



Rubber or plastics covered rollers – Enquiries and orders – Recommendations for technical information to be supplied by purchaser

In 1979 Technical Committee ISO/TC 45, *Rubber and rubber products*, agreed to progress a request by Yugoslavia to issue a document listing the essential information required by the roller covering manufacturer. This was to ensure the purchaser was supplied with a product as suitable as possible for the intended application. A draft was then prepared taking account of the technical terms used in a number of countries. The draft was discussed by Working group 11, *Miscellaneous rubber products*, of TC 45 in 1980 and the recommendation made that it should be published as an ISO Technical Report type 3. The draft was subsequently balloted within TC 45 as a draft proposal for a Technical Report. After amendment, as a result of the comments received, TC 45 approved the issue of the document as a type 3 Technical Report.

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0 Introduction

This Technical Report specifies the essential information required by the roller covering manufacturer.

Covered rollers are cylindrical cores, usually made of metal upon which a covering of rubber or plastics is bonded. The covering specification is made for a particular application. The rollers are made in a wide variety of sizes and the covering will vary in hardness, type of material and surface treatment depending upon their intended use.

The function of the roller together with the conditions under which it has to operate, determine its size and structure as well as the physical and chemical properties of the covering material. This document lists most of the essential information required to establish the most serviceable and durable roller covering. It should serve as a basis for questionnaires to be completed by a roller customer in connection with an enquiry or order.

Not all questions are pertinent to every roller application. Only questions relevant to the application need be answered. Different industries would ideally require individual compilations. Roller manufacturers have or may elaborate from the items below different lists of queries for different industries or types of machinery.

NOTE — If different terms are applied in English and American usage, both terms are given, in the format English term/American term.

1 Scope and field of application

This Technical Report specifies most of the information which may be required by a manufacturer from a customer in order to determine the most suitable roller covering for a particular purpose.

2 References

ISO 6123/1 to 3, *Rubber or plastics covered rollers — Specifications —*
Part 1 : Requirements for hardness.
*Part 2 : Surface characteristics.*¹⁾
*Part 3 : Dimensions and dimensional tolerances.*¹⁾

3 Roller application

3.1 Machine in which the roller is used :

- a) branch or type of industry;
- b) function of the machine or process;
- c) machine manufacturer :
 - 1) type,
 - 2) year of construction;
- d) roller position on machine.

3.2 Function of the roller :

for example suction, squeezing, guiding, carrying, driving, spreading, drawing, inking, engraving, embossing.

3.3 Products carried :

- a) nature of product carried by or in contact with the roller, for example fabric, paper, sheet metal, timber, etc;
- b) thickness of product (if applicable);
- c) temperature of product.

¹⁾ At present at the stage of draft.

4 Roller design and construction

4.1 Roller core/shell

4.1.1 Design :

- a) material, for example steel tube, cast iron, stainless steel, bronze shell, brass, aluminium;
- b) solid or hollow;
- c) mounted journals/shafts or open ended;
- d) manner in which ends/heads and journals/hubs are fastened to core/shell, for example welded, screwed, or shrink fitted.

4.1.2 Dimensions (see the figure) :

- a) length of the core/shell (face length);
- b) outside diameter of core/shell;
- c) inside diameter of core/shell *or* wall thickness of core/shell;
- d) total length over journals/shafts (overall length) *or* length of journals/shafts;
- e) diameter of journals/shafts.

4.1.3 Mass of core/shell :

with or without ends/heads and journals/shafts?

4.1.4 Surface of core/shell :

for example as cast, smooth, roughened, grooved, drilled.

4.1.5 Balancing

- a) Balancing prior to covering, yes or no?
either static or dynamic.
- b) Balancing after covering, yes or no?
either static or dynamic.

4.1.6 Other relevant details of the roller core/shell :

for example device for water cooling (shower), device for heating.

4.2 Previous roller covering

4.2.1 With what has the roller been covered so far?

Specify

- a) material;
- b) hardness;
- c) colour;
- d) previous order number and quality supplied if this or another roller has been covered before for the same application.

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Is it possible to transmit a sample of the previous covering?

4.2.2 Did the previous covering give satisfaction?

If not, why not?

4.3 Dimensions of covering

4.3.1 Length of covering (face length)

4.3.2 Outside diameter of covering (finished diameter) or thickness of covering

Cross-section of roller — parallel or crowned :

- a) form or shape of crown (if applicable);
- b) crown dimensions (if applicable).

4.3.3 Requirements on tolerances (see ISO 6123/3) :

- a) tolerance on diameter;
- b) tolerance on parallelism or crown;
- c) tolerance on concentricity;
- d) tolerance on length.

4.3.4 Finish at ends of face covering (see the figure) :

Edges

- a) square *or* rounded (radiused);
- b) chamfered;
- c) tapered;
- d) dubbed (relieved).

Specify dimensions.

End/head and journal/hub covering (see 4.5).

4.3.5 Surface (see 4.4.4)

If surface is drilled :

- a) drilled length;
- b) pattern of holes;
- c) shape of holes :
 - 1) diameter, tapered, chamfered,
 - 2) depth (in case of blind drilled).

4.3.6 Other relevant details of the covering dimensions

4.4 Material, hardness and surface of covering

4.4.1 Material requested

- a) rubber;
- b) plastics.

4.4.2 Hardness requested (see ISO 6123/1) :

- a) in international rubber hardness degrees (IRHD);
- b) in Shore A hardness degrees;
- c) in Shore D hardness degrees;
- d) in Pusey and Jones indentation values.

4.4.3 Colour requested

4.4.4 Surface requested (see ISO 6123/2) :

- a) surface quality
grade;
- b) surface finish/treatment
class;
- c) special treatment or structure, for example drilled, grooved, herringbone pattern, etc.

4.5 Covering of ends/heads, journals/hubs and flingers (see the figure)

If a covering of ends/heads and journals/hubs is requested, a drawing should be supplied.

- a) covering of ends/heads
thickness;
- b) covering of journals/hubs :
 - 1) length of covering including covered journals/hubs *or* length of journal/hub covering,
 - 2) diameter of journal/hub covering *or* thickness of journal/hub covering;
- c) splash rings, flange pulleys or flingers?

5 Service characteristics

5.1 Working period

Express the working period in hours per week.

5.2 Speed :

- a) surface speed, expressed in metres per minute, or revolutions per minute
constant or varying? (in case of variations, specify average speed and duration of maximum speed);
- b) roller driven or idling.

5.3 Loading :

- a) total loading, in newtons, or nip load, expressed in newtons per millimetre
constant or varying? (in case of variations, specify average pressure and duration of maximum pressure);
- b) loading measurable?
- c) pressure mechanism, for example pneumatic, hydraulic, dead weight loaded, hand operated;
- d) release during standstill/shut down?

5.4 Contacting roller :

- a) material of roller in contact :
 - 1) soft or hard rubber, ebonite, plastics,
 - 2) metal (specify),
 - 3) ceramics;
- b) surface condition (smooth, rough, grooved?);
- c) hardness of a rubber or plastics roller in contact;
- d) even speed or friction?
- e) synchronized drive or surface friction drive?

5.5 Temperature :

- a) roller temperature
constant or varying? (in case of variations, specify average temperature and duration of maximum temperature);
- b) influences of coldness down to ...°C;
- c) internal heating or cooling.

5.6 Chemical environment

Is the roller running

- a) totally immersed in a bath?
- b) moistened by web or carryover?
- c) only splashed by chemicals?

Chemical resistance required against

- a) acids;
- b) alkalis;
- c) salts;
- d) oils or greases;
- e) organic solvents;
- f) other.