

TECHNICAL REPORT

ISO/TR
10688

First edition
2015-11-15

Paper, board and pulps — Basic terms and equations for optical properties

*Papiers, cartons et pâtes — Équations et termes de base pour
propriétés optiques*



Reference number
ISO/TR 10688:2015(E)

© ISO 2015



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Terms and definitions	1
2.1 Brightness	1
3 Calculations	9
3.1 Colour appearance, tristimulus values	9
3.2 Reflectance factor, Y-value, opacity, transmittance	13
3.2.1 Reflectance factor, R	13
3.2.2 Luminous reflectance factor, R_y	13
3.2.3 Y-value ($C/2^\circ$)	14
3.2.4 Opacity	14
3.2.5 Transmittance from luminous reflectance factor measurements	14
3.3 Brightness	14
3.4 Light-scattering and light-absorption coefficients	15
3.4.1 Conditions for the Kubelka-Munk theory	15
3.4.2 Calculations of s and k	16
3.5 Chromaticity coordinates	17
3.6 Dominant wavelength	18
3.7 CIELAB colour space coordinates	18
3.8 Colour differences in CIELAB colour space	20
3.9 CIE-whiteness and Tint	21
3.9.1 CIE tint	21
3.9.2 CIE-whiteness, W	21
3.10 Fluorescence component	22
3.11 Metamerism index	23
3.12 yellowness index	23
Bibliography	24