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**Information technology — 120 mm  
(8,54 Gbytes per side) and 80 mm  
(2,66 Gbytes per side) DVD recordable  
disk for dual layer (DVD-R for DL)**

*Technologies de l'information — Disques DVD enregistrables de  
120 mm (8,54 Go par face) et 80 mm (2,66 Go par face) pour double  
couche (DVD-R pour DL)*



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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 12862 was prepared by Ecma International (as ECMA-382) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

This second edition cancels and replaces the first edition (ISO/IEC 12862:2009), which has been technically revised.

## Introduction

Ecma Technical Committee TC31 was established in 1984 for the standardization of optical disks and optical disk cartridges (ODC). Since its establishment, TC31 has made major contributions to ISO/IEC JTC 1/SC 23 toward the development of International Standards for optical disks. Numerous standards have been developed by TC31 and published by Ecma, almost all of which have also been adopted by ISO/IEC under the fast-track procedure as International Standards. The following Ecma standards for DVD 120 mm and 80 mm have been published by Ecma and adopted by ISO/IEC JTC 1. These standards are based on original specifications from the DVD Forum.

- ECMA-267 (2001) 120 mm DVD-Read-Only Disk, 3<sup>rd</sup> edition  
*ISO/IEC 16448*
- ECMA-268 (2001) 80 mm DVD-Read-Only Disk, 3<sup>rd</sup> edition  
*ISO/IEC 16449*
- ECMA-272 (1999) 120 mm DVD Rewritable Disk (DVD-RAM), 2nd edition  
*ISO/IEC 16824*
- ECMA-273 (1998) Case for 120 mm DVD-RAM Disks, 1<sup>st</sup> edition  
*ISO/IEC 16825*
- ECMA-279 (1998) 80 mm (1,23 Gbytes per side) and 120 mm (3,95 Gbytes per side) DVD-Recordable Disk (DVD-R), 1<sup>st</sup> edition  
*ISO/IEC 20563*
- ECMA-330 (2005) 120 mm (4,7 Gbytes per side) and 80 mm (1,46 Gbytes per side) DVD Rewritable Disk (DVD-RAM), 3<sup>rd</sup> edition  
*ISO/IEC 17592*
- ECMA-331 (2004) Cases for 120 mm and 80 mm DVD-RAM Disks, 2<sup>nd</sup> edition  
*ISO/IEC 17594*
- ECMA-338 (2002) 80 mm (1,46 Gbytes per side) and 120 mm (4,70 Gbytes per side) DVD Re-recordable Disk (DVD-RW), 1<sup>st</sup> edition  
*ISO/IEC 17342*
- ECMA-359 (2004) 80 mm (1,46 Gbytes per side) and 120 mm (4,70 Gbytes per side) DVD Recordable Disk (DVD-R), 1<sup>st</sup> edition  
*ISO/IEC 23912*
- ECMA-382 (2008) 120 mm (8,54 Gbytes per side) and 80 mm (2,66 Gbytes per side) DVD Recordable Disk for Dual Layer (DVD-R for DL), 1<sup>st</sup> edition  
*ISO/IEC 12862*
- ECMA-384 (2008) 120 mm (8,54 Gbytes per side) and 80 mm (2,66 Gbytes per side) DVD Re-recordable Disk for Dual Layer (DVD-RW for DL), 1<sup>st</sup> edition  
*ISO/IEC 13170*

In April 2007, nine members proposed that TC31 develop a standard for 120 mm and 80 mm dual layer DVD recordable optical disks using organic dye recording technology. TC31 adopted this project, which resulted in ECMA-382 (2008).

In December 2009, a proposal was made that TC31 update this Ecma Standard for editorial corrections and clarifications. TC31 approved this proposal, which resulted in the second edition of ECMA-382.

This International Standard specifies two types of dual layer recordable optical disks, one (Type 1S) making use of recording on only a single side of the disk and yielding a nominal capacity of 8,54 Gbytes for a 120 mm disk and 2,66 Gbytes for an 80 mm disk, the other (Type 2S) making use of recording on both sides of the disk and yielding a nominal capacity of 17,08 Gbytes for a 120 mm disk and 5,32 Gbytes for an 80 mm disk.



# Information technology — 120 mm (8,54 Gbytes per side) and 80 mm (2,66 Gbytes per side) DVD recordable disk for dual layer (DVD-R for DL)

## 1 Scope

This International Standard specifies the mechanical, physical and optical characteristics of a 120 mm and an 80 mm dual layer DVD recordable disk to enable the interchange of such disks. It specifies the quality of the pre-recorded, unrecorded and recorded signals, the format of the data, the format of the information zone, the format of the unrecorded zone, and the recording method, thereby allowing for information interchange by means of such disks. This disk is identified as a DVD recordable disk for dual layer (DVD-R for DL).

This International Standard specifies the following:

- 120 mm and 80 mm nominal diameter disks that can be either single- or double-sided;
- the conditions for conformance;
- the environments in which the disk is to be operated and stored;
- the mechanical and physical characteristics of the disk, so as to provide mechanical interchange between data processing systems;
- the format of the pre-recorded information on an unrecorded disk, including the physical disposition of the tracks and sectors, the error correcting codes and the coding method used;
- the format of the data and the recorded information on the disk, including the physical disposition of the tracks and sectors, the error correcting codes and the coding method used;
- the characteristics of the signals from pre-recorded and unrecorded areas on the disk, enabling data processing systems to read the pre-recorded information and to write to the disks;
- the characteristics of the signals recorded on the disk, enabling data processing systems to read the data from the disk.

This International Standard provides for interchange of disks between disk drives. Together with a standard for volume and file structure, it provides for full data interchange between data processing systems.

## 2 Conformance

### 2.1 Optical Disk

A claim of conformance shall specify the type of the disk, i.e. its size and whether it is single-sided or double-sided. An optical disk is in conformance with this International Standard if it meets the mandatory requirements specified for this type.

## 2.2 Generating system

A generating system is in conformance with this International Standard if the optical disk it generates is in accordance with 2.1.

## 2.3 Receiving system

A receiving system is in conformance with this International Standard if it is able to handle an optical disk in accordance with 2.1.

## 3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ECMA-287, *Safety of electronic equipment*