

# Chapter 10. File Specification and Naming

The *File Specification and Naming* standard defines the PDS conventions for forming file specifications and names. This chapter is based on levels 1 and 2 of the international standard ISO 9660, “Information Processing - Volume and File Structure of CD-ROM for Information Interchange.”

## ***ISO 9660 Level 1 versus ISO 9660 Level 2***

PDS recommends that archive products delivered on physical media adhere to the ISO 9660 Level 1 specification. Specifically, CD-ROM volumes that are expected to be widely distributed should use file identifiers consisting of a maximum of eight characters in the base name and three characters in the extension (i.e., “8.3” file names), as described in Section 10.1.1. When there are compelling reasons to relax the 8.3 file name standard, the ISO 9660 Level 2 specification with respect to file names may be used, subject to the restrictions listed in Section 10.1.2.

## ***Electronic Transfer and Storage of Archives***

The ISO 9660 Level 1 and Level 2 standards are specifically for CD and DVD media as described in Section 11. Data providers may negotiate with their PDS Node to deliver archives electronically rather than on CD-ROM. As electronic delivery of archives is becoming a more common practice, PDS is pursuing a more comprehensive standard. Pending the results of this investigation, PDS requires that electronically delivered data meet the restrictions listed in Section 10.1.3.

## **10.1 File Specification Standards**

A file specification consists of the following elements:

1. A complete directory path name (as discussed in the *Directory Types and Naming* chapter of this document)
2. A file name (including extension)

The PDS has adopted the UNIX/POSIX forward slash character (/) as the directory separator for use in path names. Directory path name formation is discussed further in the *Directory Types and Naming* chapter of this document.

The following is an example of a simple file specification. The file specification identifies the location of the file relative to the root of a volume, including the directory path name.

File Name: TG15N122.IMG

File Specification: TG15NXXX/TG15N1XX/TG15N12X/TG15N122.IMG

Do not use path or file names that correspond to operating system specific names, such as:

AUX COM1 CON LPT1 NUL PRN

### 10.1.1 ISO 9660 Level 1 Specification

A file name consists of a base name and an extension, separated by a full stop character (“.”). Under ISO 9660 Level 1, the length of the base name may not exceed eight characters and the extension may not exceed three characters. In addition, a version number consisting of a semicolon and an integer must follow the file identifier. The base name and extension may only contain characters from the following set: the upper case alphanumeric characters (A- Z, 0-9) and the underscore (“\_”). Collectively, these requirements are often referred to as the “8.3” (“8 dot 3”) file naming convention. These limitations exist primarily to accommodate older computer systems that cannot handle longer file names.

Preferred format: BASENAME (1..8 characters) "." EXTENSION (3 characters)

Allowable format: BASENAME (1..8 characters) "." EXTENSION (1..3 characters)

Actual format

on archive medium: BASENAME (1..8 characters) "." EXTENSION (1..3 characters) ";1"

### 10.1.2 ISO 9660 Level 2 Specification

The PDS use of ISO 9660 Level 2 file names adheres to all the above restrictions, with the exception that the base name may be up to 27 characters long (total file name length not to exceed 31 characters). Thus, this format is sometimes referred to as the “27.3” format.

*Note:* In rare cases the following variations are allowed on the 27.3 format file name:

- The file name portion may be up to 29 characters long; or
- The extension may be up to 29 characters long.

In no case, however, may the total file name length, including the “.”, exceed 31 characters.

Preferred format: BASENAME (1..27 characters) "." EXTENSION (3 characters)

Allowable format: BASENAME (1..29 characters) "." EXTENSION (1..29 characters)

Actual format

on archive medium: BASENAME (1..29 characters) "." EXTENSION (1..29 characters) ";1"

Note that *only* the file and directory name specifications for Level 2 may be used in PDS archive volumes. All other Level 2 extensions are prohibited.

### 10.1.3 Specification for Files Delivered Electronically

Electronically delivered files must adhere to the ISO 9660 Level 2 specification with the exception that the base name of the file may be up to 36 characters long. Thus the total file name length, including a period and 3-character extension, is 40 characters. This format may be referred to as the “36.3” format. The limit of 40 characters is chosen because it is the maximum length of the value of the PRODUCT\_ID keyword. As it is a common practice to use the file name as the unique product identifier, this limit will ensure that the file name is not too long to be a PRODUCT\_ID.

Notes:

1. The 36.3 format exceeds the limit imposed by the ISO 9660:1988 Level 2 standard.
2. Directory names for electronic delivery must still follow the ISO 9660:1988 Level 2 standard, i.e., they are restricted to 31 characters as described in Section 8.2.
3. The total length of directory path and file name must not exceed 255 characters.
4. The 36.3 rule is specifically for electronic delivery. Files delivered on CD or DVD media must conform to the 27.3 rule.
5. Delivery of files on a “data brick”, that is, a computer hard drive that can be mounted directly onto a computer or network, is considered an electronic delivery.

## 10.2 Reserved Directory Names, File Names and Extensions

A number of file names, directory names and file extensions are reserved for files that are required in PDS archive volumes under various circumstances. These reserved names and extensions are listed in the following sections for easy reference. For details concerning what directories and files are required where and when, see the indicated chapter.

### 10.2.1 Reserved Directory Names

The following directory names are reserved. The contents of these directories are described in Chapter 19, *Volume Organization and Naming*.

BROWSE  
CALIB  
CATALOG  
DATA  
DOCUMENT  
EXTRAS  
GAZETTER  
GEOMETRY  
INDEX  
LABEL  
SOFTWARE

### 10.2.2 Reserved File Names

The following file names are reserved. Not all of them are required in all cases. For a complete

description of what files are required where and when, see Chapter 19, *Volume Organization and Naming*.

AAREADME.TXT	GAZINFO.TXT	PERSON.CAT
BROWINFO.TXT	GEOMINFO.TXT	REF.CAT
CALINFO.TXT	INDEX.TAB	SGIINFO.TXT
CATALOG.CAT	INDXINFO.TXT	SOFTINFO.TXT
CATINFO.TXT	INST.CAT	SUNINFO.TXT
CUMINDEX.TAB	INSTHOST.CAT	VOLDESC.CAT
DATASET.CAT	LABINFO.TXT	VOLDESC.SFD
DOCINFO.TXT	MACINFO.TXT	VOLINFO.TXT
ERRATA.TXT	MISSION.CAT	ZIPINFO.TXT
EXTRINFO.TXT	PCINFO.TXT	

### 10.2.3 Reserved Extensions

The file extensions listed in Table 10.1 are reserved. A brief description for each is provided in the table. Additional detail is contained in Chapter 19, *Volume Organization and Naming*, and Chapter 9, *Documents*.

Note that the presence of any given file extension in this table should in no way be construed as to imply that the associated format is acceptable for data archiving purposes. Please consult your Discipline Node for assistance in determining acceptable formats for that purpose.

## 10.3 Guidelines for Naming Sequential Files

In cases where file names are constructed from a time tag or sequential data object identifier, the following forms are suggested (but not required):

Pnnnnnnn.EXT

where “.EXT” is the file extension (see above) and P is a character indicating:

- C    *nnnnnnnn* is a clock count value (e.g., “C3345678.IMG”)
- T    *nnnnnnnn* is a time value (e.g., “T870315.TAB”)
- F    *nnnnnnnn* is a frame ID or an image ID (e.g., “F242AO3.IMG”)
- N    *nnnnnnnn* is a numeric file identification number (e.g., “N003.TAB”)

Extension	Description (use with files of this type)
ASC	Plain ASCII documentation files
BC	SPICE Binary format CK (pointing) files
BSP	SPICE Binary format SPK (ephemeris) files
CAT	Catalog object(s)
CSV	SPREADSHEET object(s)
DAT	Binary files (other than images)
DLL	Dynamic Link Library
DOC	Microsoft Word document
EPS	Encapsulated Postscript
EXE	Application or Executable
FIT	Image data with FITS (Flexible Image Transport System) header (preferred)
FMT	Include file for describing data object (meta data)
FTS	Image data with FITS (Flexible Image Transport System) header
GIF	GIF image
HTM <i>or</i> HTML	HTML document
IBG	Browse image data
IMG	Image data
IMQ	Image data that have been compressed (Not for use with JPEG 2000 compressed data.)
JP2	JPEG 2000 (JP2) formatted image
JPG	JPEG image
LBL	Detached label for describing data object
LIB	Library of object files
MAK	Makefile for compiling / linking application or executable
OBJ	Object file
PDF	Adobe PDF document
PNG	Portable Network Graphics
PS	Postscript
QUB	Spectral (or other) image QUBEs
RTF	Rich Text document
TAB	Tabular data, including ASCII TABLE objects with detached labels
TEX	TeX or LaTeX document
TI	SPICE Text IK (instrument parameters) files
TIF <i>or</i> TIFF	Tagged Image File Format documents
TF	SPICE Frames kernel files
TLS	SPICE Leap seconds kernel files
TPC	SPICE Physical and cartographic constants kernel files
TSC	SPICE Spacecraft clock coefficients kernel files
TXT	Plain text documentation files
XC	SPICE Transfer format CK (pointing) files
XES	SPICE E-kernel files
XSP	SPICE Transfer format SPK (ephemeris) files
ZIP	Zip-compressed files within PDS

**Table 10.1 – Reserved File Extensions**

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