

# AKAFLEX® KDF HT:

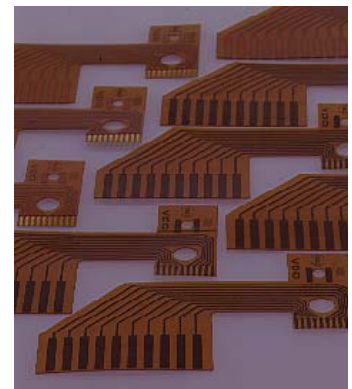
## Coverlay and bonding films on a polyimide film basis for flexible printed circuits

### Availability of AKAFLEX® KDF HT

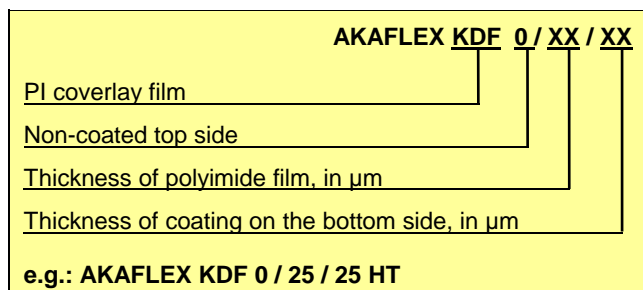
AKAFLEX KDF HT is available from KREMPPEL as

- ✓ **Coverlay films coated with adhesive on one side** for covering etched circuits, and
- ✓ **Bonding films coated with adhesive on both sides** for producing high-grade multi-layers

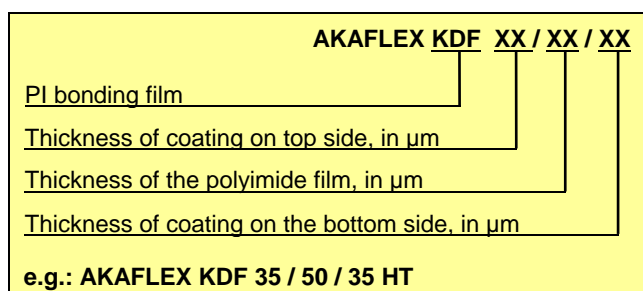
The polyimide film (PI) is coated with a modified highly flexible epoxy resin and then covered by a protective paper. A modified epoxy system characterised by very good temperature stability has been developed for the HT product family. In combination with polyimide film, the bonding system used here reaches a temperature index per UL 796 of 130 °C.



#### Designation for coverlay films



#### Designation for bonding films



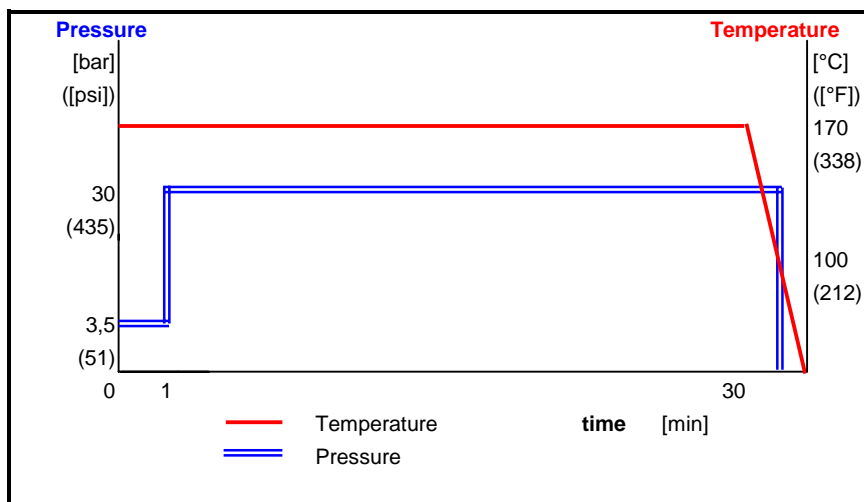
#### Standard types of AKAFLEX® KDF HT

Standard-type designation	Thickness of polyimide film	Thickness of the coating
with KAPTON® standard film		
KDF 0 / 12 / 10 HT	12 µm	10 µm
KDF 0 / 25 / 25 HT	25 µm	25 µm
KDF 0 / 25 / 35 HT	25 µm	35 µm
KDF 25 / 25 / 25 HT	25 µm	25 µm

Other types  
on request

## Processing AKAFLEX® KDF HT

The following pressing cycle is recommended for processing AKAFLEX KDF HT in heated-plate presses:



**Plate temperature:**  
170 °C (338°F)

**Contact pressure:**  
3.5 bar (51psi)(1 min)

**Pressing pressure:**  
30 bar (435psi)

**Pressing time:**  
30 minutes

**Cooling:**  
< 100 °C (212°F) under pressure

**Conformal layer:**  
e.g. silicone

## Quality assurance

All AKAFLEX products are subject to the procedures of on-going quality control as defined in the Quality Assurance Handbook of August Krempel Soehne. This quality assurance system is certified as meeting the requirements of ISO 9001 and ISO/TS 16949. For AKAFLEX KDF HT, testing is performed on the master reels according to the methods given in IPC-TM 650. The test results are evaluated in accordance with IPC 4203/2. AKAFLEX KDF types are approved according to UL 94V-0.

The AKAFLEX KDF HT types are approved according to UL 94V-0.

## Availability of AKAFLEX® KDF HT

- ✓ **Standard reel width:**  
610 mm or 305 mm;  
other widths on request
- ✓ **Standard reel length:**  
100 m; other lengths on request
- ✓ **Format:**  
As requested by the customer
- ✓ **Packaging:**  
Reels suspended in robust corrugated-cardboard cartons
- ✓ **Standard cores:**  
Inside diameter 76 mm
- ✓ **Certificate:**  
Test certificate according to EN 10 204 - 2.2.



## Storage

Coverlay and bonding films have a limited shelf life because of their application-specific properties. The adhesive systems used here can be stored for at least 3 months in a dry environment at room temperature (+25 °C/77 °F).

8.2.2

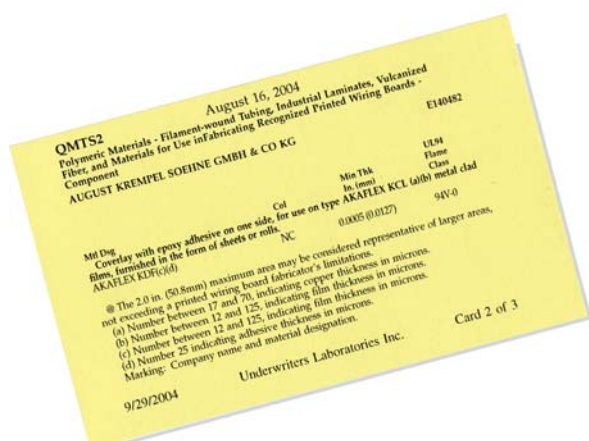
All values stated are to be seen as typical values. We reserve the right to introduce changes within the framework of further technical development. We do not accept any obligations or liabilities in respect of this information. Status: 03/2006  
August Krempel Soehne GmbH+Co. KG · P.O.Box 1240 · D-71655 Vaihingen · Tel. (+49) 7042 915-0 · e-mail: info@krempel.com

**halogenfree**

**Technical data for AKAFLEX® KDF 0/12/10 HT**  
**12 µm KAPTON® standard film / coated with 10 µm adhesive on one side**

Coverlay-film properties	Test method IPC-TM 650	IPC-4203/2 May 2002	Typical values			
<b>Peel strength</b>						
- as delivered	2.4.9 B	> 0.7	> 0.7	N/mm	> 4.0	lb/in
- after solder dip	2.4.9 D	> 0.525	> 0.525	N/mm	> 3.0	lb/in
- after temperature cycling	2.4.9 F	> 0.7	> 0.7	N/mm	> 4.0	lb/in
<b>Tensile strength of the Kapton-film</b>	2.4.19	> 138	> 138	N/mm <sup>2</sup>	> 20.0x10 <sup>3</sup>	psi
<b>Failure strength of the Kapton-film</b>	2.4.19	> 25	> 35	%	> 35	%
<b>Initial tear strength of the Kapton-film</b>	2.4.16	> 1	> 3	N	> 10.5	oz
<b>Dimensional stability (after removing the release film)</b>	Company-internal test	--	< 0.20	%	< 0.20	%
<b>Dimensional stability (30 min. at 150 °C/300°F)</b>	2.2.4 Method A	< 0.20	< 0.20	%	< 0.20	%
<b>Solder-bath stability of the Kapton- film (at 288 °C)</b>	2.4.13 B	> 10	> 180	sec	> 180	sec
<b>Flow per 25 µm coating thickness</b>	2.3.17.1	< 0.127	< 0.127	mm	< 5	mil
<b>Temperature index</b>	UL 796	DBD	130	°C	266	°F
<b>Dissipation factor (at 1MHz)</b>	ASTM D-150	< 0.04	< 0.03	--	< 0.03	--

DBD = Data Being Developed

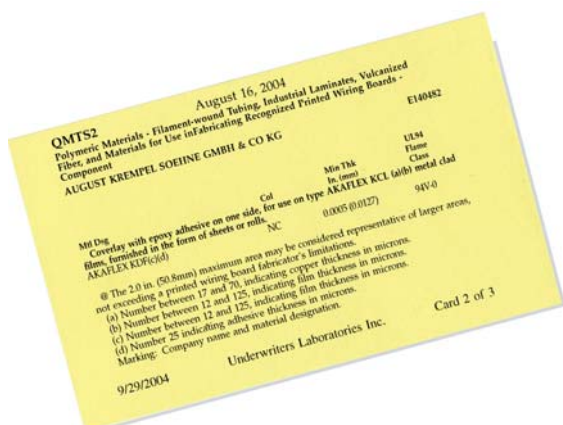


**halogenfree**

**Technical data for AKAFLEX® KDF 0/25/25 HT**  
**25 µm KAPTON® standard film / coated with 25 µm adhesive on one side**

Coverlay-film properties	Test method IPC-TM 650	IPC-4203/2 May 2002	Typical values			
<b>Peel strength</b>						
- as delivered	2.4.9 B	> 1.4	> 1.4	N/mm	> 8.0	lb/in
- after solder dip	2.4.9 D	> 1.225	> 1.23	N/mm	> 7.0	lb/in
- after temperature cycling	2.4.9 F	> 1.4	> 1.4	N/mm	> 8.0	lb/in
<b>Tensile strength of the Kapton-film</b>	2.4.19	> 165	> 165	N/mm <sup>2</sup>	> 23.9x10 <sup>3</sup>	psi
<b>Failure strength of the Kapton-film</b>	2.4.19	> 25	> 45	%	> 45	%
<b>Initial tear strength of the Kapton-film</b>	2.4.16	> 5	> 5	N	> 17.6	oz
<b>Dimensional stability (after removing the release film)</b>	Company-internal test	--	0.06	%	0.06	%
<b>Dimensional stability (30 min. at 150 °C/300°F)</b>	2.2.4 Method A	< 0.20	0.10	%	0.10	%
<b>Solder-bath stability of the Kapton-film (at 288 °C)</b>	2.4.13 B	> 10	> 180	sec	> 180	sec
<b>Flow per 25 µm coating thickness</b>	2.3.17.1	< 0.127	< 0.127	mm	< 5	mil
<b>Temperature index</b>	UL 796	DBD	130	°C	266	°F
<b>Dissipation factor (at 1MHz)</b>	ASTM D-150	< 0.04	< 0.03	--	< 0.03	--

DBD = Data Being Developed

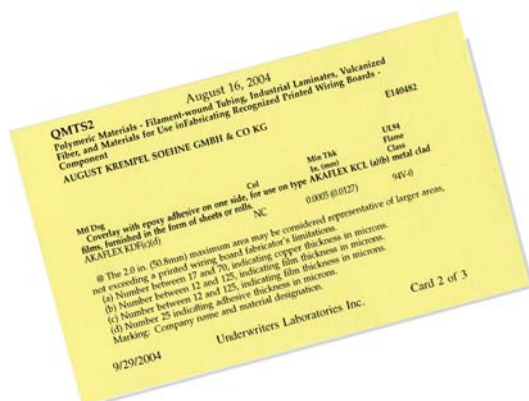


**halogenfree**

**Technical data for AKAFLEX® KDF 0/25/35 HT**  
**25 µm KAPTON® standard film / coated with 35 µm adhesive on one side**

Coverlay-film properties	Test method IPC-TM 650	IPC-4203/2 May 2002	Typical values			
<b>Peel strength</b>						
- as delivered	2.4.9 B	> 1.4	> 1.4	N/mm	> 8.0	lb/in
- after solder dip	2.4.9 D	> 1.225	> 1.23	N/mm	> 7.0	lb/in
- after temperature cycling	2.4.9 F	> 1.4	> 1.4	N/mm	> 8.0	lb/in
<b>Tensile strength of the Kapton-film</b>	2.4.19	> 165	> 165	N/mm <sup>2</sup>	> 23.9x10 <sup>3</sup>	psi
<b>Failure strength of the Kapton-film</b>	2.4.19	> 25	> 45	%	> 45	%
<b>Initial tear strength of the Kapton-film</b>	2.4.16	> 5	> 5	N	> 17.6	oz
<b>Dimensional stability (after removing the release film)</b>	Company-internal test	--	0.07	%	0.07	%
<b>Dimensional stability (30 min. at 150 °C/300°F)</b>	2.2.4 Method A	< 0.20	0.16	%	0.16	%
<b>Solder-bath stability of the Kapton-film (at 288 °C)</b>	2.4.13 B	> 10	> 180	sec	> 180	sec
<b>Flow per 25 µm coating thickness</b>	2.3.17.1	< 0.127	< 0.127	mm	< 5	mil
<b>Temperature index</b>	UL 796	DBD	130	°C	266	°F
<b>Dissipation factor (at 1MHz)</b>	ASTM D-150	< 0.04	< 0.03	--	< 0.03	--

DBD = Data Being Developed



**halogenfree**

**Technical data for AKAFLEX® KDF 25/25/25 HT**  
**25 µm KAPTON® standard film / coated with 25 µm adhesive on both sides**

Coverlay-film properties	Test method IPC-TM 650	IPC-4203/2 May 2002	Typical values			
<b>Peel strength</b>						
- as delivered	2.4.9 B	> 1.4	> 1.4	N/mm	> 8.0	lb/in
- after solder dip	2.4.9 D	> 1.225	> 1.23	N/mm	> 7.0	lb/in
- after temperature cycling	2.4.9 F	> 1.4	> 1.4	N/mm	> 8.0	lb/in
<b>Tensile strength of the Kapton-film</b>	2.4.19	> 165	> 165	N/mm <sup>2</sup>	> 23.9x10 <sup>3</sup>	psi
<b>Failure strength of the Kapton-film</b>	2.4.19	> 25	> 45	%	> 45	%
<b>Initial tear strength of the Kapton-film</b>	2.4.16	> 5	> 5	N	> 17.6	oz
<b>Dimensional stability (after removing the release film)</b>	Company-internal test	--	0.10	%	0.10	%
<b>Dimensional stability (30 min. at 150 °C/300°F)</b>	2.2.4 Method A	< 0.20	0.10	%	0.10	%
<b>Solder-bath stability of the Kapton- film (at 288 °C)</b>	2.4.13 B	> 10	> 180	sec	> 180	sec
<b>Flow per 25 µm coating thickness</b>	2.3.17.1	< 0.127	< 0.127	mm	< 5	mil
<b>Temperature index</b>	UL 796	DBD	130	°C	266	°F
<b>Dissipation factor (at 1MHz)</b>	ASTM D-150	< 0.04	< 0.03	--	< 0.03	--

DBD = Data Being Developed

