

REFERENCES

- Aaronson, A. M. (1992). Phosphorus flame retardant for a changing world. *Phosphorus Chemistry, Developments in American Science, ACS Symposium Series 486*, Washington, 218.
- Anderson, C. E., Dziuk, J., Mallow, W. A., & Buckmaster, J. (1985). Intumescence reaction mechanisms. *Journal of Fire Sciences, 3*(3), 161-194.
- Arias, J. L., Fink, D. J., Xiao, S. Q., Heuer, A. H., & Caplan, A. I. (1993). Biominerization and eggshells: cell-mediated acellular compartments of mineralized extracellular matrix. *International Review of Cytology, 145*, 217-250.
- Arias, J. L., & Fernández, M. S. (2003). Biomimetic processes through the study of mineralized shells. *Materials Characterization, 50*(2-3), 189-195.
- ASTM-119. (1998). Standard test methods for fire testing of building construction and materials. Philadelphia: American Society for Testing and Material.
- Babushok, V., & Tsang, W. (2000). Inhibitor rankings for alkane combustion. *Combustion and Flame, 123*(4), 488-506.
- Banerjee, A. N., & Chattopadhyay, S. (1993). Adhesion study of vinylchloride-vinylacetate-maleic acid terpolymer/butylated melamine-formaldehyde resin blends. *International Journal of Adhesion and Adhesives, 13*(3), 173-180.
- Bellayer, S., Tavard, E., Duquesne, S., Piechaczyk, A., & Bourbigot, S. (2009). Mechanism of intumescence of a polyethylene/calcium carbonate/stearic acid system. *Polymer Degradation and Stability, 94*(5), 797-803.
- Benbow, J. (1987). Minerals in fire protection, *Industrial Minerals, 240*, 61-73.
- Bertelli, G., Camino, G., Marchetti, E., Costa, L., Casorati, E., & Locatelli, R. (1989). Parameters affecting fire retardant effectiveness in intumescence systems. *Polymer Degradation and Stability, 25*(2-4), 277-292.
- Bourbigot, S., Bras, M. L., & Delobel, R. (1993). Carbonization mechanisms resulting from intumescence association with the ammonium polyphosphate-pentaerythritol fire retardant system. *Carbon, 31*(8), 1219-1230.

Bourbigot, S., Le Bras, M., Delobel, R., Bréant, P., & Trémillon, J.-m. (1995). Carbonization mechanisms resulting from intumescence-part II. Association with an ethylene terpolymer and the ammonium polyphosphate-pentaerythritol fire retardant system. *Carbon*, 33(3), 283-294.

Bourbigot, S., Samyn, F., Turf, T., & Duquesne, S. (2010). Nanomorphology and reaction to fire of polyurethane and polyamide nanocomposites containing flame retardants. *Polymer Degradation and Stability*, 95(3), 320-326.

BS5950: (1990). Structural use of steelwork in building, Part 8: Code of practice for fire resistant design, British Standards Institution.

BS EN1991-1-2: (2002). Eurocode 1: Actions on structures-Part 1.2: General actions-Actions on structures exposed to fire, British Standards Institution, London, November 2002.

Buchanan, A. H. (2002). Structural Design for Fire Safety. John Wiley & Sons.

Camino, G., Costa, L., Trossarelli, L., Costanzi, F. & Landoni, G. (1984). Study of the mechanism of intumescence in fire retardant polymers: Part IV--Evidence of ester formation in ammonium polyphosphate-pentaerythritol mixtures. *Polymer Degradation and Stability*, 8, 13-22.

Camino, G., Costa, L., & Martinasso, G. (1989). Intumescence fire-retardant systems. *Polymer Degradation and Stability*, 23(4), 359-376.

Camino, G., Martinasso, G., & Costa, L. (1990). Thermal degradation of pentaerythritol diphosphate, model compound for fire retardant intumescence systems: Part I-Overall thermal degradation. *Polymer Degradation and Stability*, 27(3), 285-296.

Camino, G., Martinasso, G., Costa, L., & Gobetto, R. (1990). Thermal degradation of pentaerythritol diphosphate, model compound for fire retardant intumescence systems: Part II-Intumescence step. *Polymer Degradation and Stability*, 28(1), 17-38.

Camino, G., Costa, L., & Luda di Cortemiglia, M. P. (1991). Overview of fire retardant mechanisms. *Polymer Degradation and Stability*, 33(2), 131-154.

Castrovinci, A., Camino, G., Drevelle, C., Duquesne, S., Magniez, C., & Vouters, M. (2005). Ammonium polyphosphate-aluminum trihydroxide antagonism in fire retarded butadiene-styrene block copolymer. *European Polymer Journal*, 41(9), 2023-2033.

Chou, C.-S., Lin, S.-H., Wang, C.-I., & Liu, K.-H. (2010). A hybrid intumescent fire retardant coating from cake- and eggshell-type IFRC. *Powder Technology*, 198(1), 149-156.

Chuang, Y.-J., Chuang, Y.-H., & Lin, C.-Y. (2009). Fire tests to study heat insulation scenario of galvanized rolling shutters sprayed with intumescent coatings. *Materials & Design*, 30(7), 2576-2583.

Cullis, C. F., & Hirschler, M. M. (1981). The Combustion of Organic Polymers. Oxford: Clarendon Press.

Dai, X. H., Wang, Y. C., & Bailey, C. G. (2009). Effects of partial fire protection on temperature developments in steel joints protected by intumescent coating. *Fire Safety Journal*, 44(3), 376-386.

Davis, J., & Huggard, M. (1996). *Journal of Vinyl Additives Technology*, 2, 69.

Duquesne, S., Le Bras, M., Bourbigot, S., Delobel, R., Camino, G., Eling, B., et al., (2001). *Journal of Applied Polymer Science*, 82, 3262.

Duquesne, S., Magnet, S., Jama, C., & Delobel, R. (2004). Intumescence paints: fire protective coatings for metallic substrates. *Surface and Coatings Technology*, 180-181, 302-307.

Duval, R., & Kadri, E. H. (1998). Influence of silica fume on the workability and the compressive strength of high performance concretes. *Cement and Concrete research*. Vol. 28 (4), 522-547.

Eurocode 1: Actions on Structures; Part 1-2: General Actions - Actions on Structures Exposed to Fire. Brussels: BSi British Standards, 2002.

Eurocode 3: Design of Steel Structures -Part 1-2: General Rules - Structural Fire Design. Brussels: BSi British Standards, 2005.

Focke, W. W., Strydom, C. A., & Bartie, N. (1997). Thermal analysis of commercial inorganic flame retardants. *South African of Chemical Engineering*, 9(2), 41-51.

Gann, R. G. (1993). Flame retardants in Kirk Othmer's Encyclopaedia of Chemical technology. Vol. 10, 930-936, 4th Ed., John Wiley and Sons, New York.

Georlette, P., Simons, J., & Costa, L. (2000). Halogen-Containing Fire-Retardant Compounds, in Fire Retardancy of Polymeric Materials, Chapter 8, 245-284, wilkie, C. A. & Grand, A. F. (Editors), Marcel Dekker Inc., New York.

Gilman, J. W., & Kashiwagi, T. (1997). Intumescence flame retardant. A Biweekly capsule newsletter highlighting NIST activities, research and services-Fire Science, 14 October, NIST, Gaithersburg, USA.

Gilman, J. W. (1999). Flammability and thermal stability studies of polymer layered-silicate (clay) nanocomposites. *Applied Clay Science*, 15(1-2), 31-49.

Granzow, A., & Cannelongo, J. F. (1976). *Journal of Applied Polymer Science*, 20, 689.

Green, J. (1996). Mechanism of flame retardancy and smoke suppression- A review. *Journal of Fire Science*, 14, Part 6, 426-442.

Green, J. (1997). 25 Years of flame retarding plastics. *Journal of Fire Science*, 15, Part 1, 52-67.

Gu, J.-w., Zhang, G.-c., Dong, S.-l., Zhang, Q.-y., & Kong, J. (2007). Study on preparation and fire-retardant mechanism analysis of intumescence flame-retardant coatings. *Surface and Coatings Technology*, 201(18), 7835-7841.

Horacek, H., & Grabner, R. (1996). Advantages of flame retardants based on nitrogen compounds. *Polymer degradation and Stability*, 54, 205-215.

Hornsby, P. R. (2007). The Application of Fire-Retardant Fillers for Use in Textile Barrier Materials. In: Duquesne, S., Magniez, C. & Camino, G. (eds). *Multifunctional Barriers for Flexible Structure*. Springer Berlin Heidelberg.

Horrocks, A. R., Kandola, B. K., Davies, P. J., Zhang, S., & Padbury, S. A. (2005). Developments in flame retardant textiles - a review. *Polymer Degradation and Stability*, 88(1), 3-12.

International Organization for Standardization. (1975). Fire resistance Tests - elements of building construction. ISO 834. Geneva, Switzerland.

Jimenez, M., Duquesne, S., & Bourbigot, S. (2006a). Characterization of the performance of an intumescence fire protective coating. *Surface and Coatings Technology*, 201(3-4), 979-987.

Jimenez, M., Duquesne, S., & Bourbigot, S. (2006b). Intumescence fire protective coating: Toward a better understanding of their mechanism of action. *Thermochimica Acta*, 449(1-2), 16-26.

Jimenez, M., Duquesne, S., & Bourbigot, S. (2009). Kinetic analysis of the thermal degradation of an epoxy-based intumescent coating. *Polymer Degradation and Stability*, 94(3), 404-409.

Kandola, B. K., & Horrocks, A. R. (1998). Flame retardant composites, a review: The potential for use of intumescents. In: *Fire Retardancy of Polymers-The Use of Intumescence*, ed. Delobel, R. The Royal Society of Chemistry, 395-417.

Kandola, B. K., & Horrocks, A. R. (1996). Complex char formation in flame-retarded fibre-intumescence combinations-II. Thermal analytical studies. *Polymer Degradation and Stability*, 54(2-3), 289-303.

Kay, M., Price, F. A., & Lavery, I. (1979). A review of intumescence materials, with emphasis on melamine formulations. *Journal of Fire Retardant Chemistry*, 6, 69-91.

Levchik, S. V., Costa, L., & Camino, G. (1996). *Polymer Degradation Stability*, 43, 43.

Lyons, J. W. (1987). The Chemistry and Uses of Fire retardants. Robert E. Krieger Publishing Company, Florida.

Martin, D. R., & Dial, R. E. (1950). *Journal of American Chemistry Society*, 72, 852.

Miller, B. (1996). Intumescents, FR efficiency pace flame retardant gains. *Plastic World*. 1996, 44-59.

Mount, R. A., (1992). The Three Sisters of Intumescence. Proceedings of the *FRCA Conference* in Orlando, Florida.

Nakamoto, J., Togawa, K., Miyagawa, T., & Fujii, M. (1998). Water permeability of high slag content concrete, Fly Ash, Silica Fume, Slag, and Natural Pozzolans in Concrete. Sixth CANMET/ACI/JCI Conference in Bangkok, 779-798.

Pearce, E. M. (1986). Flame retardants for polymer systems. *Pure and Applied Chemistry*, 58, 925-930.

Pettigrew, A. (1993). Halogenated flame retardants in Kirk Othmer's Encyclopaedia of Chemical Technology. Vol. 10, 954-976, 4th Ed., John Wiley & Sons, New York.

Qiang, W., Jian, P. L., & Bao, J. Q. (2003). *Polymer International*, 52, 1326.

Quershi, S. P., & Krassowski, D. W. (1997). Intumescence resin system for improving fire resistance of composites. In: *Proceedings of the 29th International SAMPE Technical Conference*, 625-629.

Rains, W. A. (1994). Fire Retardant Coatings. Handbook of Fire retardant Coatings and Fire testing Services (Technomic Publishing Company, Lancaster). 1-4.

Richard Horrocks, A., Anand, S. C., & Sanderson, D. (1996). Complex char formation in flame retarded fibre-intumescence combinations: 1. Scanning electron microscopic studies. *Polymer*, 37(15), 3197-3206.

Rigolo, M., & Woodhams, R. T. (1992). *Polymer Engineering Science*, 32, 327.

Rothon, R. N. (2003). Effects of particulate fillers on flame retardant properties of composites. In: R.N. Rothon, Editor, *Particulate Filled Polymer Composites* (2nd ed.), Rapra Technology Ltd., Shrewsbury, 263-302.

Sabir, B. B. (1997). Mechanical properties and frost resistance of silica fume concrete. *Cement and concrete composites*. Vol. 19, 285-294.

Schmidt, W. G. (1965). Flame retardant additives in plastics and recent patents. *Plastics Institute, (London), Transactions and Journal*, 33 (108), Dec 1965, 247-255.

Shih, Y. F., Wang, Y. T., Jeng, R. J., & Wei, K. M. (2004). Expandable graphite systems for phosphorus-containing unsaturated polyesters. I. Enhanced thermal properties and flame retardancy. *Polymer Degradation Stability*, 86, 339.

Sorathia, U., & Beck, C. (1996). Fire protection of glass/vinyl ester composites for structural applications. In: *Proceedings of the 41st International SAMPE Symposium*, March 1996, 687-697.

Sorathia, U., Gracik, T., Ness, J., Durkin, A., Williams, F., Hunstad, M., et al. (2003). Evaluation of intumescence coatings for shipboard fire protection. *Journal of Fire Sciences*, (21), 423-450.

- Sutker, B. J. (1988). Flame retardants in Ullman's Encyclopaedia of Industrial Chemistry. Vol. A11, 123-140, 5th Ed., Gerhartz, W. (Editor), VCH Verslag, Weinheim.
- Taheri, A., & Breugel, K. V. (1998). Performance of Blast Furnace Slag Cement Concrete in simulated aggressive marine environment. In CANMET/ACI sixth international conference on fly ash, silica fume, slag and natural pozzolans in concrete. Bangkok, Thailand. Vol. 2 (178), (pp.717-737).
- Toro, P., Quijada, R., Yazdani-Pedram, M., & Arias, J. L. (2007). Eggshell, a new bio-filler for polypropylene composites. *Materials Letters*, 61(22), 4347-4350.
- Touval, I. (1993). Antimony and other inorganic flame retardants in Kirk Othmer's Encyclopaedia of Chemical Technology. Vol. 10, 936-954, 4th Ed., John Wiley & Sons, New York.
- Vandersall, H. L. (1971). Intumescence coating systems, their development and chemistry. *Journal of Fire and Flammability*, 2, 97-114.
- Wang, H., Liu, J., Xu, S., & Shi, W. (2009). Preparation and film properties of tri(3,4-epoxycyclohexylmethyl) phosphate based cationically UV curing coatings. *Progress in Organic Coatings*, 65(2), 263-268.
- Wang, Q., & Shi, W. (2006). Kinetics study of thermal decomposition of epoxy resins containing flame retardant components. *Polymer Degradation and Stability*, 91(8), 1747-1754.
- Wang, G., & Yang, J. (2010a). Influences of binder on fire protection and anticorrosion properties of intumescence fire resistive coating for steel structure. *Surface and Coatings Technology*, 204(8), 1186-1192.
- Wang, G., & Yang, J. (2010b). Influences of expandable graphite modified by polyethylene glycol on fire protection of waterborne intumescence fire resistive coating. *Surface and Coatings Technology*, 204, 3599-3605.
- Wang, X., Hu, Y., Song, L., Xing, W., Lu, H., Lv, P., et al. (2010). Flame retardancy and thermal degradation mechanism of epoxy resin composites based on a DOPO substituted organophosphorus oligomer. *Polymer*, 51(11), 2435-2445.
- Wang, Z., Han, E., & Ke, W. (2006a). An investigation into fire protection and water resistance of intumescence nano-coatings. *Surface and Coatings Technology*, 201(3-4), 1528-1535.

Wang, Z., Han, E., & Ke, W. (2006b). Effect of nanoparticles on the improvement in fire-resistant and anti-ageing properties of flame-retardant coating. *Surface and Coatings Technology*, 200(20-21), 5706-5716.

Weil, E., D. (1992). Mechanisms of phosphorous based flame retardants. Proceedings of the *FRCA conference* in Orlando, Florida.

Weil, E. D. (2004). Flame Retardancy. *Encyclopedia of Polymer Science and Technology*, 11, Wiley Interscience, New York.

Wolf, R., & Lal Kaul, B. (1992). Plastics, Additives in Ullman's Encyclopaedia of Industrial Chemistry. Vol. A20, 459-507, 5th Ed., Gerhartz, W. (Editor), VCH Verslag, Weinheim.

Yew, M. C., & Ramli Sulong, N. H. (2009). Investigation on Fire Protection of Intumescent Coatings for Steel, Proceedings of the 1st International Seminar on Sustainable Infrastructure and Building Environment in Developing Countries (SIBE 2009), Bandung, Indonesia.

Yew, M. C., & Ramli Sulong, N. H. (2011). Effect of epoxy binder on fire protection and bonding strength of intumescent fire protective coatings for steel. *Advanced Materials Research*, Vol. 168-170, 1228-1232.

Zhang, P., Song, L., Lu, H., Hu, Y., Xing, W., Ni, J., et al. (2009). Synergistic effect of nanoflaky manganese phosphate on thermal degradation and flame retardant properties of intumescent flame retardant polypropylene system. *Polymer Degradation and Stability*, 94(2), 201-207.