

EUROCODE 3: DESIGN OF STEEL STRUCTURES
Part 4-1: Silos
Estonian National Annex

Eurokoodeks 3: Teraskonstruksioonide
projekteerimine
Osa 4-1: Puistemahutid
Eesti standardi rahvuslik lisa

NATIONAL FOREWORD

This document is

- the Estonian National Annex to the European Standard EN 1993-4-1:2007 and its Amendment EN 1993-4-1:2007/A1:2017. It includes Estonian Nationally Determined Parameters (NDP) and procedures and it must be used together with EN 1993-4-1 for structural design of buildings and civil engineering works built in Estonia;
- endorsed with a notification published in the January 2018 issue of the official bulletin of the Estonian Centre for Standardisation.

The proposition to prepare a National Annex was made by the technical committee EVS/TC 13 „Design of building structures“, it was coordinated by the Estonian Centre for Standardisation.

The National Annex was prepared by Ivar Talvik, this document has been approved by EVS/TC 13.

In some clauses notes with Nationally Determined Parameters have been added and designated with Estonian country code EE.

Some of the elements of this document or some of the solutions described in this document may be the subject of patent rights. EVS shall not be held responsible for identifying any or all such patent rights.

Feedback about the content of the standard can be given by using the feedback form on the home page of the Estonian Centre for Standardisation or by e-mail standardiosakond@evs.ee.

ICS 65.040.20; 91.010.30; 91.080.13

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronical or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact the Estonian Centre for Standardisation:

Homepage www.evs.ee; phone 605 5050; e-mail info@evs.ee

CONTENTS

Annex NA (informative) National Annex of Estonia	5
NA.2.2 Reliability differentiation.....	5
NA.2.9.2.2 Partial factors for resistances	6
NA.3.4 Special alloy steels	6
NA.4.1.4 Allowance for corrosion and abrasion	6
NA.4.2.2.3 Consequence Class 2	7
NA.4.3.1 Modelling of the structural box	7
NA.5.3.2.3 Plastic limit state	7
NA.5.3.2.4 Buckling under axial compression	8
NA.5.3.2.5 Buckling under external pressure, internal partial vacuum and wind	9
NA.5.3.2.6 Membrane shear	10
NA.5.3.2.8 Fatigue, LS4.....	10
NA.5.3.3.3 Buckling under axial compression	10
NA.5.3.3.5 Membrane shear	11
NA.5.3.4.3.2 Unstiffened wall	11
NA.5.3.4.3.3 Stiffened wall treated as an orthotropic shell	11
NA.5.3.4.3.4 Stiffened wall treated as carrying axial compression only in the stiffeners	12
NA.5.3.4.5 Buckling under external pressure, partial vacuum or wind	13
NA.5.4.4 Discretely supported cylindrical shell	13
NA.5.4.7 Anchorage at the base of a silo	14
NA.5.5.2 Rectangular openings	15
NA.5.6.2 Deflections	15
NA.6.1.2 Hopper wall design	15
NA.6.3.2.3 Rupture at the transition junction	16
NA.6.3.2.7 Buckling in hoppers	16
NA.7.3.1 Shell or unsupported roofs	17
NA.8.3.3 Resistance to in-plane buckling	17
NA.8.4.1 Uniformly supported transition junctions	17
NA.8.4.2 Transition junction ring girder	17
NA.8.5.3 Base ring	18
NA.9.5.1 Forces in internal ties due to solids pressure on them	18
NA.9.5.2 Modelling of ties	19
NA.9.8.2 Deflections	19
NA.A.2 Action effect assessment	19
NA.A.3.2.1 Plastic limit state	20

NA.A.3.2.2	Axial compression.....	20
NA.A.3.2.3	External pressure, internal partial vacuum and wind	20
NA.A.3.3	Conical welded hoppers	20
NA.A.3.4	Transition junction	22