where processes for making products include a subset of process steps with eradicating or diminishing the dangerousness of a harmful chemical substance as its fundamental goal, and this subset is in itself novel and unobvious, this subset is covered by group [A62D 3/00](#).

2. In this group the following term is used with the meaning indicated:
 - harmful chemical substances are chemical waste substances which are too hazardous or toxic to be discarded in an ordinary municipal landfill.
3. In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.
4. In this group, it is desirable to add the indexing code(s) of group [A62D 2101/00](#) relating to the nature of the harmful chemical substance.
5. This group covers
 - Processes for combatting harmful chemical substances or agents or materials containing harmful chemical agents. These processes can be chemical or physico-chemical, e.g. use of special chemical reagents for chemical fixing, and result in the decomposition or transformation of the agents in harmless or less harmful substances, because of the change in its chemical constitution. These processes can comprise the step of dissolving or dispersing the hazardous substances in water for the purpose of treating them or the step of producing a gaseous product from a non-gaseous hazardous substance
 - Treatment of specific hazardous substances in sludge, e.g. residue from industrial processes, with the exception of sludge from (municipal) sewage treatment.
6. This group does not cover:
 - Chemical or biological purification of smoke or fumes, covered by [B01D 53/34](#)
 - Disposal of solid waste, destroying solid waste or transforming solid waste into something useful or harmless, covered by [B09B](#)
 - Chemical reclamation of contaminated soil, covered by [B09C 1/08](#)
 - Treatment of waste water, sewage or sludge, covered by [C02F](#)
 - Incorporating waste or residues in a glass or vitreous matrix covered by [C03C 1/00](#)
 - Incorporating waste or residues in cement or cementitious compositions, covered by [C04B 7/24](#)
 - Use of waste materials as filler for mortars, concrete or the like covered by [C04B 18/04](#)
 - Destructive distillation, covered by [C10B 53/00](#)
 - Obtaining metals from residues or scrap, covered by [C22B](#)
 - Consuming waste by combustion, covered by [F23G](#)
 - Treatment of radioactively-contaminated waste, covered by [G21F 9/00](#)

A62D 3/02

- . by biological methods, i.e. processes using enzymes or micro-organisms

A62D 3/10

- . by subjecting to electric or wave energy or particle or ionizing radiation

A62D 3/11

- . . Electrochemical processes, e.g. electrodialysis

A62D 3/115

- . . . Electrolytic degradation or conversion

A62D 3/13

- . . to sonic energy

A62D 3/15

- . . to particle radiation, e.g. electron beam radiation

- A62D 3/17 . . . to electromagnetic radiation, e.g. emitted by a laser
- A62D 3/172 Gamma rays, i.e. radiation having a wavelength of about 0.003nm to 0.03 nm
- A62D 3/174 X-rays, i.e. radiation having a wavelength of about 0.03nm to 3nm
- A62D 3/176 Ultraviolet radiations, i.e. radiation having a wavelength of about 3nm to 400nm
- A62D 3/178 Microwave radiations, i.e. radiation having a wavelength of about 0.3 cm to 30cm
- A62D 3/19 . . . to plasma
- A62D 3/20 . . by hydropyrolysis or destructive steam gasification, e.g. using water and heat or supercritical water, to effect chemical change
- A62D 3/30 . . by reacting with chemical agents
- A62D 3/32 . . . by treatment in molten chemical reagent, e.g. salts or metals
- A62D 3/33 . . . by chemical fixing the harmful substance, e.g. by chelation or complexation
- A62D 3/34 . . . Dehalogenation using reactive chemical agents able to degrade
- A62D 3/35 . . . by hydrolysis
- A62D 3/36 . . . Detoxification by using acid or alkaline reagents
- A62D 3/37 . . . by reduction, e.g. hydrogenation
- A62D 3/38 . . . by oxidation; by combustion
- A62D 3/40 . . by heating to effect chemical change, e.g. pyrolysis

A62D 5/00 Composition of materials for coverings or clothing affording protection against harmful chemical agents

A62D 7/00 Composition of materials for transparent parts of gas-masks, respirators, breathing bags, or helmets

- A62D 7/02 . . Clear-view sheets which prevent the formation of water drops or ice ([materials for minimising adherence of ice or water to surfaces C09K 3/18](#))

A62D 9/00 Composition of chemical substances for use in breathing apparatus
(production of oxygen-generating compounds in general, processes for the production of oxygen from chemicals in general [C01B 13/00](#), [C25B 1/02](#))

A62D 2101/00 Harmfull chemical substances made harmless, or less harmful, by effecting chemical change

NOTES

1. The indexing codes of group [A62D 2101/00](#) are to be used for identifying the origin or chemical nature of the harmful chemical substances which are made harmless or less harmful by processes already classified as such in groups [A62D 3/02](#) to [A62D 3/40](#)
2. When indexing a substance in groups [A62D 2101/02](#) to [A62D 2101/08](#), indexing according to its chemical structure is also made in one or more of groups [A62D 2101/20](#) to [A62D 2101/40](#), if of interest

- A62D 2101/02 . . Chemical warfare substances, e.g. cholinesterase inhibitor
- A62D 2101/04 . . pesticides, e.g. insecticides, herbicides, fungicides or nematocides
- A62D 2101/06 . . Explosives, propellants or pyrotechnics, e.g. rocket fuel or napalm

- A62D 2101/08 . Toxic combustion residues, e.g. toxic substances contained in fly ash from waste incineration
- A62D 2101/20 . Organic substances
- A62D 2101/22 . . containing halogen
- A62D 2101/24 . . containing heavy metals
- A62D 2101/26 . . containing nitrogen or phosphorus
- A62D 2101/28 . . containing oxygen, sulfur, selenium or tellurium, i.e. chalcogen
- A62D 2101/40 . Inorganic substances
- A62D 2101/41 . . Inorganic fibres, e.g. asbestos
- A62D 2101/43 . . containing heavy metals, in the bonded or free state
- A62D 2101/45 . . containing nitrogen or phosphorus
- A62D 2101/47 . . containing oxygen, sulfur, selenium or tellurium, i.e. chalcogen
- A62D 2101/49 . . containing halogen

- A62D 2203/00 Aspects of processes for making harmful chemical substances harmless, or less harmful, by effecting chemical change in the substances**
- A62D 2203/02 . Combined processes involving two or more distinct steps covered by groups [A62D 3/10](#) to [A62D 3/40](#)
- A62D 2203/04 . Combined processes involving two or more non-distinct steps covered by groups [A62D 3/10](#) to [A62D 3/40](#)
- A62D 2203/10 . Apparatus specially adapted for treating harmful chemical agents; Details thereof