
**Industrial automation systems and
integration — Product data representation
and exchange —**

**Part 1009:
Application module: Shape appearance
and layers**

*Systèmes d'automatisation industrielle et intégration — Représentation
et échange de données de produits —*

Partie 1009: Module d'application: Apparence de forme et couches



Reference number
ISO/TS 10303-1009:2001(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years with a view to deciding whether it should be confirmed for a further three years, revised to become an International Standard, or withdrawn. In the case of a confirmed ISO/PAS or ISO/TS, it is reviewed again after six years at which time it has to be either transposed into an International Standard or withdrawn.

Attention is drawn to the possibility that some of the elements of this part of ISO 10303 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 10303-1009 was prepared by Technical Committee ISO/TC 184, *Industrial automation system and integration*, Subcommittee SC 4, *Industrial data*.

ISO 10303 is organized as a series of parts, each published separately. The structure of ISO 10303 is described in ISO 10303-1.

Each part of ISO 10303 is a member of one of the following series: description methods, implementation methods, conformance testing methodology and framework, integrated generic resources, integrated applications resources, application protocols, abstract test suites, application interpreted constructs, and application modules. This part is a member of the application modules series.

A complete list of parts of ISO 10303 is available from the Internet

<<http://www.nist.gov/sc4/editing/step/titles/>>

Annexes A and B form a normative part of this part of ISO 10303. Annexes C, D and E are for information only.

Introduction

ISO 10303 is an International Standard for the computer-interpretable representation and exchange of product data. The objective is to provide a neutral mechanism capable of describing product data throughout the life cycle of a product, independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases and archiving.

This International Standard is organized as a series of parts, each published separately. The parts of ISO 10303 fall into one of the following series: description methods, integrated resources, application interpreted constructs, application protocols, application modules, abstract test suites, implementation methods, and conformance testing. The series are described in ISO 10303-1. This part of ISO 10303 is a member of the application module series.

This part of ISO 10303 specifies an application module for assignment of visual attributes and layers to shape models, geometric and topological elements.

A set of application modules can be combined to provide the capability to assign shape elements to layers and visual attributes, such as colours and curve fonts, to geometric and topological elements. For additional information, see Annex F of this technical specification of ISO 10303.

Industrial automation systems and integration — Product data representation and exchange —

Part 1009:

Application module: Shape appearance and layers

1 Scope

This part of ISO 10303 specifies the application module for the assignment of visual attributes and layers to shape models, geometric and topological elements.

The following are within scope of this part of ISO 10303:

- assignment of layers to shape items;
- assignment of visual attributes to shape items;
- assignment of colour to surfaces;
- assignment of visual attributes to curves belonging to surfaces.

The following are outside the scope of this part of ISO 10303:

- definition of views on which shape models, geometric elements or annotation are presented;
- specification of shape models.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10303. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10303 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 8824-1:1998, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation*

ISO 10303-1:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 1: Overview and fundamental principles*

ISO/TS 10303-1009:2001(E)

ISO 10303-11:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 11: Description methods: The EXPRESS language reference manual*

ISO 10303-41:2000, *Industrial automation systems and integration — Product data representation and exchange — Part 41: Integrated generic resource: Fundamentals of product description and support*

ISO 10303-46:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 46: Integrated generic resources: Visual presentation*

ISO 10303-202:1996, *Industrial automation systems and integration — Product data representation and exchange — Part 202: Application protocol: Associative draughting*

ISO/TS 10303-1001:2001, *Industrial automation systems and integration — Product data representation and exchange — Part 1001: Application module: Appearance assignment*

3 Terms, definitions, and abbreviations

3.1 Terms defined in ISO 10303-1

For the purposes of this part of ISO 10303, the following terms defined in ISO 10303-1 apply:

- application;
- application object;
- application protocol;
- application reference model;
- data;
- information;
- integrated resource;
- product;
- product data;
- unit of functionality.

3.2 Terms defined in ISO 10303-202

For the purposes of this part of ISO 10303, the following term defined in ISO 10303-202 applies:

- application interpreted construct.

3.3 Terms defined in ISO/TS 10303-1001

For the purposes of this part of ISO 10303, the following terms defined in ISO/TS 10303-1001 apply:

- application module;
- module interpreted model.

3.4 Abbreviations

For the purposes of this part of ISO 10303, the following abbreviations apply:

AM	application module
ARM	application reference model
MIM	module interpreted model
UoF	unit of functionality
URL	uniform resource locator

4 Information requirements

This clause specifies the information requirements for the appearance assignment module. The information requirements are specified as a set of units of functionality and application objects. The information requirements are defined using the terminology of the subject area of this application module.

- A graphical representation of the information requirements is given in annex C.
- The mapping specification is specified in 5.1 which shows how the information requirements are met using the integrated resources of this International Standard. The use of the integrated resources introduces additional requirements which are common to application modules and protocols.

EXPRESS specification:

```
* )
SCHEMA Shape_appearance_layer_arm;
( *
```

4.1 Units of functionality

This subclause specifies the units of functionality (UoF) for this part of ISO 10303 as well as any support elements needed for the application module definition. This part of ISO 10303 specifies the following unit of functionality:

- Shape_appearance.