
**Information technology — Radio
frequency identification for item
management — Implementation
guidelines —**

**Part 2:
Recycling and RFID tags**

*Technologies de l'information — Identification de radiofréquences pour
la gestion d'items — Lignes directrices pour la mise en œuvre —*

Partie 2: Recyclage et repères RFID

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Terms and definitions	1
3 Symbols (and abbreviated terms)	1
4 Using RFID tagging to improve the environment	2
4.1 Use of RFID to improve waste stream recycling	2
4.1.1 Tracking waste with RFID	2
4.1.2 Recycle process mark	2
4.2 Recycle process automation	2
5 Recycling of RF tags	3
5.1 General	3
5.2 Passive tags	3
5.2.1 Overview	3
5.2.2 Passive RFID tags and presently recycled materials	3
5.2.3 Recycling	6
5.2.4 Disposal of passive tags as waste	7
5.2.5 Other regulatory considerations	7
5.3 Active tags	8
5.3.1 General	8
5.3.2 Presently recycled material	8
5.3.3 Reuse of active tags	9
Annex A (informative) Recycle streams	10
Annex B (informative) Chemical make-up of a typical passive RF tag	11
Annex C (informative) Chemical make-up of a typical active RF tag	12
Annex D (informative) Fibre Box Association National Council for Air and Streams Improvement	13
Annex E (informative) Confederation of European Paper Industries	14
Annex F (informative) Society of Plastic Engineers	15
Annex G (informative) Society of Plastic Industries	16
Annex H (informative) Glass Packaging Institute	17
Annex I (informative) Steel Recycling Institute	18
Annex J (informative) Aluminium Association	19
Annex K (informative) Institute of Scrap Recycling Industries	20
Annex L (informative) Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC of the European Parliament	21
Annex M (informative) Restriction Of Hazardous Substances (RoHS) Directive 2002/95/EC of the European Parliament	22
Annex N (informative) End of Live Vehicle (ELV)	23
Annex O (informative) Home Electronics Recycling Law (HERL) in Japan	24
Annex P (informative) Extended Producer Responsibility Program (EPRP) in Korea	26
Annex Q (informative) Prohibited and Allowable Substances List	27
Bibliography	28

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.

In exceptional circumstances, the joint technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when the joint technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

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 TR 24729-2, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

ISO/IEC TR 24729 consists of the following parts, under the general title *Information technology — Radio frequency identification for item management — Implementation guidelines*:

- *Part 1: RFID-enabled labels and packaging supporting ISO/IEC 18000-6C*
- *Part 2: Recycling and RFID tags*

The following part is under preparation:

- *Part 3: Implementation and operation of UHF RFID interrogator systems in logistics applications*

Information technology — Radio frequency identification for item management — Implementation guidelines —

Part 2: Recycling and RFID tags

1 Scope

Radio-frequency identification (RFID) is positioned to serve as a significant enabler in the recycling of various types of products; notably home appliances and electronics. At the same time various recycling streams are challenged by the possibility of RF tags being attached to recycled material, notably glass and steel.

2 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762-1 and ISO/IEC 19762-3 apply.

3 Symbols (and abbreviated terms)

For the purposes of this document, the symbols and abbreviated terms given in ISO/IEC 19762-1, ISO/IEC 19762-3, and the following apply.

ELV	End of Life Vehicle (European Union)
EPRP	Extended Producer Responsibility Program (Korea)
HERL	Home Electronics Recycling Law (Japan)
iNEMI	international Electronics Manufacturing Initiative
IC	Integrated Circuit
OCC	Old Corrugated Cartons
PET	Polyethylene Terephthalate
PBB	Polybrominated Biphenyls
PBDE	Polybrominated Diphenyl Ethers
ppm	parts per million
RF	Radio Frequency
RFID	Radio Frequency Identification
RoHS	Restriction Of Hazardous Substances
TID	Tag Identification
UHF	Ultra-High Frequency
WEEE	Waste Electrical and Electronic Equipment