

GeoBasis-DE

Geodata of the German Surveying and Mapping

Federal Agency for Cartography and Geodesy

# Digital Topographic Map 1 : 25 000, Preliminary Edition

DTK25-V



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Federal Agency for Cartography and Geodesy

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# 1 Index of data sets

Product	:	DTK25-V
Contents	:	Georeferenced raster data of the "Topographischen Karte 1 : 25 000" (TK25)
		as 1 <i>combined layer</i> with the colour-coded map image and as up to 6 <i>single layers</i> , which are classified according to the map colours.
		(Map image without terrain representation by shadow relief)
Region	:	Federal Republic of Germany
Spatial relationships	:	In the sheet line system of the map TK25: - 2976 <b>single sheets</b>
		In the BKG tiling systems of the different georeferencings: - ca 4070 <b>seamless tiles</b> 10 km x 10 km
Georeferencing	:	<ul> <li>Gauss-Krüger projection in the 2nd, 3rd, 4th or 5th meridian strip Bessel ellipsoid, Potsdam datum (origin of Rauenberg), Height system NN, HN, NHN</li> </ul>
		<ul> <li>UTM projection in zone 32 or 33</li> <li>Ellipsoid WGS84 (here identical with GRS80), datum WGS84 (here identical with ETRS89)</li> <li>Height system NN, HN, NHN</li> </ul>
		<ul> <li>Lambert's conformal conical projection with two equidistant reference parallels 48°40' and 53°40' of northern latitude Ellipsoid WGS84 (here identical with GRS80), datum WGS84 (here identical with ETRS89) Reference centre: 10°30' eastern longitude, 51°00' northern latitude Height system NN, HN, NHN</li> </ul>
Up-to-dateness	:	see metainformation system ("Information on data") under <u>www.geodatenzentrum.de</u>
Source	:	- Topographic Map 1:25 000 (Map image without terrain representation by shadow relief)
Production method	:	<ul> <li>Scan und digital updating of the raster data by the federal states by the GeoDatenZentrum at the BKG:</li> <li>Harmonisation of the layer classification and the colour charts</li> <li>Georeferencing and seamless data editing</li> </ul>
Resolution	:	200 pixels/cm i.e. 508 dpi
Data formats	:	TIFF LZW, colour depth 8 bit, RGB palette TIFF CCITT GROUP4, colour depth 1 bit (black-and-white)
Data carriers	:	CD-ROM, DVD

#### **2** Description of data contents

#### 2.1 General

The Digital Topographic Map 1 : 25 000, preliminary edition (DTK25-V), includes the raster data of the "Topographische Karte 1 : 25 000" (TK25) without terrain representation by shadow relief (hill shading).

The GeoDatenZentrum at the BKG has harmonised as far as possible the data, in particular for uniform structures of the content and of the data and for creation of seamless products.

Nevertheless, there exist certain differences between the federal states as regards the map graphics and the data structures which cannot be changed afterwards. They will be described in the following chapters by the documentation of the data structure.

The raster data are subdivided into several layers according to their cartographic content. The DTK25-V has 1 coloured combined layer , 6 single coloured layers and 12 black/white layers

The **combined layer** is a combination of the black/white layers and offers the complete colour map image of the TK25.

Colours and structure of the **single layers** for the DTK25-V are basically corresponding to the colours of the TK25. Further practical thematic attribution of individual map elements were made in some layers. The user has therefore the advantage of an area-wide availability for each layer.

The single layers of all Digital Topographic Maps distributed by BKG have an identical structure, except for some scale-dependent special characteristics. Here, layer 6 is meant for representing administrative boundaries with special colours (boundary bands and others). As this is not relevant for the DTK25-V, layer 6 is not taken up here.

More differentiating information is possible due in the resolution 200 pixel/cm to the 2 - 6 colour channels which are part of the single layers and to each are attributed certain cartographic elements. (see 2.2).

It is possible to offer them as black/white raster data. In this case the layers 1, 3, 5, and 7 are further subdivided by channel separation in order to distinguish the different brightness values of the standard print colours (see 2.2), so the number of layers may amount to a total of 11.

When using selected single layers, please note that the layers are ready for map printing and are therefore containing background removals, i.e. the cartographic symbols may have graphical gaps in order to avoid certain overlays with symbols of other layers.

#### 2.2 Content and colour chart of single and additional layers by 200 pixel/cm

The following tables give descriptions of the content and the colour chart of each single layer. The headline gives the following distinctive characteristics:

- Number of layer, i.e. Layer 1,
- Colour, i.e. black,

The special characteristics in the data of the Länder are described as follows:

The following abbreviations are used for the federal Länder:

BΒ Brandenburg BW Baden - Württemberg ΒY Bayern Hessen ΗE ΜV Mecklenburg - Vorpommern NI Niedersachsen NW Nordrhein - Westfalen RP Rheinland - Pfalz SH Schleswig - Holstein SL Saarland SN Sachsen ST Sachsen - Anhalt TΗ Thüringen

These abbreviations indicate that in the map sheets prepared by the state survey office of this land the representation marked with an  $x^{*}$  is the relevant one.

Black
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Chan- Content Federal land														
nei		BB	BW	BY	HE	мν	NI	NW	RP	SH	SL	SN	ST	тн
1	Situation	х	х	х	х	х	х	х	х	х	х	х	х	х
	Lettering	х	х	х		х	x	x	х	х	х	х	х	х
	Garden areas (raste- red)	х								х	х			
	Vegetation areas									х	х	х		
	Inhabited areas (ras- tered)					х	х							
	Nature protection area (rastered)	х	x			x	x	x		x	x	x		
	Vineyards			х				х						
	Boundaries	х	x	х	х	х	х	х	х	х	х	х	х	х
	Military training area (rastered)	х							х				x	x
	Rocks, sands		х	х		х	х	х		х				
	Vegetation symbols									х	х			
	Tree signature	Х		х		х	х	х		x	х	x		
2	Inhabitedarea Industrial areas				х									
3	Lettering for situa- tion				х									
0	Background	Х	x	х	х	х	х	х	х	х	х	х	х	х

#### Colour chart layer 1

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1 + 3	0 0	0 0	0 0	black
2	212 83	212 83	212 83	grey

This layer will be delivered in the black/white format TIFF CCITT Group 4 in the form of the files l1k1.tif (including the channels k1 andk3), and l1k2.tif (including the channel k2), separately for each channel.

Red

Chan-	Content	Federal land												
nei		BB	BW	BY	HE	мν	NI	NW	RP	SH	SL	SN	ST	тн
1	Inhabited places, sparsely built-up				х		х		х				х	х
2	Inhabited places, closely built-up				х									
0	Background				х		х		x				х	х

Colour chart layer 2

Channel	Red	Green	Blue	Colour				
0	255 100	255 100	255 100	white				
1	255 100	178 47	178 41	light red				
2	255 100	89 30	89 30	red				

This layer will be delivered in the black/white format TIFF CCITT Group 4 in the form of the file l2k1.tif (including the channel k1)and l2k2.tif (including channel k2)

Blue
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Chan-	Content	Federal land												
		BB	BW	BY	HE	мν	NI	NW	RP	SH	SL	SN	ST	тн
1	Water shapes	x	х	х	х	х	х	х	х	х	х	х	х	х
	Water lettering	х	х	х	х	x	x	х	х	х	х	х	x	x
	Rastered water are- as		x									x		
	Highway number				x									
2	Water areas	х	х	х	х	х	х	х	х	х	х		х	х
3	Tidal flats						х			х				
0	Background	х	x	x	x	х	x	х	x	x	x	x	х	x

Colour chart layer 3

Channel	Red	Green	Blue	Colour		
0	255 100	255 100	255 100	white		
1	0 0	0 0	255 100	brook-blue		
2	102 40	186 73	255 100	lake-blue		
3	242 95	214 84	170 67	tidal-flat-brown		

This layer will be delivered in the black/white format TIFF CCITT Group 4 in the form of the files l3k1.tif (including the channel k1), l3k2.tif (including the channel k2) and l3k3.tif (including the channel k3), separately for each channel.

#### **Relief-brown**

Chan-	Content	Federal land												
		BB	BW	BY	HE	ΜV	NI	NW	RP	SH	SL	SN	ST	тн
1	Contours	х	х	x	х	х	x	х	x	х	х	x	х	x
	Sands	х				x							x	x
	Military training area						х							
0	Background	х	х	х	х	х	х	х	х	х	х	х	х	х

Colour chart layer 4

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1	178 70	102 40	0 0	relief-brown

This layer will be delivered in the black/white format TIFF CCITT Group 4 in the form of the file l4.tif (including the channel k1).

#### Green

Chan-	Content						Fe	deral	land					
		BB	BW	BY	HE	мν	NI	NW	RP	SH	SL	SN	ST	тн
1	Forest areas	х	x	x	x	x	x	x	x	x	х	х	x	х
6	Vegetation shapes		х											
	Garden are- as,rastered		х											
	Boundery of nation- al park, rastered	х			х				х				х	х
	national park boundary band (full tone)						х							
	Lettering	х			х		х		х				х	х
	Europeab street numbers				х									
	Tree signature	х	х		х		х		х				х	х
	Vineyards, rastered		х						х				x	
0	Background	х	х	х	х	х	х	х	х	х	х	х	х	х

#### Colour chart layer 5

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1	204 80	255 100	204 80	forest-green
6	0 0	229 90	0 0	tree-green

This layer will be delivered in the black/white format TIFF CCITT Group 4 in the form of the files I5k1.tif (including the channel k1) and I5k6.tif (including the channel k6), separately for each channel.

not occupied for DTK25-V.

#### Layer 7

#### Street-orange and street-yellow

Chan-	Content	Federal land												
nei		BB	BW	BY	HE	мν	NI	NW	RP	SH	SL	SN	ST	тн
1	Traffic class long-distance traffic	х		х			х		х				х	х
2	Traffic class regional traffic, Federal street num- bers	х		х			x		х				х	x
0	Background	х		х			х		х				х	х

#### Colour chart layer 7

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1	255 100	128 50	0 0	orange
2	255 100	242 95	89 35	yellow

This layer will be delivered in the black/white format TIFF CCITT Group 4 in the form of the files I7k1.tif (including the channel k1) and I7k2.tif (including the channel k2), separately for each channel.

## 2.3 Content and colour chart of the combined layer by 200 Pixel/cm

The combined layer (L0) has the following colour chart and is created as indicated by combination of the black/white layers (L<i>) in order of the priority:

Chan- nel	Red	Green	Blue	Colour	L <i>/channel</i>	Priority	Principal contents
0	255 100	255 100	255 100	white	L <i>/k0</i>		Background
1	0 0	0 0	0 0	black	L1k1+3	9	Situation, lettering, boundaries, symbols for garden areas, vegetation shapes and symbols, boundaries, sands, geo- detic fundamentals
2	0 0	0 0	255 100	brook- blue	L3k1	8	Water conturs and water lettering, rastered water areas, Highway numbers
3	204 80	255 100	255 100	lake-blue	L3k2	3	Water areas
4	178 75	102 40	0 0	relief- brown	L4k1+2	5	Relief, contours, sands Military training areas
5	204 80	255 100	204 80	forest- green	L5k1	1	Forest areas, Garden areas
6	212 83	212 83	212 83	grey	L1k2	2	Inhabited places and industrial areas
7	242 83	214 78	170 75	tidal-flat- brown	L3k3	3	Tidal flats
8	0 0	229 90	0 0	tree-green	L5k6	7	Vegetation shapes, Vege- tation lettering, European street numbers
9	255 100	242 95	89 30	yellow	L7k2	6	Regional traffic
10	255 100	89 30	89 30	red	not applied for DTK25-V		Long-distance traffic
11	102 50	51 30	0 0	brown	not applied for DTK25		Not applied
12	204 80	255 100	255 100	sea-blue	not applied for DTK25		Sea areas

Chan- nel	Red	Green	Blue	Colour	L <i>/channel</i>	Priority	Principal contents
13	255 100	89 30	89 30	red	l2k2	4	Vegetation lettering, Eu- ropean street numbers
14	255 100	178 70	178 70	light red	L2k1	4	Mask for residential de- velopment sites Military training areas
15	204 80	102 40	217 85	boundary- violet	not applied for DTK25		Boundary symbol
16	230 90	204 80	242 95	light violet	not applied for DTK25		Boundary band
17	217 85	153 60	217 85	light violet	not applied for DTK25		Name of administrative unit
18	115 45	166 65	90 35		not applied for DTK25		Hypsometric tint depres- sion DTK1000
19	216 85	255 100	178 70		not applied for DTK25		Hypsometric tint 0-100m
20	255 100	255 100	255 100		not applied for DTK25		Hypsometric tint 100- 200m
21	255 100	255 100	204 80		not applied for DTK25		Hypsometric tint 200- 500m
22	255 100	242 95	153 60		not applied for DTK25		Hypsometric tint 500- 1000m
23	255 100	216 85	38 15		not applied for DTK25		Hypsometric tint 1000- 1500m
24	255 100	196 77	0 0		not applied for DTK25		Hypsometric tint 1500- 2000m
25	255 100	178 70	0 0		not applied for DTK25		Hypsometric tint 2000- 2500m
26	216 85	166 65	100 40		not applied for DTK25		Hypsometric tint 2500- 3000m
27	130 50	0 0	64 25		not applied for DTK25		Hypsometric tint 3000- 4000m
28	255 100	120 47	105 41	light red	not applied for DTK25		Boundary band
29	255 95	196 85	0 70	fallow- land- brown	not applied for DTK25		Fallow land

Chan- nel	Red	Green	Blue	Colour	L <i>/channel</i>	Priority	Principal contents
30	216 90	255 100	178 85	meadow- green	not applied for DTK25		Meadow, grassland
31	178 70	235 90	128 50	park- green	not applied for DTK25		Park
32	255 100	128 50	0 0	orange	L7K1	6	Long-distance traffic
33	255 90	242 85	120 65	field-ochre	not applied for DTK25		Agricultural area
34	255 100	255 100	255 100	white	not applied for DTK25		Road mask
35	204 80	220 85	166 65	garden- green	not applied for DTK25		Garden areas
36	99 39	99 39	99 39	grey	not applied for DTK25		Industrial building
37	143 56	143 56	143 56	grey	not applied for DTK25		residential inside areas
38	184 72	184 72	184 72	grey	not applied for DTK25		residential outside areas

# 3 Data volume

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The data volume of the entire data sets (all map sheets or all tiles) amounts in the individual data formats to:

Specification	Data volume in MB					
	TIFF LZW	TIFF CCITT Group4				
Combined layer resolution 200 pixels/cm	17.200	-				
Single layers resolution 200 pixels/cm	up to max. 10.100 (l1) total 29.300	up to max. 4.200 (I1) total 7.600				

# 4 Information on data supply

Data supply is possible together with a free *thematic choice* of the layers out of the existing data. *Spatial sections* (preferably rectangular areas) can be defined in a flexible way. For large areas it is necessary to make the delivery as single map sheets or as seamless tiles (see 5).

The online ordering system of the GeoDatenZentrum (<u>www.geodatenzentrum.de</u>  $\rightarrow$  ordering) is offering all possibilities of data supply, is guiding the user through the product line indicating the standard specifications and special services and the pricing system as well (see 9).

**Updatedness** of the data is indicated in the meta information system (<u>www.geodatenzentrum.de</u>  $\rightarrow$  Information on data). Data supplies are including the updatedness information for the data.

Each map sheet, each tile and each rectangular section is supplied with an updatedness file indicated by .akt showing line per line the relevant map sheets and the year of updating for the map sheet.

Example: Content of the file s3\_04\_01.akt

CC3902,2000 CC3102,2000

The tile s3\_04\_01 is including data of the map sheets CC3902 and CC3102, whose year of updatedness is 2000 each.

Data supply is also including a *sheet and tile index* (see 5) and *software* for manipulation of the data structure if necessary (see 7).

# 5 Sheet limits and BKG tiling systems

The single sheets are offered in the sheet line system of the General Topographic Map 1 : 25 000 (TK25), i.e. one raster data file is produced for each layer of each map sheet.

Large seamless data amounts are supplied as tiling systems defined for a long term. Dependent from georeferencing, the data are grouped into square georeferenced partial areas. This is favouring the manipulation and the future updating of the raster data (by changing individual tiles) through the user.

Sheet and tile indexes are available at <u>www.geodatenzentrum.de</u>.

The DTK25-V is available as tiles of 10 km x 10 km. The tiles are numbered by lines and by columns, beginning top left with 00\_00. Thus, e.g. the tile  $s_{0.06}^{-0.08}$  is covering the 7<sup>th</sup> line and 9<sup>th</sup> column of the tiling system in the 3<sup>rd</sup> meridian strip of the Gauss-Krüger projection.

For a better orientation the data in the BKG tiling systems are supplied together with sheet and tile indexes and with national boundaries in the shape format and with the software ArcExplorer for direct visualisation.

# 6 Description of data formats

#### 6.1 TIFF

The data will be delivered on the selected data carrier and will have the following directory structure:

<Name of the product>



Example:

dtk25-V



The following georeferencing information is available for each raster index:

- ASCII file with the extension ".eck" with the corners of the TIFF file in pixels and the corresponding world co-ordinates, line structure:

X\_Pixel Y\_Pixel X\_Welt Y\_Welt

in the order of the corners: 2 3 1 4

Pixel co-ordinate system: origin (0,0) in the pixel centre of the left lower pixel, positive x axis directed to the right, positive y axis directed upwards.

- corresponding Worldfile (file extension ".tfw", among others for ArcInfo, ArcView, ArcExplorer).

Colour coded data (the combined layer and the single layers as standard) will preferably be delivered as *packed LZW*. Unpacked data delivery for small sections will be possible on request. The TIFF format uses an integrated RGB palette. Colour depth is normally 8 bit.

Black-and-white coded data (single layers on special request) will be supplied as *CCITT GROUP4* package. The layers 1 to 3, 5, 7 will further be subdivided by channel separation in order to detect the different intensity values of the standard print colours (see 2.2).

# 7 Software

#### 71 General note

The Digital Topographic Data are supplied in the unified data structures described above supporting also large data amounts. For typical manipulations of this data structure and for those manipulations which may sometimes be necessary the GeoDatenZentrum will supply to the users the software described below.

You will find the programs on each first data carrier delivered for your order, and also in the web under <u>www.geodantezentrum.de</u>  $\rightarrow$  *Software* for the operating systems UNIX (as Bourne Shell) and Windows (as EXE).

#### 7.2 Flat storage of DTK

For small data amounts and for certain applications a "flat storage" of all data in only one directory may be suitable instead of a data storage in several directories.

The program *Flache\_Ablage* is copying Digital Topographic Maps (DTK) from the subdirectories described in 6.1 and/or 6.2 into a common target directory. To store the files unambiguously into the target directory, the name of each relevant subdirectory is preceding them, e.g.:  $cc2334/I0.tif \rightarrow cc2334_I0.tif$ .

You will find more information for the use of this program on our website and when starting the program.

### 7.3 Renaming of DTK

The program *Umbenennung* serves for renaming the individual layers of Digital Topographic Maps (DTK) within the subdirectories described above having the name of the sheet or tile. In the directory the colour coded combined layer is named 10 and the colour coded single layers are named 11, 12, .... While this uniform naming has some advantages for automated processing, it may in other cases be desired that the name of the layer should also include the name of the sheet or tile. The program is renaming all the layers by including in the first position the name of the directory, e.g. 10.tif  $\rightarrow$  c1234\_10.tif.

You will find more information for the use of this program on our website and when starting the program.

# 8 Test data

Test data are available for download under <u>www.geodatenzentrum.de</u>  $\rightarrow$  test data. Their contents and structures are processed in the same way like the data to be supplied and they are therefore very good suited for concrete test use.

# 9 Ordering and other services

Please send your order via our **online ordering system** under <u>www.geodatenzentrum.de</u>  $\rightarrow$  ordering.

Orders may also be addressed to:

Bundesamt für Kartographie und Geodäsie Referat GI5 - Dienstleistungszentrum Karl-Rothe-Straße 10-14 D-04105 Leipzig

 Tel.:
 +49(0)341 5634 333

 Fax:
 +49(0)341 5634 415

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 dienstleistungszentrum@bkg.bund.de

Please find further information and more service under <u>www.geodatenzentrum.de</u>.