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Rubber and plastics hoses and hose assemblies — Vocabulary

Tuyaux et flexibles en caoutchouc et en plastique — Vocabulaire



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Foreword

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International Standard ISO 8330 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

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Rubber and plastics hoses and hose assemblies — Vocabulary

1 Scope

This International Standard defines terms used in the hose industry. The terms are listed alphabetically in English.

When a term has one or more synonym(s), the synonymous terms follow the preferred term and are also listed in the alphabetic sequence. Deprecated synonymous terms are indicated by “(deprecated)”. The expression “See also” is used after the definition (or note) to refer to another term (not always synonym) whose definition or note contains information related to the term preceding the expression.

2 Terms and definitions

angle of braid

angle of lay

acute angle between any strand of the braid and a line parallel to the axis of the hose

angle of lay

(see also angle of braid)

armoured hose

hose with a protective covering, generally applied as a braid or helix, to minimise physical damage

armouring

protective covering over a hose, generally applied as a braid or helix, to prevent mechanical damage or to support the reinforcement of a section hose

bend radius

radius of a bent section of hose measured to the innermost surface of the curved portion

bending force

load required to induce bending around a specified radius and hence a measure of stiffness

bias angle

smaller included angle between the warp threads of a cloth and a diagonal line cutting across the warp threads

bias cut

cut of a textile material made diagonally at an angle less than 90 ° to the longitudinal axis

bias seam

seam at which bias cut fabrics are joined together

binding-in wire**nipple wire**

wire used to anchor a hose to a nipple, usually applied during the construction of the hose

body wire

round or flat wire helix embedded in the hose wall to increase strength or to resist collapse

bore

inside of a hose through which the material to be conveyed passes

braid

continuous sleeve of interwoven single or multiple strands of yarn or wire

braided hose

hose in which the reinforcement has been applied as interwoven spiral strands

brand

mark or symbol either embossed, inlaid or printed on a hose, coupling or hose assembly identifying or describing a product and/or manufacturer

breaker ply

open mesh fabric used to enhance the bond of a hose lining or cover to its carcass and to spread impact

NOTE This addition can add reinforcement to these components.

burst pressure

pressure at which rupture of the hose occurs

NOTE The term has the dimension of bar¹

capped end

sealed end (deprecated)

hose end covered to protect its internal elements

carcass

fabric, cord and/or metal reinforcing section of a hose, as distinguished from the hose tube or cover

(See also reinforcement)

¹ 1 bar = 0,1 MPa

cloth marked finish

appearance of the vulcanized cover produced by straight or spiral wrapping used during vulcanization and subsequently removed
(See also *wrapper marks*)

coiling diameter

minimum diameter of coil to which a hose can be coiled without damage

collapsible hose

softwall hose which, when unpressurized internally, can be coiled on itself
(See also *layflat hose*)

consolidated

state in which the components of a hose are firmly brought together by the application of pressure during manufacture

NOTE Components can not be considered bonded until after vulcanization. Consolidation procedures may be carried out several times during construction.

convoluted hose

hose fluted helically (externally and/or internally)

corrugated hose

hose with a cover fluted circumferentially with bellows-like corrugations

coupling

fitting, usually made of metal, attached to the end of a hose to facilitate connection to equipment or another hose

NOTE A female coupling carries the internal fastening; a male coupling carries the external fastening.

cover

outer layer covering the reinforcement

dog-leg

abrupt localised deviation in direction of a hose when pressurized; caused by a local flaw in the construction of the carcass, being manifest as a sharp or angular change in direction

end-reinforcement

extra reinforcing material applied to the end of a hose to provide additional strength or stiffness

enlarged end

hose end having a diameter greater than the internal diameter of the hose to accommodate a coupling or to fit onto pipework

embedding layer

layer of rubber in which is embedded a reinforcing helix of wire or other material

externally convoluted hose

hose containing a reinforcing helix in which the outer cover has been formed into corrugations between the turns of the helix. Such hoses may be rough bore, semi-embedded bore or smooth bore

fabric

plane structure produced by interlaced yarns, fibres or filaments

filler strip

material added during fabrication of a hose containing supporting helix to fill the spaces between the successive turns

hand-built hose

hose made by hand on a mandrel, reinforced by textile or wire or combination of both and a cover

hardwall hose

hose containing, in the wall, a concentric supporting helix of rigid or semi-rigid material

helical cord (in hose)

reinforcement formed by a cord or cords wound spirally around the body of a hose

helix

shape formed by spiralling a wire or other reinforcement around or within the body of the hose

helix angle

acute angle between any strand of helical reinforcement and a line parallel to the axis

hose**(pl.hoses)**

flexible tube consisting of a lining, reinforcement and, usually, an outer cover

hose assembly

length of hose with a coupling attached to one or each end

hose wall

material between the internal and external surfaces of a hose

hydraulic hose

hose with a braid or spiral reinforcement designed to withstand high pressures

hydrostatic stability

ability to resist, within limits, changes in length and/or diameter and/or twist at a specified pressure

hydrostatic stability test

non-destructive test in which the change in length and/or diameter and/or twist of a hose is measured at a specified pressure

impulse

pressure of short duration that may be cyclic, and which produces sudden stress

impulse test

pulsating pressure test, usually applied to high pressure hydraulic hose

insulating layer

rubber between plies of reinforcement

internal diameter

diameter of the bore of a hose

NOTE The term has the dimension of mm.

kinking

distortion of a hose by excessive bending, leading to closure or partial closure of the hose bore and/or permanent deformation

knitted hose

hose with textile reinforcement applied in an inter-locking looped configuration

knitted ply

layer of textile reinforcement in which the yarns are applied in an interlocking looped configuration in a continuous tubular structure

lap

part that extends over itself or like part, usually by a desired and predetermined amount

lap seam

seam made by placing the edge of one piece of material extending flat over the edge of the second piece of material

lay

direction of advance of a strand of reinforcing material for one complete turn along its length axis

layflat hose

softwall hose which, when unpressurized internally, collapses to such an extent that the inner faces of the bore make contact and the hose takes up a flat cross-section appearance

lining

innermost continuous all-rubber or plastic element of a hose

machine-made hose

hose made by machine instead of by hand on a mandrel, particularly wrapped ply hose

mandrel

rigid or flexible rod or tube of circular cross-section on which certain types of hose are manufactured

mandrel built

hose fabricated on a mandrel

mandrel-made hose

hose fabricated by hand and vulcanized on a mandrel

minimum bend radius

smallest specified radius to which a hose may be bent in service
(see also *bend radius*)

moulded hose

hose vulcanized in a rigid mould or inside a lead sheath that is subsequently removed

nipple wire

(see also *binding-in wire*)

nominal bore

reference number for the bore of a hose

NOTE The term is dimensionless.

outside diameter

diameter of the exterior of the cross-section of a hose

NOTE The term has the dimension of mm.

pitch

distance from one point on a helix to the corresponding point on the next turn of the helix measured parallel to the axis (can also apply to other reinforcing components)

plain end

uncapped or otherwise unprotected end of a hose

plastics hose

hose of plastics material with a reinforcement of textile material and a cover of plastics material

ply**(pl. plies)**

layer(s) of reinforcing material
(see also *reinforcement*)

ply adhesion

force required to separate two adjoining plies of a hose

popcorning

effect on a steam hose lining attributed to the eruption, during subsequent use, of condensate formed and entrapped in the lining during cooling

pricking

perforation of a hose cover designed to prevent blisters on the cover formed by the expansion of gases trapped in the interstices of the reinforcement

proof pressure

pressure applied during a non-destructive test and held for a specified period of time to prove the integrity of the construction

NOTE The term has the dimension of bar.

proof pressure test

pressure holding test to prove the structural integrity of a hose

reeling diameter

minimum diameter of reel on which a hose can be coiled without damage by kinking or distortion

(see also *collapsible hose*)

reinforcement

non-rubber strengthening member (s) of a hose

(see also *carcass*)

reinforcement angle

angle formed by the intersection of a reinforcement strand and a line parallel to the axis of the hose

rough bore hose

hose in which a reinforcing helix of wire, or its shape, is exposed in the bore

rubber hose

tube made of vulcanized rubber with a reinforcement, generally textile or metal wire, and usually a cover

rubber tubing

flexible tube made of vulcanized rubber without a reinforcement

sealed end (deprecated)

(see also *capped end*)

semi-embedded hose

hose containing a concentric helix of wire or other material, embedded in the lining so that only a portion of the helix is exposed

smooth bore hose

hose in which no reinforcing wire helix or its shape is exposed on the inner surface of the lining

soft end

hose end in which the rigid or semi-rigid reinforcement has been omitted to allow fitting of a coupling

softwall hose

hose without a supporting helix of rigid or semi-rigid material

spacing

distance between adjacent turns of wire measured parallel to the axis of the helix i.e. pitch minus the width of the wire. May also apply to rings or other hoop type reinforcement

spiral lay

manner in which a spiral reinforcement is applied with respect of angularity and lead or pitch as in a hose or cylindrical article (*see also angle of lay*)

spiral wrapping

method of applying external pressure to a hose during vulcanization by using a narrow strip of cloth wound helically, with overlaps, along the hose

spiralled hose

hose reinforced with strands wound helically in layers with adjacent layers in opposing directions

splice

joint or junction made by lapping or butting straight or on a bias, and held together through vulcanisation or mechanical means

static bonding

use of conductive material to eliminate static electrical charges

static conductivity

capability of giving a path for dissipation of static electricity

static wire

wire incorporated in a hose to conduct static electricity

straight end

end of a hose, the structure and dimensions of which are identical to those of the body of the hose; it is produced by simply cutting the hose, at right angles to its length

straight wrapping

lightweight fabric in which the wrap threads are parallel to the axis of the hose and wrapped around the hose to impart pressure and consolidate the hose during vulcanization

thermoplastics hose

tube of flexible plastics material reinforced with a spiral of a semi-rigid plastics material encapsulated in, or external to, the wall

tolerance

specified range within which a measured value lies

tubing

flexible polymeric tube without reinforcement

twist

turn about the longitudinal axis of a hose when subjected to internal pressure or external torsional forces

vacuum test

test of the resistance of a hose to collapse under vacuum

warp

lengthwise yarns in a woven fabric or in a woven hose cover

warping

deviation of a hose in the length, when pressurized, caused by asymmetric or faulty construction

wire reinforced

containing wires to give added strength, increased dimensional stability, or crush resistance

wire reinforced hose

hose in which the primary reinforcement is wire

working pressure

maximum pressure to which a hose is designed to be subjected, including the expected momentary surges, during service

NOTE The term has the dimension of bar.

working temperature

maximum or minimum temperature at which a hose is designed to be serviceable

woven fabric

flat structure composed of two series of interlaced yarns or filaments, one parallel to the axis of the fabric and the other transverse

woven hose

hose in which reinforcement has been applied by circular weaving

wrapped cure

vulcanizing process using a tensioned strip of fabric to apply external pressure

(see also spiral wrapping)

wrapped ply hose

hose in which a reinforcement of woven fabric is wrapped in layers

wrapper marks

impressions left on the surface of a hose by a material used during vulcanization; usually shows characteristics of a woven pattern and wrapper edge marks

(see also cloth marked finish)

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