

DAOTAN® TW 7061/35WA
our new, universal premium PUD



Dr. Ulrike Kuttler
Global Application Technology Manager, Automotive Surfacer and Basecoat





CHARACTERISTICS

Aqueous emulsion of a high molecular weight aliphatic urethane-acrylic-hybrid. DAOTAN TW 7061 is shear- stable, solvent- and emulsifier free.

Dried at ambient temperature DAOTAN TW 7061 yields clear and crack-free films without any previous addition of solvents or paint additives.

Product data		
Dynamic viscosity	(DIN EN 3219;100 1/s, 23°C)	10 – 350 mPa.s
pH Value	(DIN ISO 976; 10% in water)	7.3 - 8.5
Non-volatile matter	(DIN EN ISO 3251; 1hr, 125°C,1g)	34 - 36 %
Appearance		Opaque
Colour		Colorless to yellowish

DAOTAN® TW 7061/35WA – PREMIUM APPLICATIONS



With DAOTAN TW 7061 our PUD portfolio gets a new addition that perfectly fits for a broad range of premium applications like:

- WB Automotive and VR Basecoats
- Plastic Primer (1K/2K)
for INTERIOR and EXTERIOR Automotive and GI applications
- Stoving Monocoats (DTM)

DAOTAN® TW 7061/35WA – KEY FEATURES



DAOTAN TW 7061 provides:

- Unique thermal yellowing stability up to 200°C
- Outstanding appearance and bright metallic effects in WB Basecoats
- Excellent mechanical properties e.g. stone chip resistance properties
- Excellent adhesion to CED
as well as ferrous- and non-ferrous metals (aluminum!) in baking enamels (in combination with e.g. CYMEL® 303 or CYMEL 327)
- Outstanding wet adhesion even in low bake applications
- Excellent adhesion to a wide variety of plastic substrates (isocyanate crosslinked as well as NON crosslinked primer formulations)
- Very good outdoor durability

DAOTAN® TW 7061/35WA

Thermal yellowing (delta b) after	DAOTAN TW 7061	DAOTAN TW 6464	DAOTAN TW 7064
10 min/80°C + 20 min/180°C	0.44	5.42	0.91
10 min/80°C + 20 min/200°C	1.94	18.41	2.66
Test set-up: draw down of resin (as supplied) with 100µm on a white tile, drying/stoving conditions as mentioned, yellowing according to DIN EN ISO 11664-4			



WB SILVER BASECOAT FORMULATION AND APPLICATION (CR 231/1)

Part I:	30.10	Daotan® TW 7061/35WA	
	1.30	Cymel® 327 **	
	1.50	Dimethyl ethanolamine / 10% solution in de- ionized Water	
	10.20	De- ionized Water	
	7.20	Rheovis AS 1130 / 10% solution *	(rheology modifier)
	18.90	De- ionized Water	
Part II:	7.80	Stapa IL Hydrolan 2154	
	0.50	Additol® XL 250	(wetting- and dispersing agent)
	5.70	Butyl glycol	
Part III:	6.30	Ultralube E 500 V	
Part IV:	1.60	Iso- butanol	
Part V:	0.70	Dimethyl ethanolamine / 10% solution in de- ionized Water	
	8.20	De- ionized Water	
Total	100.00		

*Rheovis AS 1130 / 10% solution:

	64.50	De- ionized Water	
	2.50	Dimethyl ethanolamine / 10% solution in de- ionized Water	
	33.00	Rheovis AS 1130	
Total	100.00		

** Cymel 327 is not added to the refinish basecoat formulation.

Production Procedure:

Blend components of Part I in the order mentioned and homogenize well.

Prepare pre-mix Part II: Blend Aluminum paste with Additol XL 250 and butyl glycol.

Stir for 30 minutes. Do not use a dissolver!

Add pre- mixed Part II to Part I and homogenize thoroughly.

Add Part III stir 5 minutes, add Part IV and homogenize for another 10 minutes.

Let the paint rest for approx. 12 hours.

Adjust pH value and viscosity with components of Part V.

Paint properties :

Paint solids: approx. 17%

Paint viscosity DIN EN ISO 3219/23°C, shear rate 25s⁻¹: approx. 400 mPa.s

Pigment : Binder (on solids): approx. 0,4 : 1

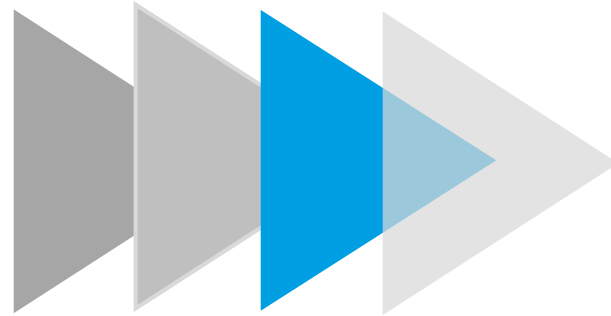
pH - Value DIN ISO 976, 23°C: approx. 8,1

Drying conditions:

5 min Flash off + 8 min 60 - 80°C.

Overcoat with a 1K or 2K clearcoat, solvent- as well as waterborne, is possible

TEST SETUP



Substrate : Gardobond panels, 26S 6800 OC

CED according to industry standard (DFT: 20 – 22 μ m)

WB Primer Surfacer F2409/15, (DFT: 30 - 35 μ m)

Basecoat silver CR 231/1 (DFT: approx. 10 μ m)

1K baking Clearcoat MB 800 (DFT: approx. 50 μ m) or
2K baking Clearcoat MB 489 (DFT: approx. 50 μ m) or
2K Refinish Clearcoat MR 1130 (DFT: approx. 50 μ m)

TEST RESULTS WITH 1K BAKING CLEARCOAT (MB 800)

Property	Basecoat DAOTAN® TW 7061	Basecoat DAOTAN VTW 6462
96 hours humidity testing (QCT)		
Blisters	0	5(S1)
Whitening	Yes	Yes
Gloss; before / after	101 / 96	96 / 76
Adhesion; before / after	0 / 1	1 / 2
Hardness; before / after	91 / 50	127 / 47
Erichsen; cupping before / after	6.3 / 3.9	3.8 / 4.9
Flop; before / after	16.5 / 15.2	16.3 / 16.0
PV 1200 according to Volkswagen (10 cycles / 5 days)		
Stone chip 2x500g, 2bar; before	1.5	1.5
Stone chip 2x500g, 2bar; after	1.5	2.0

TEST RESULTS WITH 2K BAKING CLEARCOAT (MB 489)

Property	Basecoat DAOTAN® TW 7061	Basecoat DAOTAN VTW 6462
96 hours humidity testing (QCT)		
Blisters	0	3(S1)
Whitening	Yes	Yes
Gloss; before / after	96 / 94	95 / 94
Adhesion; before / after	0 / 0	0 / 0
Hardness; before / after	110 / 45	152 / 50
Erichsen cupping; before / after	6.0 / 8.9	6.3 / 7.5
Flop; before / after	15.3 / 15.8	15.9 / 15.6
PV 1200 according to Volkswagen (10 cycles / 5 days)		
Stone chip 2x500g, 2bar; before	1.5	2.0
Stone chip 2x500g, 2bar; after	1.5	2.5

TEST RESULTS WITH 2K REFINISH CLEARCOAT (MR 1130)

Property	Basecoat DAOTAN® TW 7061	Basecoat DAOTAN VTW 6462
240 hours humidity testing (40°C, 100% RH)		
Blisters	0	5(S2)
Whitening	No, very slight swelling	Yes
Gloss; before / after	88 / 70	96 / 62
Adhesion; before / after	0 / 0	0 / 5
Hardness; before / after	90 / 40	116 / 40
Flop; before / after	15.4 / 14.4	15.1 / 13.8
PV 1200 according to Volkswagen (10 cycles / 5 days)		
Stone chip 2x500g, 2bar; before	1.5	4.0
Stone chip 2x500g, 2bar; after	2.0	3.5

WB 2K CONDUCTIVE PRIMER– PAINT FORMULATION AND APPLICATION

Component A:

Part I:	35.00	Daotan® TW 7061/35WA	
	2.70	Butyl glycol	
	2.50	Dimethyl ethanolamine / 10% solution in de- ionized Water	
	0.30	Additol® VXW 6393	(defoamer)
	0.40	Additol VXW 6208	(dispersing additive)
	5.30	Bentone EW 3%	(rheology modifier)
Part II:	12.20	Kronos 2310	
	2.10	Micro Talcum AT Extra	
	1.50	conductive Carbon black	
	4.10	De- ionized Water	
Part III:	0.40	Additol VXW 6393	(defoamer)
	0.30	Additol VXW 6503 N	(flow- and substrate wetting agent)
	14.00	Butyl glycol	
	12.30	De- ionized Water	
Part IV:	6.90	De- ionized Water	
Total	100.00		

Component B:

	6.9	Desmodur N3300	
	1.55	Solventnaphta 150-180	
	1.55	Butyl acetate	
Total	10		

Production Procedure:

Premix Part I, add Part II and grind to requested fineness with a beed mill.

Add Part III and homogenize thoroughly.

If needed use part IV to adjust to requested viscosity.

Add Crosslinker shortly before processing.

Adjust to desired application viscosity by means of de- ionized Water.

Paint Data:

Solids Content (Comp.A):	approx. 30%
Solids Content (Comp. A+B):	approx. 33%
at 130 mPa.s (shear rate 25s-1)	
Pigment / Binder (Comp. A+B):	approx. 1.2 / 1
pH- Value:	approx. 8.4

Stoving Conditions: 30 min / 80°C

ADHESION RESULTS OF WB 2K PRIMER – CONDUCTIVE, BLACK

Substrate	Adhesion after 30min/80°C	Adhesion after 30min/80°C & 12h 80°C	Adhesion after 30min/80°C & 12h 80°C & 16h water immersion at 40°C
Polycarbonate (PC)	0	0	0
Polyamide (PA-6)	0	0	0 (slight swelling)
Polystyrene (PS)	5	5	5 (blisters)
Polypropylene (PP) flamed	0	0	0 (slight swelling)
Polyvinylchloride (PVC)	0	0	0
T 65XF	0	0	0
T85XF	0	0	0
Acrylonitrile butadiene styrene (ABS) 3616	0	0	0
Polyethylene terephthalate (PET)	2	0	0
Durethan BKV 30 (PA)	0	0	0 (slight swelling)
Xenoy CL 101 (PC / PBT)	0	0	0
Polymethylmethacrylate (PMMA)	5	5	5 (slight swelling)
Polyoxymethylene (POM)	5	5	5

Cross hatch with tape peel-off, DFT: approx. 20µm Gt 0 = full adhesion, Gt 5 = no adhesion

ADHESION RESULTS OF WB 1K PRIMER (WITHOUT CROSSLINKER) – CONDUCTIVE, BLACK

Substrate	Adhesion after 30min/80°C	Adhesion after 30min/80°C & 12h 80°C	Adhesion after 30min/80°C & 12h 80°C & 16h water immersion at 40°C
Polycarbonate (PC)	0	0	0 (slight swelling)
Polyamide (PA-6)	0	0	0 (slight swelling)
Polystyrene (PS)	5	5	5 (slight swelling)
Polypropylene (PP) flamed	5	5	5 (slight swelling)
Polyvinylchloride (PVC)	0	0	0 (slight swelling)
T 65XF	0	0	0 (slight swelling)
T85XF	1	0	0 (slight swelling)
Acrylonitrile butadiene styrene (ABS) 3616	0	0	0 (slight swelling)
Polyethylene terephthalate (PET)	5	5	5 (slight swelling)
Durethan BKV 30 (PA)	1	1	0 (slight swelling)
Xenoy CL 101 (PC / PBT)	0	0	0 (slight swelling)
Polymethylmethacrylate (PMMA)	5	5	0 (slight swelling)
Polyoxymethylene (POM)	5	5	5 (slight swelling)

Cross hatch with tape peel-off, DFT: approx. 20µm Gt 0 = full adhesion, Gt 5 = no adhesion

FILM PROPERTIES OF WB PRIMER – CONDUCTIVE, BLACK

Property	1K Primer (without crosslinker)	2K Primer
Test results after 30min/80°C		
DFT [μm]	20	20
König pendulum hardness [sec]	22	20
Gloss at 60°	69	71
Acetone resistance; spot test [sec]	< 10	< 10
Xylene resistance; spot test [min]	<1	<1
Test results after 30min/80°C & 12h /80°C accelerated aging		
König pendulum hardness [sec]	22	53
Acetone resistance; spot test [sec]	<10	<20
Xylene resistance; spot test [min]	<1	<1

WB METALLIC MONOCOAT FOR WHEEL RIMS– PAINT FORMULATION AND APPLICATION

Part I:	25.60	Daotan® TW 7061/35WA	
	22.30	Resydrol® VAX 5533w/40LG	
	1.20	Dimethyl ethanolamine / 10% solution in de- ionized Water	
	5.00	De- ionized Water	
	0.30	Additol® XW 390	(flow- and wetting agent)
	0.30	Additol VXW 6503 N	(flow- and substrate wetting agent)
	9.00	Rheovis 1130 solution*	(rheology modifier)
	8.90	De- ionized Water	
Part II:	7.80	Stapa IL Hydrolan 2154	
	0.50	Additol XL 250	(wetting- and dispersing agent)
	5.70	Butyl glycol	
Part III:	1.80	Isobutanol	
Part IV:	1.40	Dimethyl ethanolamine / 10% solution in de- ionized Water	
	10.20	De- ionized Water	
Total	100.00		

*Rheovis AS 1130 / 10% solution:

	64.50	De- ionized Water	
	2.50	Dimethyl ethanolamine / 10% solution in de- ionized Water	
	33.00	Rheovis AS 1130	
Total	100.00		

Production Procedure:

Blend components of Part I in the order mentioned and homogenize well.

Prepare pre-Mix Part II

Blend Aluminum paste with Additol XL 250 and butyl glycol.

Stir for 30 minutes. Do not use a dissolver!

Add pre-mix Part II to the blend of Part I and homogenize thoroughly.

Add Part III and stir 5 minutes.

Let the paint rest for approximately 12 hours.

Adjust pH value and viscosity with components of Part IV.

Application:

Spraying viscosity: (shear rate $25s^{-1}$) approx. 300 mPa.s

pH – Value: approx. 8.3

Stoving conditions: 5 min flash off + 20min/170°C

WB METALLIC MONOCOAT FOR WHEEL RIMS – TEST RESULTS



Coating properties		
Dry Film Thickness	25µm	
Substrate	steel panel, pre- coated with CED	
• Film hardness (König)		129 s
• Adhesion to CED (cross cut)		Gt=0
• Cupping test (EN ISO 1520)		Approx. 6.5 mm
• Impact (ASTM D 2794)		
Impact direct:		70i/p
Impact reverse:		60i/p
• Flop index		15.6

DAOTAN® TW 7061/35WA

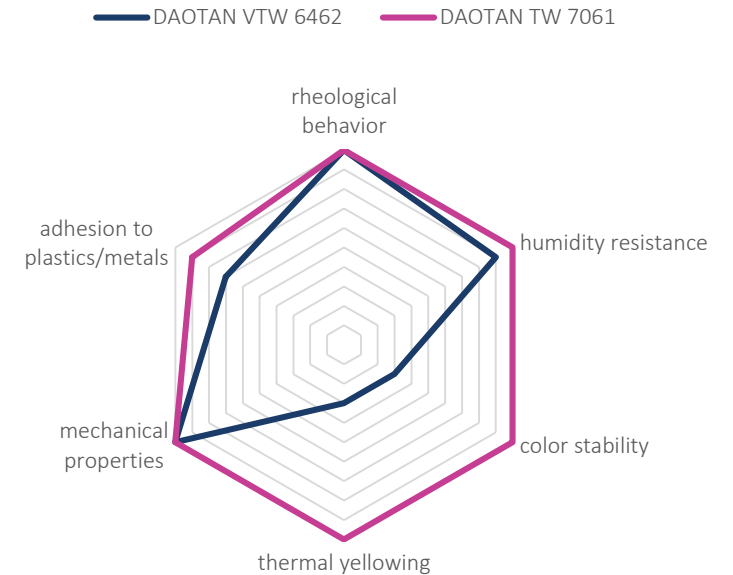


DAOTAN TW 7061/35WA is an extremely versatile polyester-acrylic hybrid PUD for automotive OEM and VR application.

Compared to our standard basecoat polyurethane dispersions DAOTAN TW 7061/35WA provides:

- Better adhesion on a broad range of plastics and metals
- Improved humidity resistance
- Improved color stability
- Less thermal yellowing

without compromising on other important properties such as rheological behavior, metallic appearance and mechanical properties.



CONTACT



For further technical information and inquires please contact your regular allnex representative or Technical Service & Business Development Managers:

Dr. Ulrike Kuttler
phone + 43 503991302
ulrike.kuttler@allnex.com

Robert Harrer
phone + 43 503991256
robert.harrer@allnex.com

Jack van den Berge
phone. + 31 164276614
jack.vandenberge@allnex.com

Berend Mulder
phone + 31 164276471
berend.mulder@allnex.com

LEGAL NOTICE

Disclaimer: allnex Group companies ('allnex') exclude all liability with respect to the use made by anyone of the information contained herein. The information contained herein represents allnex's best knowledge but does not constitute any express or implied guarantee or warranty as to the accuracy, the completeness or relevance of the data set out herein. Nothing contained herein shall be construed as conferring any license or right under any patent or other intellectual property rights of allnex or of any third party. The information relating to the products is given for information purposes only. No guarantee or warranty is provided that the product and/or information is suitable for any specific use, performance or result. Any unauthorized use of the product or information may infringe the intellectual property rights of allnex, including its patent rights. The user should perform his/her own tests to determine the suitability for a particular purpose. The final choice of use of a product and/or information as well as the investigation of any possible violation of intellectual property rights or misappropriation of trade secrets of allnex and/or third parties remain the sole responsibility of the user.

Notice: Trademarks indicated with ®, TM or * as well as the allnex name and logo are registered, unregistered or pending trademarks of Allnex Netherlands B.V. or its directly or indirectly affiliated allnex Group companies.

©2020 allnex Group. All Rights Reserved.



allnex

The Coating Resins Company

Solvent compatibility of Daotan® TW 7061/35WA

Viscosity Daotan TW 7061/35WA (without solvent):

Shear rate (SR) 25s⁻¹: 19 mPa.s

Shear rate (SR) 100s⁻¹: 58 mPa.s

5% solvent addition (calculated on form of delivery)

Solvent	Appearance	Viscosity [mPa.s] at SR 25s ⁻¹		Viscosity [mPa.s] at SR 100s ⁻¹	
		immediately	after 7 days	immediately	after 7 days
Butyl glycol	o.k. (difficult to mix)	186	184	149	148
Butyl diglycol	o.k.	124	15	106	40
Methoxypropoxy propanol (Dowanol DPM)	o.k.	17	19	46	49
Proglyde DMM	i n c o m p a t i b l e				
Butoxyl	o.k. (difficult to mix)	15	22	41	29
Texanol	o.k.	27	32	71	80
Butylglycol acetate	o.k.	135	105	110	88
Isobutanol	o.k.	204	210	157	163
Isopropanol	o.k.	20	105	71	88
Solventnaphtha 150/180	incompatible	22	separation	69	Separation
2- Ethyl hexanol	o.k.	150	171	118	132

Solvent compatibility of Daotan® TW 7061/35WA

Viscosity Daotan TW 7061/35WA (without solvent):

Shear rate (SR) 25s⁻¹: 19 mPa.s

Shear rate (SR) 100s⁻¹: 58 mPa.s

10% solvent addition (calculated on form of delivery)					
Solvent	Appearance	Viscosity [mPa.s] at SR 25s ⁻¹		Viscosity [mPa.s] at SR 100s ⁻¹	
		immediately	after 7 days	immediately	after 7 days
Butyl glycol	o.k. (difficult to mix)	685	480	470	352
Butyl diglycol	o.k.	193	15	157	41
Methoxypropoxy propanol (Dowanol DPM)	o.k. (difficult to mix)	16	18	51	50
Proglyde DMM	i n c o m p a t i b l e				
Butoxyl	o.k. (difficult to mix)	15	4	47	25
Texanol	o.k.	206	266	150	174
Butylglycol acetate	o.k.	445	318	268	206
Isobutanol	o.k.	697	741	421	442
Isopropanol	o.k.	125	125	107	106
Solventnaphtha 150/180	i n c o m p a t i b l e				
2- Ethyl hexanol	o.k.	476	709	272	342