



ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES®

IPC-1730A

Laminator Qualification Profile

IPC-1730A

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A standard developed by IPC

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Documents

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In May 1995 the IPC's Technical Activities Executive Committee adopted Principles of Standardization as a guiding principle of IPC's standardization efforts.

Standards Should:

- Show relationship to Design for Manufacturability (DFM) and Design for the Environment (DFE)
- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feedback system on use and problems for future improvement

Standards Should Not:

- Inhibit innovation
- Increase time-to-market
- Keep people out
- Increase cycle time
- Tell you how to make something
- Contain anything that cannot be defended with data

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IPC-1730A

Laminator Qualification Profile

Developed by the Laminator Qualification Profile Task Group (3-11h)
of the Printed Board Base Materials Committee of IPC



Users of this standard are encouraged to participate in the
development of future revisions.

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IPC-1730A Laminator Qualification Profile (LQP)

1 SCOPE

This Laminator Qualification Profile (LQP) isn't intended to satisfy all of the customer's requirements, however conscientious maintenance of this document and/or registration to ISO 9000 requirements should satisfy the major concerns. Thus, audits should be simpler, required less frequently, and facilitate less paperwork, as vendors and suppliers work together to meeting each other's needs.

1.1 CONTENTS This document divides the LQP into six sections. The laminator completing the LQP should ensure each section is dated and maintained as a separate entity.

These sections cover:

Site, facility, and distributor descriptions (see Section 3).
 Description of products manufactured at the site (see Section 4).
 Approvals and certifications from third party organizations (see Section 5).
 Description of total quality management (TQM) in place or being implemented at the facility (see Section 6).

1.2 How to Use this LQP The LQP can be used for single or multiple sites or locations. Information about the overall company is helpful in establishing the relationship of the existing site(s) to the total company. The first page of Section 3 is intended to convey this information. The remainder of the LQP is devoted to information about existing site(s).

The laminate manufacturer should keep all sections current. In the initial contact between the manufacturer and a new customer, an abbreviated LQP may suffice (site description from Section 3 and Section 4). The remaining sections of the LQP provide details of the site manufacturing capability and the quality principles that have been incorporated into the systems used to manufacture products. This information is useful for assessing where the organization stands on implementing quality and technology. The same data also help the customer in determining how well the manufacturer's capability matches the their needs.

1.2.1 LQP Electronic Editing This MS Word template comes with editable fields. IPC has made this electronic document available for ease of completing, updating, and filing the LQP, as well as to give the laminate manufacturer and customer a common interface. Using the template enables laminate manufacturers to maintain several customer specific files without the endless stream of paperwork.

Editable fields are highlighted in gray. To complete the fields in the template, use the TAB key to toggle from field to field, entering the information as instructed in the introductory text for each section.

The developers of this LQP strongly suggest the person at the laminate manufacturing facility responsible for creating and maintaining the LQP write protect the file to be sent.

2 APPLICABLE DOCUMENTS

IPC-4103 Specification for Base Materials for for High Speed/High Frequency Applications
IPC-4101 Specification for Base Materials for Rigid and Multilayer Printed Boards
IPC/JPCA-4104 Specification for High Density Interconnect (HDI) and Microvia Materials
IPC-4562 Metal Foil for Printed Wiring Applications

3 DESCRIPTION

The laminate manufacturer uses this section to give general information concerning the company and site(s) being audited.

Completed by	Date
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3.1 Company Description

GENERAL INFORMATION		
LEGAL NAME		
PHYSICAL ADDRESS		
CITY	STATE	ZIP
MAILING ADDRESS		
CITY	STATE	ZIP
PROVINCE	COUNTRY	
TELEPHONE NUMBER	FAX NUMBER	
☐ PUBLICLY OWNED ☐ PRIVATE	DATE FOUNDED	

MANAGEMENT
PRESIDENT
GENERAL MANAGER
MANUFACTURING MANAGER
QUALITY MANAGER
MARKETING MANAGER
CUSTOMER SERVICE MANAGER

ADDITIONAL INFORMATION
Supply additional information as necessary.

3.2 Site Specific Description

The laminate manufacturer uses this section to give information on the manufacturing site(s) within the company. Complete the information for each facility, noting the site identification (can be a number or company code) will be used in other areas of this LQP.

MANUFACTURING FACILITY		
SITE IDENTIFICATION:		
COMPANY NAME:		
PHYSICAL ADDRESS:		
CITY:	STATE:	ZIP:
MAILING ADDRESS:		
CITY:	STATE:	ZIP:
TELEPHONE:	FAX:	

FACILITY MANAGEMENT	TITLE	REPORTS TO
OVERALL OPERATION RESPONSIBILITY		
MANUFACTURING		
TECHNICAL/ENGINEERING		
MATERIALS/PRODUCTION CONTROL		
PURCHASING		
QUALITY		
SALES/MARKETING		
SAFETY		

BUILDINGS				
Number of Buildings at this Site	In-House Laboratories (Indicate Yes or No)			Clean Room Existing
	Process	Development	Conformance	
	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

PERSONNEL DESCRIPTION				
Engineering /Administration (Number of Employees)	Manufacturing (Number of employees)	Union (Yes or No)	Union Name (List Name if applicable)	Contract Expires (List Date)
		☐ Yes ☐ No		

GENERAL PRODUCT DESCRIPTION
Give general information on resins used, rigid or thin laminates produced, prepreg, etc.

MANUFACTURING FACILITY**SITE IDENTIFICATION:****COMPANY NAME:****PHYSICAL ADDRESS:****CITY:****STATE:****ZIP:****MAILING ADDRESS:****CITY:****STATE:****ZIP:****TELEPHONE:****FAX:****FACILITY MANAGEMENT****TITLE****REPORTS TO****OVERALL OPERATION
RESPONSIBILITY****MANUFACTURING****TECHNICAL/ENGINEERING****MATERIALS/PRODUCTION CONTROL****PURCHASING****QUALITY****SALES/MARKETING****SAFETY****BUILDINGS****Number of Buildings at
this Site****In-House Laboratories (Indicate Yes or No)****Process****Development****Conformance****Clean Room
Existing**☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No**PERSONNEL DESCRIPTION****Engineering
/Administration
(Number of
Employees)****Manufacturing
(Number of
employees)****Union
(Yes or No)****Union Name
(List Name if applicable)****Contract Expires
(List Date)**☐ Yes ☐ No**GENERAL PRODUCT DESCRIPTION****Give general information on resins used, rigid or thin laminates produced, prepreg, etc.**

MANUFACTURING FACILITY**SITE IDENTIFICATION:****COMPANY NAME:****PHYSICAL ADDRESS:****CITY:****STATE:****ZIP:****MAILING ADDRESS:****CITY:****STATE:****ZIP:****TELEPHONE:****FAX:****FACILITY MANAGEMENT****TITLE****REPORTS TO****OVERALL OPERATION
RESPONSIBILITY****MANUFACTURING****TECHNICAL/ENGINEERING****MATERIALS/PRODUCTION
CONTROL****PURCHASING****QUALITY****SALES/MARKETING****SAFETY****BUILDINGS****Number of Buildings at
this Site****In-House Laboratories (Indicate Yes or No)****Process****Development****Conformance****Clean Room
Existing**☐ Yes☐ No☐ Yes☐ No☐ Yes☐ No☐ Yes☐ No**PERSONNEL DESCRIPTION****Engineering
/Administration
(Number of
Employees)****Manufacturing
(Number of
employees)****Union
(Yes or No)****Union Name
(List Name if applicable)****Contract Expires
(List Date)**☐ Yes ☐ No**GENERAL PRODUCT DESCRIPTION****Give general information on resins used, rigid or thin laminates produced, prepreg, etc.**

MANUFACTURING FACILITY**SITE IDENTIFICATION:****COMPANY NAME:****PHYSICAL ADDRESS:****CITY:****STATE:****ZIP:****MAILING ADDRESS:****CITY:****STATE:****ZIP:****TELEPHONE:****FAX:****FACILITY MANAGEMENT****TITLE****REPORTS TO****OVERALL OPERATION
RESPONSIBILITY****MANUFACTURING****TECHNICAL/ENGINEERING****MATERIALS/PRODUCTION CONTROL****PURCHASING****QUALITY****SALES/MARKETING****SAFETY****BUILDINGS****Number of Buildings at
this Site****In-House Laboratories (Indicate Yes or No)****Process****Development****Conformance****Clean Room
Existing**☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No**PERSONNEL DESCRIPTION****Engineering
/Administration
(Number of
Employees)****Manufacturing
(Number of
employees)****Union
(Yes or No)****Union Name
(List Name if applicable)****Contract Expires
(List Date)**☐ Yes ☐ No**GENERAL PRODUCT DESCRIPTION****Give general information on resins used, rigid or thin laminates produced, prepreg, etc.**

3.3 Authorized Distributor Description

The laminator uses this section to give information on the distributor site(s) for the company.

DISTRIBUTOR FACILITY 1		
COMPANY NAME		
PHYSICAL ADDRESS		
CITY	STATE	ZIP
MAILING ADDRESS		
CITY	STATE	ZIP
TELEPHONE	FAX	

DISTRIBUTOR FACILITY 2		
COMPANY NAME		
PHYSICAL ADDRESS		
CITY	STATE	ZIP
MAILING ADDRESS		
CITY	STATE	ZIP
TELEPHONE	FAX	

DISTRIBUTOR FACILITY 3		
COMPANY NAME		
PHYSICAL ADDRESS		
CITY	STATE	ZIP
MAILING ADDRESS		
CITY	STATE	ZIP
TELEPHONE	FAX	

DISTRIBUTOR FACILITY 4		
COMPANY NAME		
PHYSICAL ADDRESS		
CITY	STATE	ZIP
MAILING ADDRESS		
CITY	STATE	ZIP
TELEPHONE	FAX	

4 PRODUCT

This laminate manufacturer uses this section to give information concerning the product(s) being manufactured at the audit site.

Completed by	Date
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4.1 Product Type The laminate manufacturer uses this section to provide information on the product(s) manufactured at the profiled site(s). The laminate manufacturer will indicate, with the site identification(s) from 3.2 in the Site Availability column, which materials specified in IPC-4101 and IPC-4103 are manufactured at the site(s). Use the blank spaces for products not covered in IPC-4101 or IPC-4103 and assign those materials a reference letter to be used later in the document.

Note: Thin laminates defined as below 0.50 mm [0.0197 in] in nominal dielectric thickness. Rigid laminates are above or equal to 0.50 mm [0.0197 in] nominal dielectric thickness.

IPC Specification	Reinforcement	Resin Type	Designation			T _g (°C) [°F]	Site Availability		
			IPC/ANSI	Military	NEMA		Laminate		Prepreg
							Thin	Rigid	
IPC-4103/01	Woven E-Glass	PTFE		GT	-	N/A			
IPC-4103/02	Woven E-Glass	PTFE		GX	-	N/A			
IPC-4103/03	Non-Woven E-Glass	PTFE		GP	-	N/A			
IPC-4103/04	Non-Woven E-Glass	PTFE		GR	-	N/A			
IPC-4103/05	Woven E-Glass	PTFE		GY	-	N/A			
IPC-4103/06	Ceramic	PTFE		-	-	N/A			
IPC-4103/07	Ceramic	PTFE		-	-	N/A			
IPC-4103/08	Ceramic	PTFE		-	-	N/A			
IPC-4101/00	Cellulose Paper	Phenolic Non-Flame Resistant	XPC/00	N/A	XPC	N/A			
IPC-4101/01	Cellulose Paper	Phenolic, Modified Non-Flame Resistant	XXXPC/01	N/A	XXXPC	N/A			
IPC-4101/02	Cellulose Paper	Phenolic Flame Resistant (Bromine/Chlorine)	FR-1/02	N/A	FR-1	N/A			
IPC-4101/03	Cellulose Paper	Phenolic, Modified Flame Resistant (Bromine/Chlorine)	FR-2/03	N/A	FR-2	N/A			
IPC-4101/04	Cellulose Paper	Epoxy Flame Resistant (Bromine/Chlorine/ Antimony Oxide)	FR-3/04	N/A	FR-3	N/A			
IPC-4101/10	Woven E-Glass, Surface / Cellulose Paper, Core	Epoxy, Modified or Unmodified / Phenolic Flame Resistant (Bromine/Antimony oxide)	CEM-1/10	N/A	CEM-1	>85			
IPC-4101/11	Woven E-Glass Surface / Nonwoven E- Glass (Chopped Felt), Core	Polyester / Vinyl Ester Flame Resistant (Bromine)	CRM-5/11	N/A	CRM-5	>80			
IPC-4101/12	Woven E-Glass, Surface / Nonwoven E- Glass (Chopped Felt), Core	Epoxy Flame Resistant (Bromine)	CEM-3/12	N/A	CEM-3	>100			
IPC-4101/13	Woven E-Glass	Polyester / Vinyl Ester Flame Resistant (Bromine)	4101/13	N/A	N/A	N/A			

IPC Specification	Reinforcement	Resin Type	Designation			T _g (°C) [°F]	Site Availability		
			IPC/ANSI	Military	NEMA		Laminate		Prepreg
							Thin	Rigid	
IPC-4101/20	Woven E-Glass	Epoxy Non-Flame Resistant	G-10/20	GE GEN	G-10	>110			
IPC-4101/21	Woven E-Glass	Epoxy, Modified or Unmodified / Multifunctional Epoxy Flame Resistant (Bromine)	FR-4/21	GF GFN GFK GFP GFM	FR-4	>110			
IPC-4101/22	Woven E-Glass	Epoxy, Hot Strength Retention Non-Flame Resistant	G-11/22	/12 GB GBN GBP	G-11	110-150			
IPC-4101/23	Woven E-Glass	Epoxy, Hot Strength Retention Flame Resistant (Bromine)	FR-5/23	/05 GH GHN GHP	FR-5	110-170			
IPC-4101/24	Woven E-Glass	Epoxy, Modified or Unmodified / Multifunctional Epoxy Flame Resistant (Bromine)	FR-4/24	/04 GF GFG GFN	FR-4	150-200			
IPC-4101/25	Woven E-Glass	Epoxy, Modified / Polyphenylene Oxide (PPO) Flame Resistant (Bromine)	FR-4/25	/04 GF GFG GFN	FR-4	150-200			
IPC-4101/26	Woven E-Glass	Epoxy, Modified / Non Epoxy Flame Resistant (Bromine)	FR-4/26	GFN GFT	FR-4	170-220			
IPC-4101/26A	Woven E-Glass	Epoxy, Modified / Non- Epoxy Flame Resistant (Bromine)	FR-4/26A	GFN GFT	FR-4	170-220			
IPC-4101/26B	Woven E-Glass	Epoxy, Modified / Triazine Flame Resistant (Bromine)	FR-4/26B	GFN GFT	FR-4	170-220			
IPC-4101/26C	Woven E-Glass	Epoxy, Modified Flame Resistant (Bromine)	FR-4/26C	N/A	FR-4	170-220			
IPC-4101/27	Unidirectional E-Glass, Cross- Plied	Epoxy, Modified or Unmodified / Multifunctional Epoxy Flame Resistant (Bromine)	FR-4/27	N/A	FR-4	>110			
IPC-4101/30	Woven E-Glass	Bismaleimide/Triazine (BT) / Epoxy Flame Resistant (Bromine)	GPY/30	GIT	N/A	170-220			
IPC-4101/40	Woven E-Glass	Polyimide Non-Flame Resistant	GPY/40	/10 GI GIN GIP	N/A	>200			
IPC-4101/41	Woven E-Glass	Polyimide	GPY/41	/10 GI GIL GIN	N/A	>250			
IPC-4101/42	Woven E-Glass	Polyimide, Modified or Unmodified	GPY/42	/10 GI GIN GIJ	N/A	200-250			
IPC-4101/50	Woven Aramid	Epoxy, Modified or Unmodified Flame Resistant (Bromine)	4101/50	/15 AF AFN AFG	N/A	135-190			