

ESSW & LKZ — Warning signs and Electric Symbols Labels

Technical Datasheet

TTDS-205 Revision 2 – February 2022

LKZ and ESSW's are popular pre-printed label families aimed at safety & warning and electric symbols identification . This group of label kits are permanent indicator labels. The labels are all made from a high quality flexible vinyl base material for tough performances. The labels are backed with a strong permanent acrylic adhesive. The label construction allows use in many applications.

These Warning and Electrical symbols conform with IEC160417 (Electrical Symbols) and ISO 7010-W012 (Warning Signs).

The sizes of the labels are detailed below with all part numbers listed.

Features

- Permanent acrylic adhesive
- Tough vinyl base material
- Flexible vinyl for irregular surfaces.
- Electric symbols comply with IEC 60417
- Warning signs comply with ISO 7010-W012
- Excellent resistance to industrial factors (dirt, stain and fluids)
- Good adhesion to low energy surfaces (e.g. Polypropylene)

Applications

- ESSW suitable for labelling electrical tools, equipment and installations
- LKZ used to identify copper-rails, electrical connections or operating resources
- Electrical Cabinets
- Voltage Warning
- 3 Phases and DC motor application
- Excellent identification through color coding and symbols.

Shelf Life

2 years when following good commercial storage practice detailed below.

Storage

Product should be stored in the original packaging, with any plastic covers which were included during shipping. Store out of direct sunlight in a clean, dry, dust free, environment.

Product should be stored at approximately 21°C (70°F) and 50% relative humidity.

Temperature Rating

- Operating Temperature Range
-40 to +110°C (-40°F to +230°F)
- Minimum Application Temperature 10°C (50°F)

Design for Environment

- Does not contain any declarable or prohibited substances from the UNIFE Railway Industry Substances List
- Further information and a downloadable declaration covering RoHS and REACH compliance can be found at the TE Product Compliance Support Centre:

<http://www.te.com/usa-en/utilities/product-compliance.html>



Typical Label Thickness

- Label (including adhesive): 0.104 mm / 0.0041 inch
- Liner: 0.188 mm / 0.007 inch

Technical Performance

	Requirement	Results	
Print Permanence			
Marking of Electrical Insulating Materials, SAE AS 4952	Legible after 50 rubs 1kg weight with an eraser	Pass	
Resistance to Solvents, MIL STD 202 Method 215	Legible after 30 wipes	Pass	
Fluid Exposure		Adhesive/color	Printed legend
• Isopropyl alcohol	Labels to remain on test plate, legible / SAE AS 5942 (TE doc 109 -121012) and no change in pre-printed color Samples stuck to Aluminium plates. 24 hours immersion 23°C (73°F) followed by 20 rubs	Pass	Pass
• IRM 902 reference oil		Pass	Pass
• MIL PRF 23699 Oil		Pass	Pass
• MIL H 83282 Oil		Pass	Pass
• Diesel Fuel		Pass	Pass
• Kilfrost DF Plus de-icer		Pass	Pass
• Tap water		Pass	Pass
• 5% Salt solution		Pass	Pass
• Detergent (1% solution)		Pass	Pass
Adhesion to FTM1 (180°)		Typical Peel force (N/25mm (oz/in.))	
Test surface:	FTM1 (180°)	20min Dwell	72hr Dwell
• Stainless steel		11 (40)	12 (42)
• Glass		15 (54)	20 (73)
• Aluminium		12 (42)	15 (54)
• Polypropylene		8.0 (31)	10 (38)
• Epoxy painted surface		12 (42)	34 (124)
Flammability			
Average Burn time, ASTM D1000	Burn time less than 10 seconds	Pass, typical burn time 5 seconds	
Burn Rate to FMVSS 302	Maximum burn rate 102mm/min	Pass	
Thermal performance			
Heat Aging	Labels to remain on plate, no discoloration and legible after 168hr at 100±2°C	Pass, samples remain legible and no damage to label	
Thermal Cycling	Labels to remain on plate and legible after 10 cycles of 1hr @ -50°C then 1hr @ 90°C followed by 100rubs	Pass, samples remain legible and no damage to label	

Where possible, TE have tested product as a finished item, including the print. Operational tests are followed by an assessment of mark adherence to validate fit form and function.

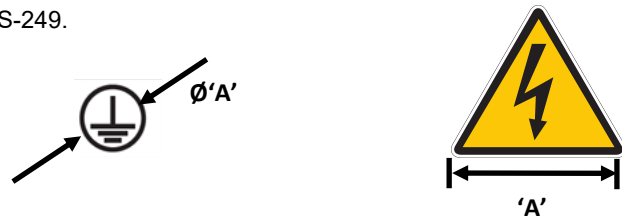
ESSW & LKZ LABEL KITS

The ESSW & LKZ label kits are supplied in hand pocket size booklets which can be easily stored or hung above a work station.



Part Number	Part Description	No. of labels per Kit	Label symbols	Label Quantity & description	Label dimensions 'A'	
					mm	in
2403900-1	WARNING25-LABEL-BK-150	150		150 x voltage warning	25	0.984
2404000-1	WARNING50-LABEL-BK-150	150		150 x voltage warning	50	1.969
2404100-1	3PHASES-LABEL-BK-300	300		60 x L1 / L2 / L3 / N / Ground	Ø 12.5	Ø 0.492
2404200-1	DC-LABEL-BK-300	300		100 x "+" / "-" / "ground"	Ø 12.5	Ø 0.492

Details of other kits for calibration labels can be found in TTDS-249.



Note: All label pictures are illustrative only and not an exact representation



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