

Paper Specification

GeBE®

**Elektronik und
Feinwerktechnik GmbH**

Modules and devices for input,
analysis, display and printing of
analog and digital data.

For GeBE Printer Series
GPT-376x • GPT-463x • GPT-467x
GPT-671x • GPT-676x • GPT-677x
GPT-681x • GPT-686x

GeBE Document No.:

KI-E-605-V1.5

Article No.: 12890

Status: 05.03.2014

Printed: 05.03.2014

German: KI-D-606



Short Information

Selecting the Right Thermal Paper

The color processing in thermal printing is generated in the coating itself, making the thermal paper part of the printing system and decisively affecting the overall result. The wrong thermal paper or one of minor quality can damage a printer within a short period of time. Only specified papers guarantee that the indicated life time is to be achieved.

The GeBE logo is a registered trademark of GeBE Elektronik und Feinwerktechnik GmbH. All other brands named in this brochure are properties of the respective companies. The technical data given are non-committal information and do not represent any assurance of certain features. Errors and changes reserved. This technical documentation is only valid until release of a revision. Please always request the newest documentation edition.

Our terms of payment and delivery apply.

Copyright © 2014 GeBE Elektronik und Feinwerktechnik GmbH. All rights reserved.

GeBE Elektronik und Feinwerktechnik GmbH

Beethovenstr. 15 • D-82110 Germering • Germany • www.gebe.net

Phone: +49 (0) 89/894141-31 • Fax: +49 (0) 89/894141-33 • Email: sales.ef@gebe.net

Surface Roughness

The thermal paper gradually grinds down the print head during operation.

High-quality paper has a smooth surface making it less mechanically abrasive. Due to minor surface roughness, topcoat papers cause even less abrasion at the print head than non-topcoat papers.

Ion Concentration

Due to the manufacturing process, thermal papers contain free charge carriers in the form of Na, K, and Cl ions. In high humidity, these work very aggressively on the glass passivation of the print head gradually corroding it.

High-quality thermal paper features very low ion concentration. Values have to be below Na<500ppm / K<100ppm / Cl<300ppm.

Temperature

During the thermal printing process, the print elements inside the print head heat up to 400°C within μ s. A good portion of the heat flows into the thermal paper and reacts with the heat sensitive layer. This heat flow is also important because it basically cools down the print head. Therefore, the life span of the print head benefits from good heat transfer.

During the print process, the components of the heat sensitive layer melt and change their color. Some parts are mechanically removed and deposited on the print head. High-quality thermal paper supports a kind of self cleaning. If the heating times are set correctly and the print head is in the right setting mechanically, only a small amount will deposit right behind the print elements. Wrong settings will cause the deposits to grow steadily in the direction of the print elements, or they may even bake directly into the print elements. In this case, the print elements are thermally insulated which causes them to wear quickly.

Thermal Printing on Preprinted Forms

Thermal printing technology also allows printing on preprinted paper, however, a few things must be observed in order to avoid damage to the sensitive print heads.

The use of preprinted paper increases the aforementioned effect. Since the printing ink is located between the print head and the heat sensitive layer, it has to be able to absorb high thermal and mechanical strain.

Unfortunately, even the best printing ink is not as resilient as a good thermal paper.

Due to the low resilience of the printing ink, the printing process creates larger deposits than on

clean thermal paper. Therefore, the following rules must be observed:

Rules for Printing on Preprinted Paper

1. Ink application in the areas for printing should be kept to a minimum, preferably zero.
2. Only use specified thermal printing ink with a minimum temperature tolerance of 230°C.
3. Sensitive, metallic, and luminescent ink may not be printed on. Hologram film should also be placed outside of the print layout.
4. The thermal output (blackening) has to be reduced, and a different printer setting may have to be selected. Please contact GeBE for details.

Technical Tips

Many mistakes can be made when printing on thermal paper.

We have been successfully cooperating with companies that have a lot of experience with the technology and that are very familiar with our printers. Our sales staff will be glad to assist you:

Printer Settings

for preprinted paper:

GPT-686x Series	Blackening	Y := 20
GPT-681x Series	Quality	Q := 1
	Power	[:= 96

GPT-676x Series	Blackening	P3 := 20
GPT-677x Series	Preheat	P24 := 0 or 1
GPT-463x Series		P25 := 20
GPT-467x Series		

GPT-376x Series	Blackening	P3 := 18
	Preheat	P24 := 0 or 1
		P25 := 20

(Please inquire about printers that are not listed.)

Brief Description of the Approved Paper Varieties from Mitsubishi:

Txx51.

Paper type 51 is a non-topcoat ECO-paper with a great cost/performance ratio.

High sensitivity for up to 300 mm/s.

5 years life span of the printed image provided that the storage regulations are observed.

Not recommended for environments with high humidity.

Txx37.

Paper type 37 is a non-topcoat ECO-paper with a great cost/performance ratio. Standard sensitivity for up to 200 mm/s. Great resilience against environmental impacts such as grease, alcohol, and softeners. Great protection against scratching. Thermo-sensitive side can be printed on in UV offset or Flexo.

25 years life span of the printed image provided that the storage regulations are observed.

Recommended for environments with high humidity only to a limited extent.

TFxx67.

Paper type 67 is a full topcoat ticket paper.

High sensitivity for up to 300 mm/s. Great resilience against environmental impacts such as heat, humidity, light, lanolin, grease, alcohol, water, and softeners. Great protection against scratching. Thermo-sensitive side can be printed on in UV offset or Flexo.

12 years life span of the printed image provided that the storage regulations are observed.

TFxx75.

Paper type 75 is a full topcoat ticket paper.

High sensitivity for up to 400 mm/s.

12 years life span of the printed image provided that the storage regulations are observed.

Brief Description of the Approved Paper Varieties from Kanzan:

KPW4xx.

The KPW is a non-topcoat paper especially developed for operation in environments with high humidity. Standard sensitivity for up to 200 mm/s.

Very good resilience against humidity, water, and heat. Good resilience against alcohol, grease, and softeners. Great protection against scratching. Thermo-sensitive side can be printed on in UV offset or Flexo.

7 years life span of the printed image provided that the storage regulations are observed.

Recommended for humid environments.

KPO4xx.

The KPO is a non-topcoat paper especially developed for Offset print. Standard sensitivity for up to 200 mm/s. Improved resistance compared to paper KPW.

10 years life span of the printed image provided that the storage regulations are observed.

KLT4xx.

The KLT is a standard topcoat ticket paper that can also be stamped. Standard sensitivity for up to 200 mm/s. Very good resilience against humidity, water, alcohol, grease, and softeners. Good resilience against heat. Great protection against scratching. Thermo-sensitive side can be printed on in UV offset or Flexo.

12 years life span of the printed image provided that the storage regulations are observed.

Recommended for humid environments.

KL4xx.

Very good resilience against humidity, water, alcohol, grease, and softeners. Good resilience against heat. Great protection against scratching. Thermo-sensitive side can be printed on in UV offset or Flexo.

15 years life span of the printed image provided that the storage regulations are observed.

Recommended for humid environments.

KL51xPR.

Paper type KL51xPR is a full topcoat ticket paper with image print quality for front and backside. High sensitivity for up to 300 mm/s. Very good resistance, like KL. 15 years life span of the printed image provided that the storage regulations are observed.

Paper Specification for the GPT-671x / GPT-676x / GPT-677x Series

Kanzan		Non Topcoat		Topcoat	
Thickness app.	Weight app.	ECO	UV Offset printable improved water resistance	KLT stampable	
85 µm	75 g/m ²	KP 460	KPW 460	KL 46	
115 µm	105 g/m ²	KP 490	KPW 490	KL 49	
125 µm**	120 g/m ^{2**}			KL 410/ KLT 410sB	
145 µm***	140 g/m ^{2***}	KPO 412	KPW 412	KL 412/ KLT 412sB	
Mitsubishi		Non Topcoat		Topcoat	
Thickness app.	Weight app.	ECO high sensitivity	UV Offset printable		
75 µm	70 g/m ²	T 7051	T od. S 7037	TF 7067	
85 µm	80 g/m ²	T 8051	T od. S 8037	TF 8067	
110 µm	100 g/m ²		T od. S 1037	TF 1067	
135 µm**	125 g/m ^{2**}		T od. S 1237	TF 1267	
145 µm***	140 g/m ^{2***}		T od. S 1437	TF 1467	

Limited cutter performance: **300k cuts / ***250k cuts: Paper used on limited printer mechanisms performance. This causes constraints of the print result (scratches, poor cutting...). Please inquire.

Paper Specification for GPT-467x and GPT-463x (GeBE Piano)

Kanzan		Non Topcoat		Topcoat	
Thickness app.	Weight app.	Offset printable	UV Offset printable water resistant	KLT stampable	High speed - quality UV Offset printable
85 µm	75 g/m ²		KPW 460	KL 46	
115 µm	105 g/m ²		KPW 490	KL 49	
125 µm	120 g/m ²	KPO 410		KL 410 / KLT 410sB	
144 µm	166 g/m ²				KL 515 PR
145 µm	145 g/m ²	KPO 412	KPW 412	KL 412 / KLT 412sB	
185 µm	185 g/m ²	KPO 415	KPW 415	KL 415 / KLT 415sB	KL 515 / KL 615
190 µm	215 g/m ²				KL 520 PR
Mitsubishi		Non Topcoat		Topcoat	
Thickness app.	Weight app.	ECO high sensitivity	UV Offset printable		
85 µm	80 g/m ²	T 8051	T od. S 8037	TF 8067	
110 µm	100 g/m ²		T od. S 1037	TF 1067	
135 µm	125 g/m ²	T 1233****	T od. S 1237	TF 1267	
145 µm	140 g/m ²	T 1433****	T od. S 1437	TF 1467	
185 µm	180 g/m ²	T 1733****	T od. S 1737	TF 1767	TF1775

**** valid for 33rd 3. generation and GPT-46xx up from version V1.2

Paper Specification for the GPT-686x Serie (Info) and GPT-681x Series

Kanzan		Non Topcoat		Topcoat	
Thickness app.	Weight app.	ECO	UV Offset printable water resistant		
85 µm	75 g/m ²	KP 460	KPW 460	KL 46	
115 µm*	105 g/m ^{2*}	KP 490	KPW 490	KL 49	
Mitsubishi		Non Topcoat		Topcoat	
Thickness app.	Weight app.	ECO high sensitivity	UV Offset printable		
75 µm	70 g/m ²	T 7051	T od. S 7037	TF 7067	
85 µm	80 g/m ²	T 8051	T od. S 8037	TF 8067	
110 µm*	100 g/m ^{2*}		T od. S 1037	TF 1067	

* limited cutter performance (>100k cuts < 300k cuts), not suited for printers 4"