ECCS TC7 TWG 7.9
Sandwich Panels and Related Structures

European Recommendations on the Stabilization of Steel Structures by Sandwich Panels

1st Edition, 2014

European Recommendations on the Stabilization of Steel Structures by Sandwich Panels

Nº135, 1st Edition, 2014

Published by:
ECCS – European Convention for Constructional Steelwork
publications@steelconstruct.com
www.steelconstruct.com

ISBN: 978-92-9147-118-8

Printed in Multicomp Lda, Mem martins Portugal

Photo cover credits Thomas Misiek

Legal deposit

PREFACE

This document gives information about the use of self-supporting sandwich panels as stabilizing elements for single steel members such as beams or columns. The document extends the application range of sandwich panels to construction class II according to EN 1993-1-3.

Sandwich panels provide stiffness against displacements in the plane of the panels and against rotation about the transverse axis of the panels. Thus, the sandwich panels may support the steel members against flexural, torsional and lateral buckling. The effect of stabilization mainly depends on the properties, location and number of fastenings installed between the individual sandwich panels and between the sandwich panels and the supporting structures. This document introduces the evaluation of rotational stiffness and shear stiffness provided by individual sandwich panels that are installed in a wall or roof of a building. In these Recommendations, the use of information is limited in order to stabilize only single structural members.

The European standard EN 14509 covers the manufacture and design of industrially made self-supporting structural sandwich panels. The use of sandwich panels as stabilizing elements such as introduced in these Recommendations extends the application area outside the scope of EN 14509. Therefore, the extended application area introduced in these Recommendations shall be regulated nationally. The sandwich panels used as stabilizing elements have to fulfil the requirements shown by the CE mark of the product.

A brief review on earlier guidelines and reports concerning the use of profiled sheeting and sandwich panels as stabilizing elements provides useful background information.

According to the knowledge of today, the sandwich panels shall be used as stiffening elements only in cases, in which the load predominantly consists of quasi-static loads, such as self-weight, snow and wind load. Repeated loads, e.g. loads caused by earthquake, are not covered by the Recommendations. Research work and further practical experience may result in new products and new ways to fasten the panels to the supporting structure in order to make stiffening technically and economically even more effective.

This document has been prepared by the European Joint Committee on Sandwich Constructions consisting of ECCS Technical Working Group TWG 7.9 and CIB Working Commission W056. The document was approved by the Technical Committee TC7. The final draft was circulated for comments to ECCS TC7.

The following individual members of ECCS TWG 7.9 and CIB W56 took part in the drafting of this document:

R. Aroch	Slovakia	External Contributor
A. Belica	Luxembourg	External Contributor
K. Berner	Germany	Full Member
S. Charton	France	Full Member
N. Comas	Spain	Corresponding Member
J.M. Davies	United Kingdom	Full Member
M. Dürr	Switzerland	External Contributor
P. Hassinen	Finland	Chairman
S. Heikkilä	Finland	Corresponding Member
A. Helenius	Finland	Corresponding Member
L. Heselius	Finland	Full Member
D. Izabel	France	Full Member
K. Kathage	Germany	Full Member
S. Käpplein	Germany	Corresponding Member
J. Lange	Germany	Full Member
P. Leach	United Kingdom	Corresponding Member
T. Misiek	Germany	Full Member
Y. Mokrani	France	Corresponding Member
J.-C. Mäki	Sweden	Corresponding Member
B. Naujoks	Germany	Full Member
U. Pfaff	Germany	Corresponding Member
L. Pfeiffer	Germany	Corresponding Member
R. Podleschny	Germany	Full Member
K. Roberts	United Kingdom	Corresponding Member
D. Ruff	Germany	Full Member
H. Saal	Germany	Full Member
J. Schedin	Belgium	Corresponding Member
A. Tillonen	Switzerland	Corresponding Member
D. Zupancic	Slovenia	Full Member

CONTENTS