

A thick, L-shaped decorative line. The vertical part on the left is red, and the horizontal part extending to the right is a gradient from purple to blue.

JOINT FORCES FOR THE ADVANTAGE
OF OUR CUSTOMERS

**WACKER PYROGENIC SILICAS - HDK[®]
FOR ELECTROPHOTOGRAPHIC TONER**

The right HDK®

PYROGENIC SILICA GRADE

FOR EVERY TONER

Clariant markets and distributes Wacker Pyrogenic Silicas. The comprehensive HDK range satisfies all charge stability and flow requirements. The following tables provide an overview of the offerings.

HDK WITH POSITIVE TRIBOCHARGE

HDK		H2015EP	H2050EP	H2150VP	H3050VP
Surface area (BET) hydrophobic ¹	[m ² /g]	105 ± 25	110 ± 20	110 ± 20	115 ± 35
pH ²		7 - 9	8 - 9	8 - 9	7.5 - 9
Tamped density ³	[g/l]	approx. 200	approx. 200	approx. 150	approx. 130
Carbon content	[wt %]	approx. 5	approx. 7	approx. 7	approx. 7
Primary particle size distribution d ₅₀ (mean) ⁴	[nm]	12	10	10	8
Agglomerate particle size d ₅₀ (mean) ⁵	[µm]	< 20	< 20	< 20	< 20
Residual SiOH ⁶	[%]	20	16	16	18
q/m ⁷	[µC/g]	approx. +25	approx. +50	approx. +110	approx. +90
Surface modification		PDMS/-NR ₂ /-NR ₃ ⁺	PDMS/-NR ₂ /-NR ₃ ⁺	PDMS/-NR ₂ /-NR ₃ ⁺	PDMS/-NR ₂ /-NR ₃ ⁺

HDK		H05TA	H13TA	H30TA	H13TP
Surface area (BET) hydrophobic ¹	[m ² /g]	50 ± 20	125 ± 15	300 ± 30	125 ± 15
pH ²		7 - 9	7 - 9	7 - 9	9 - 11
Tamped density ³	[g/l]	approx. 100	approx. 70	approx. 50	approx. 50
Carbon content	[wt %]	approx. 2	approx. 4	approx. 7	approx. 2.5
Primary particle size distribution d ₅₀ (mean) ⁴	[nm]	50	20	8	20
Agglomerate particle size d ₅₀ (mean) ⁵	[µm]	< 20	< 20	< 20	< 20
Residual SiOH ⁶	[%]	< 20	< 20	< 20	< 20
q/m ⁷	[µC/g]	approx. +50	approx. +100	approx. +200	approx. +200
Surface modification		PDMS/-NR ₂ /-NR ₃ ⁺	PDMS/-NR ₂ /-NR ₃ ⁺	PDMS/-NR ₂ /-NR ₃ ⁺	Silane/-NR ₂ /-NR ₃ ⁺

- 1 DIN ISO 9277; DIN 66131; Hydrophobic BET surface areas do not lend themselves to determinations of particle size
- 2 DIN EN ISO 787-9; 4 % in methanol/water 50:50
- 3 DIN EN ISO 787-11
- 4 Primary particles of silica do not occur as individual units
- 5 Laser diffraction; easily dispersed to submicron sized aggregates in the additive blending step
- 6 Relative silanol content with respect to hydrophilic pyrogenic silica (containing 2 SiOH/nm²)
- 7 Blow off vs. ferrite; WACKER method

Note: These figures are intended as a guide and should not be used in preparing specifications.

Abbreviations:

HMDS = Hexamethyldisilazane = Si-O-Si(CH₃)₃
 PDMS = Polydimethylsiloxane = Si-O-[Si(CH₃)₂-O]_{x-3-6}(10)

* Available only in Japan

HDK WITH NEGATIVE TRIBOCHARGE

HDK		H1303VP	H2000/4 M*	H2000T	H3004
Surface area (BET) hydrophobic ¹	[m ² /g]	120 ± 30	120 ± 20	140 ± 30	210 ± 40
pH ²		6 - 8.5	7 - 9	6 - 8	6 - 8
Tamped density ³	[g/l]	approx. 180	approx. 220	approx. 200	approx. 120
Carbon content	[wt %]	approx. 2.5	approx. 2.8	approx. 2.8	approx. 4
Primary particle size distribution d ₅₀ (mean) ⁴	[nm]	20	18	12	8
Agglomerate particle size d ₅₀ (mean) ⁵	[µm]	< 20	< 20	< 20	< 20
Residual SiOH ⁶	[%]	18	30	18	20
q/m ⁷	[µC/g]	approx. - 350	approx. - 200	approx. - 380	approx. - 410
Surface modification		HMDS	HMDS	HMDS	HMDS

HDK		H05TD	H13TD	H30TD
Surface area (BET) hydrophobic ¹	[m ² /g]	50 ± 20	125 ± 15	300 ± 30
pH ²		4 - 7	4 - 7	4 - 7
Tamped density ³	[g/l]	approx. 100	approx. 70	approx. 50
Carbon content	[wt %]	approx. 1	approx. 3	approx. 6
Primary particle size distribution d ₅₀ (mean) ⁴	[nm]	50	20	8
Agglomerate particle size d ₅₀ (mean) ⁵	[µm]	< 20	< 20	< 20
Residual SiOH ⁶	[%]	< 20	< 20	< 20
q/m ⁷	[µC/g]	approx. - 400	approx. - 500	approx. - 550
Surface modification		PDMS	PDMS	PDMS

HDK		H05TM	H13TM	H20TM	H30TM
Surface area (BET) hydrophobic ¹	[m ² /g]	50 ± 20	125 ± 15	200 ± 30	300 ± 30
pH ²		5 - 8	5 - 8	5 - 8	5 - 8
Tamped density ³	[g/l]	approx. 100	approx. 70	approx. 50	approx. 50
Carbon content	[wt %]	approx. 1	approx. 2	approx. 3	approx. 4
Primary particle size distribution d ₅₀ (mean) ⁴	[nm]	50	20	12	8
Agglomerate particle size d ₅₀ (mean) ⁵	[µm]	< 20	< 20	< 20	< 20
Residual SiOH ⁶	[%]	< 20	< 20	< 20	< 20
q/m ⁷	[µC/g]	approx. - 450	approx. - 500	approx. - 530	approx. - 550
Surface modification		HMDS	HMDS	HMDS	HMDS

HDK		H05TX	H13TX
Surface area (BET) hydrophobic ¹	[m ² /g]	50 ± 20	125 ± 15
pH ²		5 - 8	5 - 8
Tamped density ³	[g/l]	approx. 100	approx. 70
Carbon content	[wt %]	approx. 1	approx. 3
Primary particle size distribution d ₅₀ (mean) ⁴	[nm]	50	20
Agglomerate particle size d ₅₀ (mean) ⁵	[µm]	< 20	< 20
Residual SiOH ⁶	[%]	< 20	< 20
q/m ⁷	[µC/g]	approx. - 450	approx. - 500
Surface modification		HMDS/PDMS	HMDS/PDMS

HEUBACH GROUP

Marketing And Sales Non-Impact Printing
Phone +49 69 305 39926 (Germany)

de.sales@heubachcolor.com
www.heubach.com

This information corresponds to the present state of our knowledge and is intended as a general description of our products and their possible applications. We make no warranties, express or implied, as to the information's accuracy, adequacy, sufficiency, or freedom from defect and assumes no liability in connection with any use of this information. Any user of this product is responsible for determining the suitability of our products for its particular application. * Nothing included in this information waives any of our General Terms and Conditions of Sale, which control unless it agrees otherwise in writing. Any existing intellectual/industrial property rights must be observed. Due to possible changes in our products and applicable national and international regulations and laws, the status of our products could change. Material Safety Data Sheets providing safety precautions, that should be observed when handling or storing our products, are available upon request and are provided in compliance with applicable law. You should obtain and review the applicable Material Safety Data Sheet information before handling any of these products. For additional information, please contact us.

*For sales to customers located within the United States and Canada the following applies in addition
NO EXPRESS OR IMPLIED WARRANTY IS MADE OF THE MERCHANTABILITY, SUITABILITY, FITNESS FOR
A PARTICULAR PURPOSE OR OTHERWISE OF ANY PRODUCT OR SERVICE. 02/2022

™ Trademark

© Trademark registered in many countries

NIP 5011 EN | 08.2014

BRIGHTER COLORS.
BRIGHTER LIFE.