Energy Division

Raychem insulation sheets HVIS
Voltage class 36 kV, Max. busbar width 150 mm

Product description
Raychem adhesive coated, heat-shrinkable sheet HVIS provides insulation enhancement and protection against accidentally induced discharge. When heated the Raychem sheet HVIS shrinks in two directions to tightly conform to complex shapes. Raychem void-filling mastic S1061, can be added to ensure that even protruding shapes are insulated. Raychem sealing mastic, S1085, can also be applied to provide an environmentally sealed connection. The sheet can be cut to size on site and loosely secured in place with clamps and brackets. The clamps and brackets can be ordered separately as kits Raychem HVIS-TOOLS-xx. Once installed, the clamps and brackets can be removed and re-used. Raychem sheet HVIS will provide flashover protection up to 17.5 kV or up to 25 kV if the void-filling mastic is applied underneath the sheet or up to 36 kV if a double layer of HVIS is used. Re-usable joint covers can also be made to allow access or maintenance when required.

Applications
Raychem sheet HVIS will cover almost any size or shape of busbar joint, making it ideal for insulating busbar tees, elbows and other connections where tubing and tape cannot be used.

Features/benefits
- Compatible with all other products in the Raychem MV insulation enhancement system
- Easy to install on site using a gas torch or hot air device
- Manufactured from a non-halogen based material, noxious and corrosive effects are greatly reduced in the event of a fire
- Excellent anti-tracking properties
- Excellent UV and weather resistant properties make HVIS suitable for indoor or outdoor use
- Can be stored indefinitely at temperatures up to 50 °C without loss of performance

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Raychem medium voltage insulation sheets HVIS

Clearance reduction
The tables indicate the clearance reductions which are possible using Raychem sheet HVIS. These are derived from BIL, AC withstand, DC withstand and discharge extinction tests. These clearances should not be adopted without testing by the user. Sharp electrodes and unusual geometries may require wider clearances.

Round busbars

Rated voltage (kV)	Phase–phase (mm)	Phase–ground (mm)	IEC 71-2 air clearance (mm)
12	55	65	120
17.5	70	85	160
24	95	125	220
36	150	205	320

Rectangular busbars

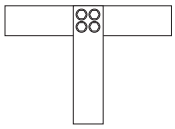
Rated voltage (kV)	Phase–phase (mm)	Phase–ground (mm)	IEC 71-2 air clearance (mm)
12	65	75	120
17.5	85	104	160
24	115	150	220
36	200	285	320

Key product specifications	Test method	Requirement
Dielectric strength	ASTM D149, IEC 243	130 kV/cm min. @ 2 mm
Accelerated ageing - Tensile strength - Ultimate elongation	ISO 188, ASTM D2671	168 hrs @ 120 °C 10 MPa min. 300% min.
Low temperature flexibility	ASTM D2671 Procedure C	No cracking after 4 hrs @ -40 °C
Comparative tracking index	VDE 0303/1	KA 3c
Smoke index	NES 711	Less than 50
Acid gas generation	Raychem PPS 3010 4.23	Less than 2% by weight
Resistance to transformer oil - Tensile strength - Ultimate elongation	VDE 0370	168 hrs @ 23 °C 7.5 MPa min. 300% min.

Note: For further product specification information see Raychem PPS 3010/25. The above information refers to backing material only, for adhesive requirements see PPS 3012/43. For void-filling mastic S1061 requirements see PPS 3012/13, for sealing mastic S1085 requirements see PPS 3012/3.

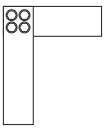
Product selection
For rectangular busbars max. thickness 15 mm

T-connection



Busbar width (mm)	Cut size needed (mm)	No. of installations per HVIS-05 sheet	HVIS-10 rolls
25	275 x 225	4	88
50	325 x 250	4	80
75	400 x 275	2	50
100	450 x 325	2	44
150	550 x 425	1	23

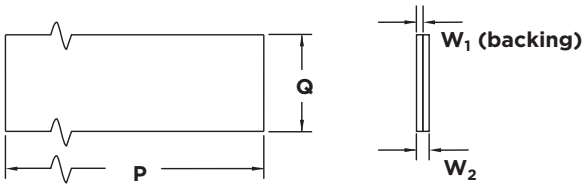
Flat elbow connection



Busbar width (mm)	Cut size needed (mm)	No. of installations per HVIS-05 sheet	HVIS-10 rolls
25	275 x 175	4	114
50	325 x 225	4	88
75	400 x 250	2	52
100	450 x 275	2	44
150	550 x 325	1	30

Note: These tables should be used as a guideline only. Please experiment with one or two joints before adopting final cut size. The busbars are assumed to be insulated to 25 mm from the joint. Cut size should extend a minimum of 100 mm on each leg of the joint before shrinking and should overlap existing insulation by 65 mm after shrinking.

Ordering information



Ordering description	Dimensions P a (m) nom.	Q a nom.	W_1 b min.	W_2 a min.	UOM
HVIS-05	0.5	660	1.5	2.4	sheet
HVIS-10	10.0	660	1.5	2.4	roll
S1061-8-300	0.3	60	-	-	piece
S1085-1-300	0.3	20	-	-	piece
HVIS-TOOLS-01	(basic clamp and bracket kit)				kit
HVIS-TOOLS-02	(extended clamp and bracket kit)				kit

Note: Dimensions in mm unless otherwise stated. a = as supplied b = after free recovery. Longitudinal and transverse change after free recovery: -25 % ±10%. Installation instructions EPP 0623 5/96 and Material Safety Data Sheet are available on request. When required, typically one piece of sealing mastic, S1085, is applied on each leg of the joint and one or two pieces of void-filling mastic, S1061, used to cover uneven shapes.

Technical reports UVR 8114 – Qualification report for HVIS

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