

**Durable
waterproofing
ensures safety.**

Poland, May 2024



About us

- IAT GmbH - Waterproofing Specialist
 - Tunnel waterproofing
 - Roofing
 - Bituminous waterproofing
 - Landfills
 - Sprinkler tanks
 - Water storage ponds
 - Gardening and landscaping
- <https://i-a-t.at/en>

Your contacts for tunnel waterproofing



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About us

- IAT is a 100 % subsidiary of the PORR Group
- 60 years experience in international projects
- currently > 535 employees
- 97.500.000 € turnover in 2023
- central values: handshake quality, reliability, customer focus and acting in partnership
- excellent customer satisfaction through adherence to deadlines, flexibility and durability of waterproofing systems



Locations



IAT PL



IAT UK



IAT DE



Oö



Amstetten



Vienna
Headquarters



Vbg



Tirol



Sbg



Ktn



IAT RO



IAT CH

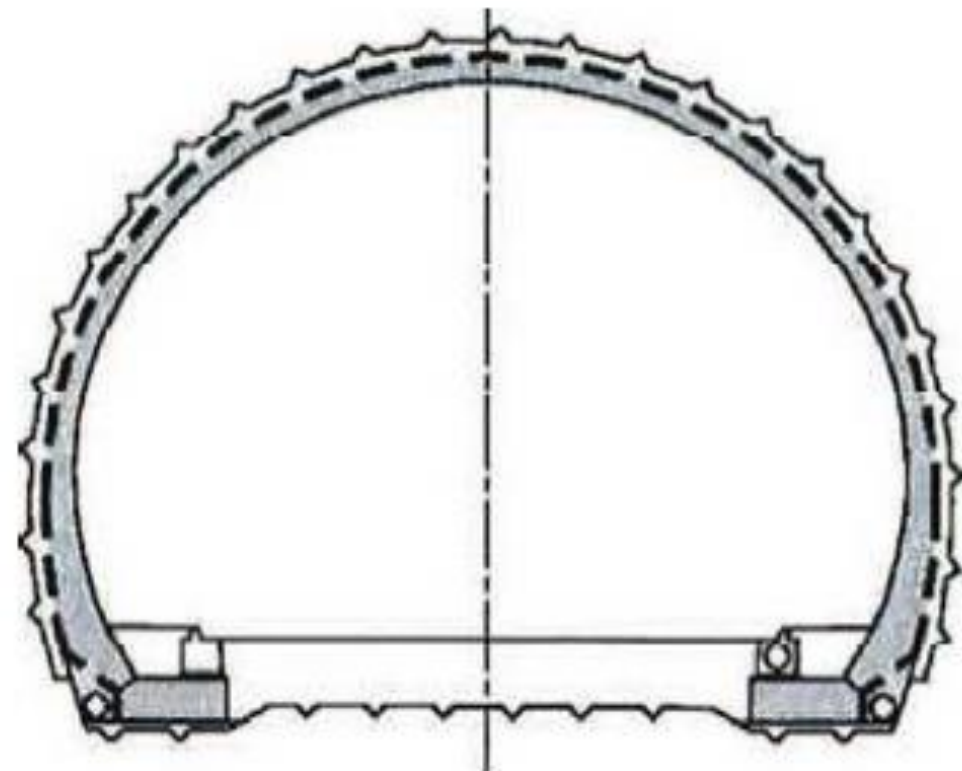


IAT Tunnel waterproofing

OBV Guideline Tunnel Waterproofing

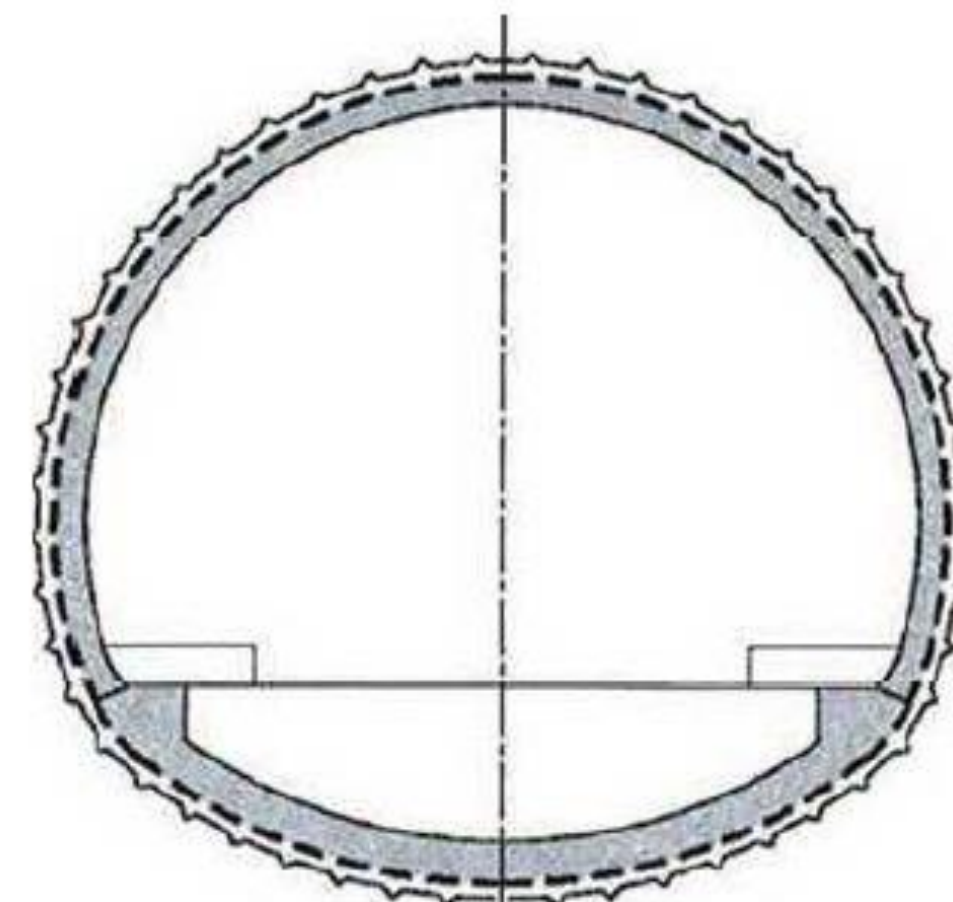
- Waterproofing geometry:
 - Cross section without water pressure - Umbrella waterproofing
 - Cross section with water pressure - All round waterproofing

Cross-section without water pressure



With rain shield waterproofing

Cross-section with water pressure



With all-round waterproofing

IAT Tunnel waterproofing

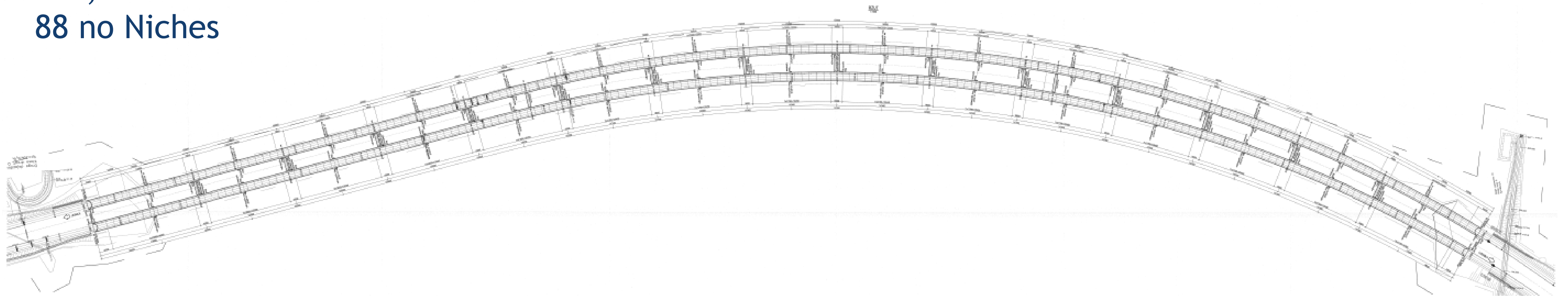
- IAT has applied the following waterproofing systems throughout the world:
 - umbrella waterproofing
 - full round waterproofing
- depending on the project's requirements those consist of:
 - layer or multiple layers of geotextile
 - waterproofing membrane (PVC, FPO, ..)
 - protection sheets
 - waterbars
 - compartmentation systems
 - re-injectable hoses
 - rebar fixing systems (BA-Anchors, etc.)



IAT Tunnel waterproofing

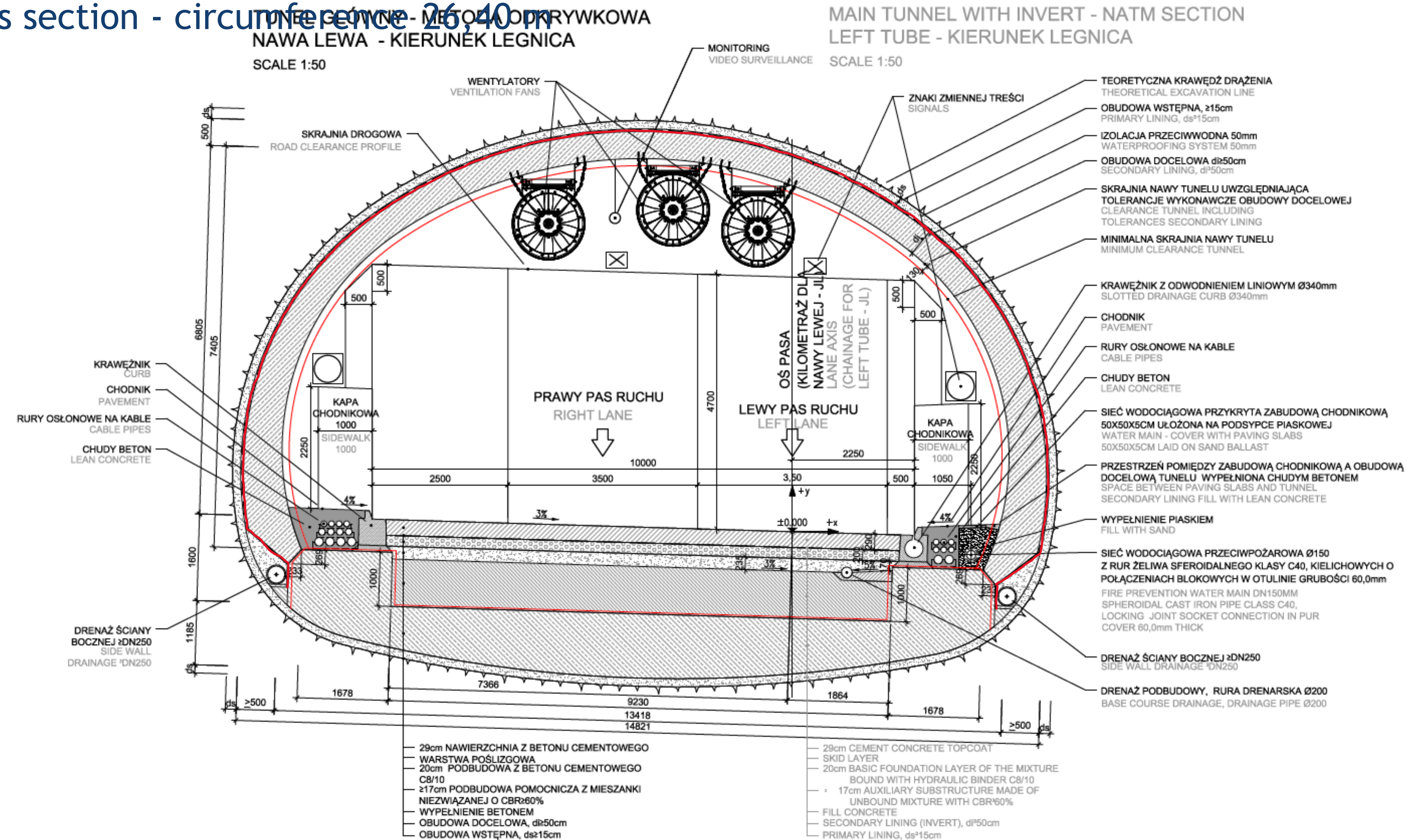
- Tunnel TS 26 - Bolków

2 tunnel tubes - 3 lanes each
8 Cross passages - Pedestrians
1 Cross Passages - Vehicels
4.424 m NATM tunnel
147,5 m Cut & Cover
88 no Niches



IAT Tunnel waterproofing

- Tunnel TS-26 -> Cross section - circumference 26,40m



IAT Tunnel waterproofing

- Tunnel TS-26
 - ~ 120.000 m² membrane NATM Tunnel
 - ~ 4.000 m² membrane C&C
 - ~ 9.300 m radial Joint strip
 - ~ 15.000 pcs Anchor mounting
 - Duration 11 month (05/22 - 03/23)



IAT Tunnel waterproofing

- Tunnel TS-26



IAT Tunnel waterproofing

- Tunnel TS-26



IAT Tunnel waterproofing

- Tunnel TS-26



IAT Tunnel waterproofing

- Tunnel TS-26



IAT Tunnel waterproofing

- Tunnel TS-26



IAT Tunnel waterproofing

- Tunnel TS-26 - OBW

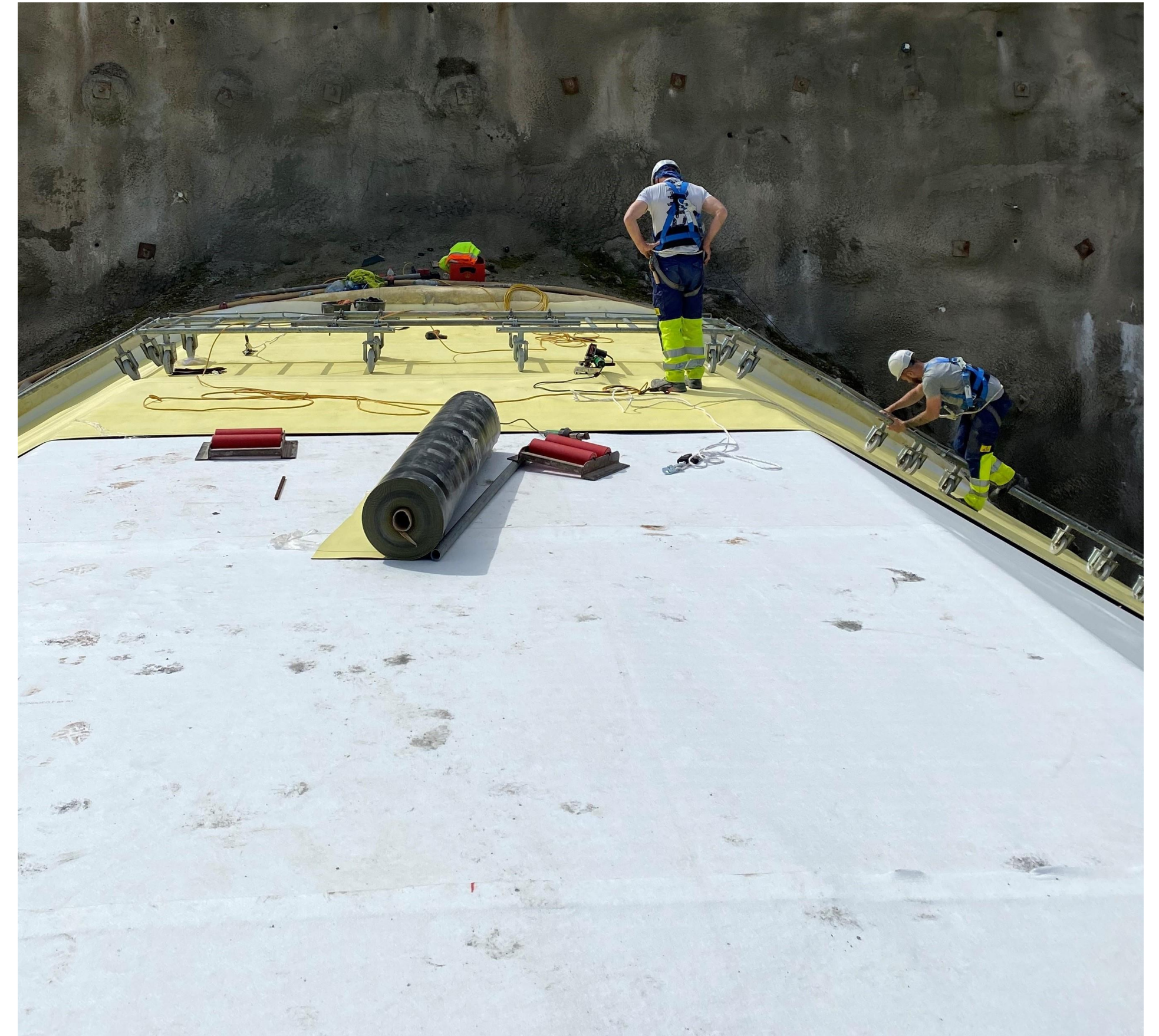


Table 4-6: Properties, test methods and requirements for flexible plastic sheet waterproofing membranes (KDB)

No.	Property	Test specification or regulation	Requirement for KDB made from ¹⁾	
			TPE-O, TPO	PVC-P
1	Product labelling and documents	ÖNORM EN 13491	Manufacturer, type, material, nominal thickness, production period on packaging: CE mark, CE accompanying document	
2	Appearance	ÖNORM EN 1850-2	Full surface bond of the signal layer with the base material, free from bubbles, cracks and entrapped air	
3	Straightness and flatness	ÖNORM EN 1848-2	g ≤ 50 mm p ≤ 10 mm	g ≤ 50 mm p ≤ 10 mm
4	Dicke			
4.1	Thickness with signal layer Nominal thickness ²⁾	ÖNORM EN 1849-2	≥ 2,0 bzw. ≥ 3,0 mm ≥ 2,1 bzw. ≥ 3,15 mm	≥ 2,0 bzw. ≥ 3,0 mm ≥ 2,1 bzw. ≥ 3,15 mm
4.2	Thickness of signal layer ³⁾		≤ 0,2 mm	≤ 0,2 mm
5	Composition			
5.1	Density	ÖNORM EN ISO 1183-1	Tolerance ≤ ± 0,005 g/cm ³	Tolerance ≤ ± 0,02 g/cm ³
5.2	DSC analysis and IR spectroscopy	ÖNORM EN ISO 11357-1, ISO 11357-3 and ASTM E 334	Determine diagram	Determine diagram
5.3	Melt mass-flow rate (MFR)	ÖNORM EN ISO 1133-1 (method A)	Permitted variation: Nominal value ≤ ± 15 %	-
6	Mechanische Eigenschaften einachsialer Zugversuch			
6.1	Tensile strength, longitudinal and transverse	ÖNORM EN ISO 527-1 and -3 ⁴⁾	≥ 15 N/mm ²	≥ 12 N/mm ²
6.2	Elongation at break, longitudinal and transverse		≥ 500 %	≥ 250 %
6.3	E-modulus between 1% and 2% elongation, longitudinal and transverse		≤ 65 N/mm ² ⁵⁾	≤ 20 N/mm ²

Warunki Wykonania i Odbioru Robót Budowlanych

i	Jednostka	Wartość wymagana
	-	powierzchnia folii powinna być gładka, bez pęcherzy, wtrąceń i zanieczyszczeń
	mm	≥ 2
uż i w poprzek	MPa	≥ 15
u, wzdłuż i w poprzek	%	≥ 200
°C	-	spełnia
enie za pomocą	-	spełnia
	MPa	≥ 0,4
ie ciepłe w powietrzu, początkowej	%	≤ 20
iu	%	≤ 20
, 10 % NaCl, cowej:	%	≤ 20
iu	%	≤ 20
3 d, roztwór nasycony,	%	≤ 20
u	%	≤ 20
owego, 5-6 % H ₂ SO ₃ , cowej	%	≤ 20
u	%	≤ 20
ywania	-	zerwanie poza zgrzewem
nia w wodzie ubytek	%	≤ 6
14 Odporność na przerastanie korzeni	-	odporny







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**Thank you for your
attention!**