

# Human Health and Environmental Fact Sheet

**Disclaimer:** The information presented in this fact sheet was compiled from information from flame retardants manufacturers and public data sources. The authors cannot be held liable for factual errors. For latest information on substance testing, classification and labelling as well as regulatory status please contact the individual manufacturers and refer to their latest safety data sheet applicable in your country or region.

|   |  |  |
|---|--|--|
| <b>Product name</b>                     | <b>Ammonium polyphosphate</b>  |  |
| <b>Synonyms</b>                         | ammonium polyphosphate, Exolit AP 422  |  |
| <b>CAS no.</b>                          | 68333-79-9   |  |
| <b>Molecular Structure</b>              | $  \begin{array}{c}  \text{H} - \left[ \begin{array}{c} \text{O} \\    \\ \text{P} - \text{O} \\   \\ \text{ONH}_4 \end{array} \right]_n - \text{H} \\  n > 1000  \end{array}  $   |  |
| <b>Mw</b>                               | ca 100 000 g/mol based on an average chain length of 1000  |  |
| <b>Mf</b>                               | (NH <sub>4</sub> PO <sub>3</sub> ) <sub>n</sub> with n > 1000  |  |
| <b>Physical form</b>                    | White powder   |  |
| <b>Use</b>                              | <ul style="list-style-type: none"> <li>• char forming component in intumescent coatings and adhesives / fillers</li> <li>• polyurethane rigid foams</li> <li>• materials containing cellulose (paper, wood, wood chip based products)</li> <li>• intumescent systems for unsaturated polyester resins or epoxy resins</li> <li>• systems for polyolefines</li> </ul> |  |
| <b>PBT/vPvB EVALUATION</b>              |  |  |
|   | <b>Conclusion</b>  | <b>Comments</b>  |
| Persistent or very Persistent           | Yes    No    X   | slow degradation of ammonium polyphosphate by hydrolysis to ammonium phosphate (plant nutrients) |
| Bioaccumulative or very bioaccumulative | Yes    No    X   |  |
| Ecotoxicity                             | Yes    No    X   |  |
| <b>HUMAN HEALTH</b>                     |  |  |
|   | <b>Result</b>  | <b>Comments</b>  |
| <b>Acute toxicity</b>                   |  |  |
| Acute toxicity (LD <sub>50</sub> )      | LD <sub>50</sub> > 2000 mg / kg (rat)  | Test standard: OECD 401  |
| Eye irritation                          | Yes    No    X   | Test standard: rabbit, according to FDA-guideline  |
| Skin irritation                         | Yes (X)    No  | slightly irritating (rabbit), according to FDA-guideline)  |
| Sensitization / Potentially allergenic  | Yes    No  | Test according to OECD 429 or OECD 406   |
| Potentially mutagenic                   | Yes    No    X   | Test according to OECD 471 (Ames-Test)   |

|                         |             |  |
|-------------------------|-------------|--|
| <b>Chronic toxicity</b> |             |  |
| Mutagenicity (NOAEL)    | Yes    No X | Not tested for (due to negative Ames-Test) |
| Reprotoxicity (NOAEL)   | No data     | Test standard: OECD 416                    |
| Genotoxicity            | Yes    No   | Not tested for                             |
| Endocrine disruption    | Yes    No   | Not tested for                             |

| <b>ENVIRONMENT</b>                              |   |   |
|---|---|---|
| <b>Degradation</b>                              |   |   |
| Half life in water (fresh or marine)            | No data   | Inorganic substance. Causes no biological oxygen consumption, therefore not suitable for standard test (OECD 301); slow degradation of ammonium polyphosphate by hydrolysis to ammonium phosphate |
| Half life in sediment (fresh or marine)         | No data   | Test standard:  |
| Half life in soil                               | No data   | Test standard:  |
| Readily biodegradable                           | Yes    No   | Test standard: OECD 301   |
| Inherently biodegradable                        | Yes    No   | Test standard: OECD 301 prolonged CBT   |
| Sewage treatment removal                        | No data %   | Test standard:  |
| <b>Bioaccumulation</b>                          |   |   |
| BCF (log)                                       | not applicable (inorganic polymer, not water soluble) | Species:  |
| Log K <sub>ow</sub>                             | not applicable  |   |
| <b>Eco-toxicity</b>                             |   |   |
| toxicity for fish                               | LC <sub>50</sub> > 500 mg/L (96 h, zebra fish)        | Species: Danio rerio<br>Test standard: OECD 203   |
| toxicity for invertebrate                       | not tested  | Species: Daphnia magna<br>Test standard: OECD 202   |
| Reprotox, invertebrate                          | not tested  | Species: Daphnia magna<br>Test standard: OECD 211   |
| Chronic toxicity for algae,                     | not tested  | Species: Scenedesmus subspicatus<br>Test standard: EEC-Guideline 92/69 No. L383 C.3.  |
| <b>Physical properties</b>                      |   |   |
| Vapour pressure at 25 °C                        | not applicable (inorganic polymer)                    | Test standard: OECD 104   |
| Solubility in water at 25 °C                    | < 5 g/L   | almost insoluble, however small amounts of ammonium phosphates are released due to slow hydrolysis: max. 0.5 % (m/m) will dissolve at 25 °C in 10 % suspension                                    |
| Soil Adsorption coefficient, K <sub>oc</sub>    | no measured   | Test standard:  |
| Henry's law constant (atm·m <sup>3</sup> /mole) | not applicable, since no vapour pressure              | Test standard   |

|  |                                       |   |
|--|---------------------------------------|---|
| Hydrolysis (half life) in water                                    | No data                               | Test standard: OECD 111   |
| <b>RISK PHRASES</b>  |                                       |   |
|  | Applies following Directive EC/67/548 | Comments  |
| R40 Limited evidence of a carcinogenic effect                      | Yes No X                              | Not tested, because substance is a polymer  |
| R42 May cause sensitisation by inhalation                          | Yes No X                              | Not tested  |
| R43 May cause sensitisation by skin contact                        | Yes No X                              | Not tested  |
| R45 May cause cancer   | Yes No X                              | Not tested, because substance is not bio-accessible   |
| R49 May cause cancer by inhalation                                 | Yes No X                              | Not tested  |
| R50 Very toxic to aquatic organisms                                | Yes No X                              | Tested with fish (see above), no tests for daphnia and algae, however, no negative effects to be expected, because substance degrades to ammonium phosphate |
| R53 May cause long-term adverse effects in the aquatic environment | Yes No X                              | Not test, however, not to be expected, because substance degrades to ammonium phosphate   |

More information:

[www.exolit.com](http://www.exolit.com) (Clariant website)