

Information-sheet to the Health and Safety points of FR2-Boards from company Roth Elektronik® GmbH

**Product name: phenolic cellulose paper, copperclad FR2
DIN IEC 249**

This information sheet give us some answers about most of the product informations out of the Health and Safety data sheets of the Baisc Material Producer. If you have any further questions please go directly to the Basic Material Producer.

All the used Basic Materials were correspond to the current DIN standards and are UL – listened. Roth Elektronik® put for all the producs Basic Materials of an equal standard from different Basic Material Producer.

Following you could find some Basic Material Producer:

Company	Producer of Basic Materials für Boards	
1	DOOSAN ELECTRO – MATERIALS Korea	http://www.isola.de
2	ISOLA AG D-52348 Düren / Germany	http://www.dse.co.kr
3	Matsushita Electric Works Deutschland GmbH Japan	http://www.matsushita.de

Item	Description
1. Chemical Ingredients:	Cured phenolic resin on cellulose paper, on one or on both sides cladde with copper foil
2. Dangerous ingredients:	None
3. Hazards identification:	None, if correctly handled no measures
4. First aid Measures:	In case of cut and scratch caused by the material wash the wound with water and soap. Desinfection is useful. If you are not sure please contact your local doctor for more informations.
5. Fire fighting measures:	Extinguishing media: all, please do not use water Extinguishing media which must not be use: all, please do not use water Hazard of decomposition products: Decomposition products may contain phenolic and formalin compounds Protective equipment: wear self-contained breathing apparatus in large fire

Item	Description										
6. Accidental Release Measures:	not applicable										
7. Handling and storage:	<p>Store on dry places</p> <p>Information for safety handling: Direct exhausting checking mechanical treatment. During manufacturing material at high temperature watch out of sufficient exhaust.</p> <p>Information for explosion- and fire protection: none special measures</p>										
8. Exposure Control and personal protection:	<p>Limits:</p> <table border="1"> <thead> <tr> <th>CAS-Number</th> <th>Substance</th> <th>List</th> <th>Exposure Limit</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td colspan="5">not applicable</td> </tr> </tbody> </table> <p>- Personal protection: during mechanical treatment we recommend this</p> <p>- Air protection: Exhaust systems</p> <p>- Hand protection: protective gloves, skin-protection-cream</p> <p>- Eye protection: wear protective goggles</p> <p>- Body protection: none</p> <p>- Industrial hygiene: Do not eat and drink at the working station. No handling with food. On mechanical treating use personal respirator. Assure good exhausting equipment on work station.</p>	CAS-Number	Substance	List	Exposure Limit	Unit	not applicable				
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not applicable											
9. Physical and chemical properties:	<p>Form: solid boards</p> <p>colour / smell: yellow - brown / none</p> <p>Change of condition:</p> <table border="1"> <tbody> <tr> <td>- Boiling Point:</td> <td>(C°)</td> <td>not applicable</td> </tr> <tr> <td>- Melting Point:</td> <td>(C°)</td> <td>not applicable</td> </tr> </tbody> </table> <p>Glas Transition Temperature: (C°) ca. 50°C (DSC-Method 20°C/min Heating Rate)</p> <p>Flash Point: (C°) not applicable</p> <p>Autoignition Temperature: (C°) not applicable</p> <p>Explosion Limits: (Vol.-%) lower, not fixed Staubexplosionsgefahr upper: not fixed</p> <p>Thermal Decomposition: (C°) at approx. 200°C Thermogravimetry (10°C/min Heating Rate)</p> <p>Vapour Pressure: (mbar) at 20°C not applicable</p> <p>Density: (g/cm³) at 20°C ca. 1,4 +/- 0,2</p> <p>Schüttdichte: (kg/m³) not applicable</p> <p>Viscosity: (mPa*s) not applicable</p> <p>Solubility in Water: insoluble</p>	- Boiling Point:	(C°)	not applicable	- Melting Point:	(C°)	not applicable				
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- Melting Point:	(C°)	not applicable									
10. Stability and Reactivity:	<p>Conditions to avoid: Formation of dust in the working area.</p> <p>Materials to avoid: strong oxidizing acids may destroy the material</p>										

Item	Description
11. Toxicological Information:	The dust occurring from cutting and drilling processes is principally not toxic. Beginners may have skin irritations, however, there is a quick accustoming. Exceptionally skin allergies; this persons should be employed elsewhere.
12. Ecological Information:	No data available
13. Disposal Considerations:	Normal Industrial waste in accordance with local regulations. This is only for the delivered Product, without any more technical handlings. Please recycle Copper.
14. Transport Information:	Road: no hazardous product Ship: no hazardous product Plane: no hazardous product
15. Regulatory Information:	EG-Guidlines: Risk Phrases: Not classified as hazardous Safety Phrases: Not classified as hazardous National Guidelines: Klassifizierung nach VbF: entfällt Technische Anleitung Luft: entfällt Wassergefährdungsklasse: nicht wassergefährdend
16. Other Information:	The above mentioned data correspond to our present state acknowledge and experience. The safety data served as description of our product in regard to necessary safety measures. They do not guarantee the described chemical properties. This information is supplied with the condition that the condition that that the person receiving it will make their own determination as it is suitability for their purpose prior to implementation.
17. Hole diameter	Standard tolerance (mm) +/- 0,1 The tolerances are valid for boards with mit nicht durchmetallisierten gebohrten or punched holes, and also for boards with metalisierten galvanisch verzinnnten, heißluftverzinnten, vernickelten oder vergoldeten Löchern.
18. Electrical Test	On some boards, in the delivery condition, there is a shimmer on the component pads from the stamp of the electrical test equipment. This has no effect about the quality of the board.
19. Solder Stop Mask	On some boards we use solder stop mask.
20. Handling Information:	Please avoid to touch the copper surface with bare hands, the surface will react therefore with a little colour change or with surface corrosion. Please avoid extreme bending of the boards..
21. Storage Information:	Please avoid direct isolation. Please store the boards not in the free air, put the boards into a dry and clean room. Strong environmental conditions may destroy the material.
22. International Standard	in accordance with In Accordance with the relevant international standards like F. Ex.: IPC-4101, EN60249-2-5/12, EN60065, UL94, IPC-MF-150F, UL 746, NemaLI-1