

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Pressboard and presspaper for electrical purposes –
Part 3: Specifications for individual materials – Sheet 2: Requirements for
presspaper, types P.2.1, P.4.1, P.4.2, P.4.3 and P.6.1**

**Carton comprimé et papier comprimé à usages électriques –
Partie 3: Spécifications pour matériaux particuliers – Feuille 2: Exigences pour
papier comprimé, types P.2.1, P.4.1, P.4.2, P.4.3 et P.6.1**



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CODE PRIX



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PRESSBOARD AND PRESSPAPER
FOR ELECTRICAL PURPOSES –****Part 3: Specifications for individual materials –
Sheet 2: Requirements for presspaper,
types P.2.1, P.4.1, P.4.2, P.4.3 and P.6.1**

FOREWORD

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International Standard IEC 60641-3-2 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

This second edition cancels and replaces the first edition published in 1992. This edition constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

- type P.6 has been replaced with a new type, but the designation has been kept;
- type P.7 has been deleted;
- the thickness relation of the properties has been simplified;
- the values were adjusted to today's needs of users.

This bilingual version, published in 2008-01, corresponds to the English version.

The text of this standard is based on the following documents:

CDV	Report on voting
15/353/CDV	15/389/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 60641 series, under the general title *Pressboard and presspaper for electrical purposes*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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PRESSBOARD AND PRESSPAPER FOR ELECTRICAL PURPOSES –

Part 3: Specifications for individual materials – Sheet 2: Requirements for presspaper, types P.2.1, P.4.1, P.4.2, P.4.3 and P.6.1

1 Scope

This part of IEC 60641 gives the requirements for presspaper for electrical purposes comprised of 100 % sulphate wood pulp, 100 % cotton or a mixture of sulphate wood pulp and cotton.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60641-1, *Pressboard and presspaper for electrical purposes – Part 1: Definitions and general requirements*

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IEC 60641-2:2004, *Pressboard and presspaper for electrical purposes – Part 2: Methods of test*

[IEC 60641-3-2:2007](https://standards.iteh.ai/catalog/standards/sist/473fccc1-05c1-4576-8dec-58bb85c947b2/iec-60641-3-2-2007)

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3 Designation (according to IEC 60641-1)

Type	Composition	Description	Table
P.2.1	100 % sulphate wood pulp	Presspaper of high density and high chemical purity.	1
P.4.1	100 % sulphate wood pulp	Presspaper of high chemical purity and high oil absorption.	1
P.4.2	100 % cotton		
P.4.3	Mixture of sulphate wood pulp and cotton		
P.6.1	100 % sulphate wood pulp	Presspaper of low porosity for dry type application.	1

NOTE Technical specifications where higher elongation is required are found under column B of P.2.1, P.4.1 and P.6.1.

4 Requirements

The material shall conform to the general requirements as given in IEC 60641-1 and to the specific requirements of the appropriate type given in Table 1 of this sheet.

Table 1 – Requirements for presspaper

Property	IEC 60641-2 Clause or subclause	Unit	Min. / Max. or range	P.2 presspaper of high density and high chemical purity		P.4 soft porous presspaper of high chemical purity and high oil absorption				P.6 presspaper of low porosity for dry type application	
				P.2.1 A 100 % sulphate wood pulp	P.2.1 B 100 % sulphate wood pulp	P.4.1 A 100 % sulphate wood pulp	P.4.1 B 100 % sulphate wood pulp	P.4.2 100 % cotton	P.4.3 Mixture of sulphate wood pulp and cotton	P.6.1 A 100 % sulphate wood pulp	P.6.1 B 100 % sulphate wood pulp
Thickness Deviation from nominal	5	%	Max.	±10	±10	±10	±10	±10	±10	±10	±10
Apparent density	6	g/cm ³	Range	1,2 - 1,3	1,2 - 1,3	1,0 - 1,2	0,95 - 1,15	1,0 - 1,2	0,95 - 1,15	1,0 - 1,2	1,1 - 1,25
Tensile strength unfolded Machine direction ≤0,2 mm >0,2 mm Cross machine direction ≤0,2 mm >0,2 mm	7	MPa	Min.	80 85 45 50	80 85 45 50	75 80 35 40	70 75 35 40	60 65 25 30	65 70 30 35	75 80 45 50	80 85 45 50
Tensile strength folded Machine direction ≤0,2 mm >0,2 mm Cross machine direction ≤0,2 mm >0,2 mm	7	MPa	Min.	60 65 40 45	60 65 40 45	55 60 30 35	50 55 30 35	45 50 25 30	50 55 30 35	55 60 40 45	60 65 40 45
Elongation unfolded Machine direction ≤0,2 mm >0,2 mm Cross machine direction ≤0,2 mm >0,2 mm	7	%	Min.	1 1,5 4 5	4 4,5 9 10	1,5 2 6 7	3 3,5 9 10	2 2,5 6 7	2 2,5 6 7	3 3 8 8	3,5 3,5 9 9
Elongation folded Machine direction ≤0,2 mm >0,2 mm Cross machine direction ≤0,2 mm >0,2 mm	7	%	Min.	1 1,5 3 4	2,5 3,5 8 9	1 1,5 6 7	2 2,5 7 8	1,5 2 6 7	1,5 2 6 7	1,5 2,5 5 6	2,5 3,5 7 8

Property	IEC 60641-2 Clause or subclause	Unit	Min. / Max. or range	P.2 presspaper of high density and high chemical purity		P.4 soft porous presspaper of high chemical purity and high oil absorption				P.6 presspaper of low porosity for dry type application			
				P.2.1 A 100 % sulphate wood pulp	P.2.1 B 100 % sulphate wood pulp	P.4.1 A 100 % sulphate wood pulp	P.4.1 B 100 % sulphate wood pulp	P.4.2 100 % cotton	P.4.3 Mixture of sulphate wood pulp and cotton	P.6.1 A 100 % sulphate wood pulp	P.6.1 B 100 % sulphate wood pulp		
Shrinkage Machine direction Cross machine direction Thickness	11	%	Max.	1	1	1	1	1	1	1	1		
				1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	
Plybond resistance	12	N/30 mm	Min.	200	200	200	200	200	200	200	200		
Moisture content	13	%	Max.	8	8	8	8	8	8	8	8		
Ash content	14	%	Max.	1	1	1	1	1	1	1	1		
Conductivity of aqueous extract	15	mS/m	Max.	8	8	8	8	8	8	8	20		
pH of aqueous extract	16		Range	6 - 9	6 - 9	6 - 9	6 - 9	6 - 9	6 - 9	6 - 9	6 - 9		
Oil absorption	17	%	Min.	6	6	10	12	10	9	-	-		
Electric strength in air unfolded ≤0,2 mm >0,2 mm in air folded ≤0,2 mm >0,2 mm in oil ≤0,2 mm >0,2 mm	20	kV/mm	Min.	10	10	9	9	10	9	10	10	10	
				11	11	10	10	11	11	11	11	11	
				7	7	6	6	7	7	7	7	7	7
				8	8	7	7	8	8	8	8	8	8
				50	50	60	60	75	70	-	-		
				50	50	60	60	75	70	-	-		

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