

# CERTIFICATION OF ANALYSIS



Jan-10

*Dear Valued Customers of ITW Thermal Films,*

Some application there is a concern that halogenated plastic materials will release corrosive and toxic gases if ignited in a fire. The corrosive element of these gases has the potential to damage electronics wherever the smoke travels, and the toxic element can be potentially hazardous to persons if they cannot easily evacuate from the area.

So several governments are considering regulation to prohibit or restrict the use of these types of substances in electronic (and other) products.

ITW Thermal film examined thoroughly these requirements, we concluded as follows.

## 1. What does Halogen-free means?

*In general as the time implies "Halogen-free" means the product material does not contain any compounds derived from halogen\*.*

*\* Halogen : It is nonmetallic reactive elements that are found in Group VII of the Periodic Table, which consists of Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I) and Astatine(At).*

*IPC (Association Connecting Electronics Industries) provided in a recent paper, "Electrical and Electronic products may be considered halogen-free if they are assembled without the intentional use of these elements in the raw materials and these elements are not intentionally present in the end product.*

## 2. Guideline of Halogen contents

	JPCA (Japan Electronics Packaging and Circuits Association)	IEC (International Electrotechnical Commission)	IPC (Association Connecting Electronics Industries)
Specification No.	JPCA-ES-01-2003	IEC 61249-2-21	IPC-4101B
Cl	< 0.09wt% (900ppm)	< 0.09wt% (900ppm)	< 0.09wt% (900ppm)
Br	< 0.09wt% (900ppm)	< 0.09wt% (900ppm)	< 0.09wt% (900ppm)
Cl + Br	-	Max 1500ppm	Max 1500ppm

ITW Thermal Film's TTR products\* comply with guideline according to the analysis of external lab.

(\*Note : the products are B220, B120, B121, B128, B324 and D321)

ITW Thermal film will continuously strive to improve environmental performance and minimize impacts environmental.