



## **HEALTH AND SAFETY ASPECT**

### **General Toxicity**

The name Saffguard applies to a wide range of extruded corrugated plastic sheet products based on polypropylene copolymers. The natural polymer is chemically inert and is generally considered non-toxic and safe for use in contact with food. The base resin meets requirements as listed in Food Additive, covering food contact uses.

Pigmented or otherwise modified sheets are not considered to constitute any extra health hazard under normal handling and conversion. All additives are melt-blended into the polymer and encapsulated. Colors are available which will meet food contact approvals.

### **Effect of Heat / Combustion**

Saffguard is made from a combustible thermoplastic material, polypropylene. While discretion would suggest that observation of precautions consistent with regulatory codes and standards should be followed when working with Saffguard, it is equally important to note that compared to other plastics on the market Saffguard is very low on a relative hazard scale.

Two areas of flammability hazard must be addressed: rate of combustion and toxicity of combustion products.

### **Rate of Combustion**

There are many flammability tests in use for different applications in the various place. A test valid in one area is not acceptable in another. We will try to offer information which will allow the relative hazard of Saffguard to be evaluated. If a flame retardant sheet is needed, ask about it.

Most generally accepted Surface Flame Spread Test is the ASTM E-84 Tunnel test. This test involves suspending a test specimen in the ceiling of the tunnel and igniting one end in the presence of a forced air stream.

This test is not applicable to thermoplastic material because they will melt out and fall to the floor, prejudicing the result. By this test Saffguard received an unrealistic low 25 (Red Oak is 100).

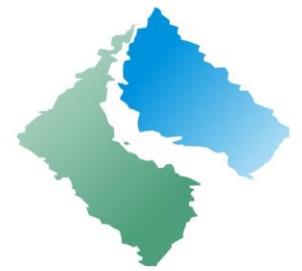
One of the factors not visible in the test figure is the length of time to get the fire going.

Until the sheet reaches a temperature of approximately 315 degrees, it will not release flammable - low molecular weight hydrocarbons.

Should a fire occur, any available fire extinguisher may be used. In a limited fire situation dry chemical powder extinguishers have proven very successful. In a larger scale fire, water sprays/ sprinkler systems are very successful because they quickly cool and damp down the fire.

### **Toxicity of Combustion**

In a fire situation the amount of smoke and the toxicity of the smoke is perhaps more serious than the burn rate. Smoke evolution is dependent on the available oxygen present, but polypropylene copolymer normally generates little smoke. This is not true for many other thermoplastics. The compounds of combustion of polyolefin plastics are not highly toxic except for carbon monoxide which will be formed when any organic matter - e.g. paper, wood or gasoline burns. In fact, the carbon monoxide given off by burning Saffguard is less than for cardboard or hardboard.



% Carbon Monoxide (CO) W/W evolved from Saffguard, cardboard and hardboard.

Temp. Celsius	% Oxygen v/v	Percentage of Carbon Monoxide & CO W/W Evolved from		
		Saffguard	Cardboard	Hardboard
500	21	6.2	7.6	15.8
	12	6.6	7.0	9.0
350	21	4.8	9.4	9.7
	15	11.7	13.8	15.5
	12	4.3	11.8	13.6
250	21	4.7	11.1	8.0
	15	2.5	9.3	7.4

### Summary

While Saffguard will burn, it does not have a flash point or an uncontrollable flame spread rate like some acrylics or styrene. It responds very much like paper. Should a fire start it is easily extinguished by any type of extinguisher. Burning Saffguard generates combustion products with very low toxicity. This is common to polyolefin polymers.