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Correlations Ev2 / Evd

Ev2 - deformation modulus (static plate loading test)
Evd - dynamic deformation modulus (Light Drop Weigth tester)

Requirement of the ZTVE-StB76 E v 2 in MN / m²	Suggestion for new limit values E v d in MN / m²
180	80
150	70
120	55
100	45
80	40
60	30
45	25
20	15

Appendix to the regulation
"ZTVE-StB94, Abschn 3,4,7,2, dec. 94"
The requirements mentioned refer to the 10% minimum quantile of the dynamic deformation modulus, if no other object-oriented correlations are present for the static deformation modulus Ev2:

For road superstructure of the building class SV, I to IV on nonfreezing subgrade or substructure a dynamic deformation modulus of at least

Evd = 60 MN/m²

with the building class V and VI

Evd = 50 MN/m²

is on the subgrade level required.

If these requirements can be fulfilled only by compacting the subgrade layers, for a building class SV or I to IV on the subgrade level a dynamic deformation modulus of at least

Evd = 50 MN/m²

and with a building class V and VI

Evd = 40 MN/m²

is sufficient.

In the case of doubt the dynamic deformation modulus is measured on the subgrade level after installation of the road base in boreholes or in dig holes.

With frost-sensitive sub-layers a dynamic deformation modulus of at least

Evd = 25 MN/m²

is on the subgrade level required (in case of soil exchange, with the appropriate response time in mind:

Evd = 30 MN/m²)

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Bearing capacity checks

suggested appendix to Regulation: "Roads and earthwork ZTV E-STB 76"

Construction layer	Condition	Ev2 (MN/m²)	Ev1/Ev2	Evd	Dpr % Proctor
Subgrade level (planum)	generally	>45		>25	
	fine-grained		<2,0		
	mix-grained	>45..20	<3,0	>25..15	
	Rock pourings		<4,0		
coarse grained soils	Gravel GW (far graduated)	>120		>55	>103
	Gravel GI (intermittently)	>100 >80		>45 >40	>100 >97
	Gravel GE (narrow graduated)	>80		>40	>100
	Sand SE-SW-SI	>60 >45		>30 >25	>97 >95

Standard values for the assignment of compaction level Dpr (Proctor) and deformation modulus Ev2

sub layers	**Level of compaction Dpr in %**	**Deformation modulus Ev2 in MN/m²**	**Evd MN/m²**	**Ev2/Ev1**
GW, GI	≥ 100	≥ 100	≥ 45	≥ 2,3
	≥ 98	> 80	≥ 40	≥ 2,5
	≥ 97	> 70	≥ 35	≥ 2,6
GE, SE, SW, SI	≥ 100	≥ 80	≥ 40	
	≥ 98	≥ 70	≥ 35	
	≥ 97	≥ 60	≥ 30	

requirement of the ZTVE STB 76 Ev2 in MN/m²	**Limit values Evd in MN/m²**
180	80
150	70
120	55
100	45
80	40
60	30
45	25
20	15

Only for information, specification without guarantee

Baustoff und
Bodenpruefstelle Wetzlar

Fill from line ditches
Quality assurance of the compaction with the
Light drop weight tester
in accordance with TP BF StB part of 8.3

Reference values for the relation of
Degree of compaction (Proctor) D_{pr}
Dynamic deformation modulus E_{vd}

	Required compaction in different levels of depth (ZTVT StB 95 *) (ZTVE StB 94)	Appoximate values for the relation to D_{pr} (ZTVE StB 94 Tab. 8)	1)Suggestion for the relation of E_{vd} to E_{v2} (in accordance with FGSV working group "testing devices", status Okt.96)
sub-layer	Degree of compaction D_{pr}	Deformation modulus E_{v2}	Deformation modulus E_{vd}
DIN 18196	%	MN/m²	MN/m²
GW, GI (e.g. stone soil or mineral mixture 0/32)	≥ 103 ≥ 100 ≥ 98 ≥ 97	≥ 120 ≥ 100 ≥ 80 ≥ 70	≥ 60 ≥ 50 ≥ 40 ≥ 35
GE, SE, SW, SI	≥ 100 ≥ 98 ≥ 97	≥ 80 ≥ 70 ≥ 60	≥ 40 ≥ 35 ≥ 32
mixed- and fine-grained soils	≥ 100 ≥ 97 ≥ 95	≥ 45 ≥ 30 ≥ 20	≥ 25 ≥ 15 ≥ 10

1) These reference values are approximate values for the proof of the achieved compaction in accordance with. ZTVE StB 94, exp. 14.2.5.. These reference values can be agreed upon between contractors and orderers.