ABB MEASUREMENT & ANALYTICS | SUPPLEMENTARY INFORMATION

List of Dielectric Constants
Level Measurement

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Measurement made easy

Introduction

Definition of dielectric constant
Dielectric constant is defined as the ratio of the electric permeability of the substance to the electric permeability of free space (i.e., vacuum). The dielectric constant expresses the extent to which a material can hold electric flux in it.

Dielectric constant value
The value of the dielectric constant is crucial in building various electronic components. It depends on various factors such as:

- Frequency
- Applied voltage
- Temperature
- Humidity and moisture
- Heating effect
- Structure and morphology of the material
- Deterioration and weathering of the material

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List of Dielectric Constants

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Substance	Dielectric Constant
A	
Acetal	3,8
Acetaldehyde	15,0
Acetamide	59,2
Acetic acid	6,2
Acetoacetic acid ethyl ester	15,0
Acetone	21,5
Acetophenone	18,0
Acetyl bromide	16,2
Acetyl chloride	15,9
Acetylacetone	23,0
Acetylene dibromide	7,2
Acetylene tetrabromide	5,6
Aconite acid ester	6,3
Activated carbon	12,0
Adipic Acid	1,8
Aerosile	1,0
Aether	4,0
Allyl alcohol	20,6
Allyl chloride	8,2
Allyl iodide	6,1
Alum	4,2
Aluminium bromide	3,4
Aluminium foil	10,8
Aluminium hydroxide	2,5
Aluminium splinters	7,3
Aluminium sulfate	2,6
Ammonia	15,0
Ammonia salt	4,3
Ammonia solution (25%)	31,6
Amyl amine	4,5
Aniline	7,0
Animal feed grist	2,4
Anisealdehyde	22,3
Anisole	4,5
Anthracite/hard coal	3,2
Antimony hydride	1,8
Argon	1,5
Arsine	2,1
Arsole	2,3
Asbestos	10,0
Ascorbic acid (vitamin C)	2,1
Azelaic acid diethylester	5,0
Azoxybenzene	5,2

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Substance	Dielectric Constant
B	
Basalt	2,5
Bauxite	2,5
Beer brew	25,0
Beets cuttings	7,3
Beets seeds	3,5
Bentonite	8,1
Benzal chloride	6,9
Benzaldehyd	17,6
Benzene	2,3
Benzene, heavy	3,2
Benzil (80°C)	10,0
Benzine	2,0
Benzyl alcohol	13,5
Benzyl chloride	7,0
Benzyl^amine	4,6
Bitumen	2,8
Black liquor	32,0
Bone fat	2,7
Bonemeal	1,7
Bore oil emulsion	25,0
Bornylacetat	4,6
Bromine	3,1
Butanoic acid	3,0
C	
Cacao beans	1,8
Calcium fluoride	2,5
Camphene	2,3
Caproic acid	2,6
Caprylic acid	2,5
Carbazole	1,3
Carbon black	18,8
Carbon disulphide	2,6
Carbon tetrachloride	2,3
Carbonylcyanid	10,7
Caustic potash	3,3
Cellit	1,6
Cellulose	1,2
Cement	2,2
Cement asbestos	3,2
Ceramic compound	17,0
Cetyl alcohol (60°C)	3,6
Chaff	1,5
Chalk	2,1

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Substance	Dielectric Constant
C	
Chamotte	1,8
Charcoal	1,3
Chloorhydrin	31,0
Chlor benzene	5,7
Chlor, fluid	2,1
Chloral	6,7
Chlorinated lime	2,3
Chloroacetic acid	33,4
Chloroform (trichlormethane)	4,8
Chocolate powder	2,0
Clay	2,3
Coal dust	2,5
Coal, 15 % moisture	4,0
Coconut oil (refined)	2,9
Coffee beans	1,5
Coke	3,0
Cola essence	17,3
Concentrated feed	3,2
Copper ore	5,6
Cork powder	1,7
Corn	3,6
Corn grist	2,1
Corn starch sirup	18,4
Cotton fibre flour	3,2
Cream (skin)	19,0
Cresol	11,0
Cresol resin	18,3
Crystal sugar	2,0
Cullet	2,0
Cuminaldehyde	10,7
Cyanogen	2,5
D	
Decalin	2,1
Degalan	3,1
Desmodur	10,0
Diacetone alcohol	18,2
Diamylether	3,0
Diatomaceous earth	1,4
Dibenzofuran (100°C)	3,0
Dibenzyl (60°C)	2,5
Diesel Fuel	2,1
Diethyl carbonate	2,8
Diethylamine	3,8

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D	
Dimethylether (methyl ether)	5,0
Diofan	32,0
Dioxane	2,0
Diphenyl	2,5
Dry yeast	2,0
E	
Emulphor	4,0
Epichlorhydrin	23,0
Ethanol (ethyl alkohol)	16,2
Ethayl acetate	6,0
Ethyl benzene	2,4
Ethyl benzoate	6,0
Ethyl mercaptan	6,9
Ethylamine	6,9
Ethylene chlorhydrin	25,0
Ethylene chloride	10,6
Ethylenediamine	15,0
Etylene oxide	13,9
F	
Fat coal——	3,4
Fatty acid	1,7
Fenchone	12,8
Ferrite pellets	21,0
Ferrosilicon	10,0
Ferrozell	18,3
Fertiliser	4,3
Fiber glass powder	1,1
Fish oil	2,6
Flax pellets	1,4
Flour	2,5
Fluorbenzene	6,4
Fluorine	1,5
Fly ash	3,3
Foam flakes	1,1
Formamide	109,0
Formic acid	57,9
Furan	3,0
Furfurol	41,7
G	
Gas	2,0
Germanium tetrachloride	2,4
Glass granulate	4,0
Glucose (50%)	30,0

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Substance	Dielectric Constant
G	
Glue	2,0
Glycerol	13,2
Glycerol water	37,0
Glycol	37,0
Glysantin	25,0
Grain grist	3,0
Grain of mustard seed	3,6
Grain of soy	2,9
Granuform	4,0
Gravel	2,6
Green vitriol	32,4
Guaiacol	11,0
Guano	2,5
Gypsum	1,8
H	
Hazels	2,0
Heating oil	2,1
Heavy fuel oil	2,2
Helium	1,1
Heptanal	9,1
Heptane	1,9
Heptanoic acid	2,6
Heptene	2,1
Hexachlorobutadiene	2,6
Hexane	1,9
Hexanol	12,5
Hexene	2,1
Hibiscus	2,8
Honey	24,0
Hot glue	2,3
Hydrazine	58,0
Hydrochloric acid	5,0
Hydrogen	1,2
Hydrogen cyanide	158,0
Hydrogen Fluoride	83,6
Hydrogen iodide	2,9
Hydrogen peroxide	84,2
Hydrogen sulfide	6,0
I	
Ice cream	16,5
Imidazole, pure	23,0
Iodine	11,1
Iodobenzene	4,6

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Substance	Dielectric Constant
I	
Iron(III)oxide red	1,9
Isoamyl acetate	4,8
Isoamyl alcohol	15,6
Isoamyl bromide	6,0
Isoamyl chloride	6,1
Isoamyl ether	2,8
Isoamyl iodide	5,6
Isobutanoic acid	2,6
Isobutyl alcohol	18,1
Isobutyl amine	4,4
Isobutyl benzene	2,3
Isobutyl bromide	7,2
Isobutyl chloride	6,5
Isobutyl cyanide	18,0
Isobutyl iodide	6,5
Isobutyl nitrate	11,7
Isobutyl silane	2,5
Isocyanate	6,1
Isoprene	2,1
Isopropanol	18,0
Isoquinoline	10,7
Isosafrol	3,3
J	
K	
Ketchup	24,0
L	
Lanolin	4,2
Lard (80°C)	2,1
Latex	24,0
Laughing gas	1,5
Lauric acid ethyl ester	3,4
Lime	2,0
Linoleic acid	2,7
M	
Malic acid diethylester	10,0
Malt	2,7
Mandelic acid nitril	18,0
Marble stones small (2-3 mm)	2,5
Meat and bone meal	1,9
Meat and bone meal	2,2
Menthol	4,0
Mercury diethyl	2,1
Mesityl oxide	15,0

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Substance	Dielectric Constant
M	
Metal powder	6,0
Methanol (methyl alkohol)	33,0
Methyl acetate	8,0
Methyl cellulose	3,0
Methyl iodide	7,1
Methyl nitrate	23,5
Methylene bromide	7,0
Methylene chloride	9,0
Methylene chloride	9,1
Metylene iodide	5,3
Mice feed	2,3
Molasses	31,3
Mono chlormethane	9,8
Morpholine	7,3
Mustard	24,0
N	
Naphtalene	2,5
Naphthenic acid	2,6
Nitric acid (98%)	19,0
Nitro phoska	5,4
Nitro varnish	5,2
Nitrobenzene	35,0
Nitroethane	29,0
Nitroglycerin	19,3
Nitroglycol	28,3
Nitromethane	39,0
Nitrosyl bromide	15,2
Nitrosyl chloride	19,0
O	
Oat	4,9
Octane	2,0
Octene	2,1
Octyl bromide	5,0
Oil	2,0
Oleic acid	2,5
Oxalo ethyl acetate	6,0
Oxygen	1,5
P	
Palm nut/kernel/seed	2,8
Palm seed oil	1,8
Palm tree nut	2,2
Palmitic acid	2,3
Paper scraps	1,2

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Substance	Dielectric Constant
P	
Paraffin	1,6
Paraldehyde	15,1
Pasta	1,9
Peanuts, dried	3,1
Peatnut expeller	2,4
Pelargon	2,8
Penta borane	21,0
Penta chlortoluene	4,8
Penta ethyl chloride	3,8
Pentanal	11,8
Pentane	1,8
Pentanol	14,8
Pentene	2,0
Perchlorate	3,6
Perlite	1,7
PET powder	1,5
Phenetole	4,2
Phenol	8,0
Phenol resin	7,4
Phosgene	4,3
Phosphate	4,0
Phosphorus salt	4,0
Phosphorus, liquid	3,9
Pinane	2,1
Piperidine	5,8
Plastic pellets	1,2
Polyamide pellets	1,7
Polyethylene	1,2
Polypropylene	1,6
Polyrol	2,8
Polyvinyl acetals	2,8
Popcorn	1,1
Potash salt	2,0
Potato starch	1,7
Pril	1,2
Printing ink	4,6
Propanoic acid	3,2
Propanol (propyl alcohol)	2,2
Propionaldehyde	14,4
Propylamine	3,0
Propylene chloride	9,0
Propylene, liquid	1,9
Propylether	3,3

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Substance	Dielectric Constant
P	
PVC powder, pure	1,3
Pyridine	13,2
Pyrroles	8,0
Q	
Quartz stone meal	2,7
Quinoline	8,8
R	
Rapeseed	3,3
Rapeseed grist	2,1
Resin	1,5
Rice	3,0
Rock salt (0-25 mm)	4,3
Rye	6,0
Rye bran	2,2
S	
Saccharose solution	20,0
Salt water	32,0
Sawdust	1,3
Silica sand	2,0
Silicic acid	2,0
Silicone oil	2,7
Silicone rubber	2,9
Skim milk powder	2,3
Soap flakes	9,2
Soap pellets	3,5
Soda	3,0
Sodium chloride	23,0
Sodium methylate	1,5
Sodium perborate	2,2
Sodium peroxide	2,7
Sodium silicate	16,0
Sodium sulfate	2,7
Soft soap	32,0
Solvent	18,0
Soy flour	4,5
Splints	1,1
Stearic acid	2,3
Styrene	2,4
Sugar	1,8
Sulfur trioxide	3,1
Sulfuric acide	21,9
Sulfuric acide (17%)	31,0
Sulfuric acide (97%)	8,6

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Substance	Dielectric Constant
S	
Sulphur	3,5
Sulphur dioxide	14,0
Sunflower seeds	2,0
T	
Talcum	1,5
Tankage	1,9
Tar	4,0
Tartaric acid	35,9
Tea powder	2,0
Terephthalic acid	1,5
Terpinene	2,7
Terpinolene	2,3
Tetrachlorethylene	2,5
Thomaskali dust	3,4
Thujone (0°C)	10,8
Tinder	12,0
Titan tetrachloride	2,8
Tobacco dust	1,8
Toluene	2,4
Tooth paste	18,3
Transformer oil	2,1
Trichloroethylene	3,2
Triethylaluminium	2,9
Triptan	1,9
U	
Ultrasil	1,4
Undecan	2,0
Urea	2,9
V	
Valeric acid	2,7
Vinegar	24,0
Viscose	34,5
W	
Water	80,3
Water (360°C)	10,0
Water, demineralisiert	29,3
Water, heavy	78,3
Water-in-oil-emulsion	24,2
Wax	1,8
Wheat	4,0
Wheat starch	2,5
White spirit	2,0
Wine	25,0

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Substance	Dielectric Constant
W	
Wood chips	2,3
Wood swarf	1,5
X	
Xylene	2,3
Xylitol	40,0
Y	
Z	
Zinc oxide	1,5
Zinc powder	4,4

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