

Analytical test methods

Test method	ISO	DIN	ASTM
	International Organization for Standardization	German Institute for Standardization	American Society for Testing and Materials
Method for determining the surface area			
BET surface area	ISO 4652	–	D 6556
Method for determining the structure			
Oil absorption number (OAN)	ISO 4656	–	D 2414
Method for characterizing the specialty carbon black surface			
Volatile matter at 950°C	–	DIN 53552	–
pH value	ISO 787-9	-	D 1512
Method for determining impurities			
Ash content	ISO 1125	-	D 1506
Colorimetric properties			
Blackness value M_v of powder specialty carbon blacks	–	DIN 55979	–
Tint strength of specialty carbon black	ISO 5435	–	D 3265

Methods are not strictly equivalent



Orion specialty carbon blacks for coatings

	Orion specialty carbon black									Typical coating applications							
	Blackness value M_v following DIN 55979	Relative tint strength IRB 3 = 100 % following ASTM D 3265	Volatile matter at 950 °C following DIN 53552	Oil absorption number following ASTM D 2414	pH value following ISO 787-9	Ash content following ASTM D 1506	BET surface area following ASTM D 6556	Average primary particle size following internal method TCGZ3			Automotive	Industrial	Decorative	Powder	Electro deposition	Antistatic / conductive	Radiation curing
Type		%	%	ml/100g		%	m ² /g	nm									
COLOUR BLACK FW 310 ¹⁾	HCF	310 ³⁾	130	12	102	2.5	0.5	600	11	●	●						
COLOUR BLACK FW 255	HCF	306 ³⁾	135	12	108	2.5	0.5	600	11	●	●						
COLOUR BLACK FW 171 ¹⁾	HCF	295	137	2	108	8	0.3	600	11	●	●		○				
COLOUR BLACK FW 285 ¹⁾	HCG	291	140	5	155	3.5	0.02	350	11	●	●						
COLOUR BLACK FW 200	HCG	286	128	20	160	2.5	0.02	550	13	●	●						
COLOUR BLACK FW 2	HCG	283	126	16.5	155	2.5	0.02	470	13	●	●						
COLOUR BLACK FW 1	HCG	280	120	5	150	3.5	0.02	320	13		●						
PRINTEX® 95 ²⁾	HCF	258	136	1	52	9.5	0.80	250	15				○				
PRINTEX® 85	MCF	254	136	1	54	9.5	0.60	200	16				○				
SPECIAL BLACK 6	HCG	275	128	18	142	2.5	0.02	450	17	●	●						
COLOUR BLACK S 170 ¹⁾	MCG	270	122	5	135	4	0.02	230	17		●						
SPECIAL BLACK 5	MCG	269	115	15	125	2.5	0.02	320	20		●						
COLOUR BLACK S 160	MCG	263	121	5	128	4	0.02	180	20		●						
PRINTEX® 60 ¹⁾	RCF	244	110	1	118	10	0.10	115	21		⚡		⚡				
SPECIAL BLACK 4	RCG	244	107	14	115	3	0.02	180	25	●	●	●					
PRINTEX® U / PRINTEX® V ¹⁾	RCG	246	112	5	115	4.5	0.02	92	25	●	●	●					
PRINTEX® 300	RCF	242	108	0.8	68	9.5	0.2	80	27		●	●	○				
PRINTEX® 140 U / PRINTEX® 140 V ¹⁾	RCG	242	109	5	115	4.5	0.02	90	29	●	●	●					
PRINTEX® 200 ¹⁾⁴⁾	LCF	230	89	0.6	45	9	0.15	48	47					○			
SPECIAL BLACK 250 ¹⁾	LCF	220	88	1.4	45	3.5	0.3	48	47								○
SPECIAL BLACK 100 ¹⁾	LCF	217	60	1.6	100	3.3	0.10	35	51	●	●	●					○
PRINTEX® G	LCF	223	57	0.7	104	9	0.10	35	51	●	●	●		○			
HIBLACK® 160	LCF	–	60	1.5	85	8.0	0.20	35	55		●						
LAMP BLACK 101	LB	209	26	–	135	8	0.02	29	95	●	●	●		○			
PRINTEX® L	CB	246	103	0.8	120	9	0.10	150	23						○		
PRINTEX® kappa 50	CB	280	139	1.5	175	9	0.07	375	12						○		
PRINTEX® XE2 B ²⁾	ECB	261	–	–	420	7.8	1.6	1000	30						○		

- Water-borne coatings
- Solvent-borne coatings
- Water- and solvent-borne coatings
- Especially recommended
- ⚡ Especially for heat resistant coatings

Nomenclature

HCG High color gas	HCF High color furnace	LCF Low color furnace
MCG Medium color gas	MCF Medium color furnace	LB Lamp black
RCG Regular color gas (Degussa gas black process)	RCF Regular color furnace	ECB Extra conductive black
		CB Conductive black

1) Only available as powder

2) Only available as beaded specialty carbon black

3) Measured in 2K-PU solvent-borne system

4) Electrical conductivity of the aqueous extract $\leq 100 \mu\text{S}/\text{cm}$

Specific gravity of specialty carbon blacks: 1.7 - 1.9 g/cm³

The data for the beaded material may deviate from the given values.



Orion specialty carbon black for polymers

		Blackness value M_V following DIN 55979	Relative tint strength IRB 3 = 100% following ASTM D 3265	Volatile matter at 950 °C following DIN 53552	Oil absorption number following ASTM D 2414	pH value following ISO 787-9	Ash content following ASTM D 1506	BET surface area following ASTM D 6556	Average primary particle size following internal method TGZ3
			%	%	ml/100g		%	m ² /g	nm
COLOUR BLACK FW 200	HCG	286	128	20	160	2.5	0.02	550	13
COLOUR BLACK FW 1	HCG	280	120	5	150	3.5	0.02	320	13
COLOUR BLACK FW 18	HCG	273	122	5	140	4.5	0.02	260	15
SPECIAL BLACK 4	RCG	244	107	14	115	3	0.02	180	25
PRINTEX® U	RCG	246	112	5	115	4.5	0.02	92	25
PRINTEX® V ¹⁾	RCG	246	112	5	115	4.5	0.02	92	25
PRINTEX® 95 ²⁾	HCF	258	136	1	52	9.5	0.80	250	15
PRINTEX® 90	HCF	265	141	1	98	9	0.40	350	14
PRINTEX® 85 ⁵⁾	MCF	254	136	1	54	9.5	0.60	200	16
HIBLACK® 600L	MCF	260	157	1.5	77	8	0.50	246	16
PRINTEX® 80 ⁵⁾	MCF	261	136	1.2	105	9	0.10	225	16
PRINTEX® 75	MCF	251	135	1.2	53	9.5	0.40	145	17
PRINTEX® 138 SQ ²⁾	RCF	243	120	1	95	8.5	0.10	150	19
PRINTEX® alpha, alpha A ^{2) 5) 6)}	RCF	240	103	0.5	100	8.7	0.10	105	20
PRINTEX® P ^{2) 5)}	RCF	245	109	0.5	102	10	0.10	120	20
PRINTEX® 60 ¹⁾	RCF	244	110	1	118	10	0.10	115	21
PRINTEX® 60 A ²⁾	RCF	244	109	0.5	102	10	0.10	115	21
PRINTEX® zeta A ²⁾	RCF	239	98	0.5	99	8.7	0.10	79	25
PRINTEX® L6 ⁶⁾	RCF	249	114	1.2	126	9	0.10	270	18
PRINTEX® 300	RCF	242	108	0.8	68	9.5	0.2	80	27
PRINTEX® 30 ¹⁾	RCF	240	100	0.7	108	9.5	0.10	80	27
PRINTEX® 3 ¹⁾	RCF	239	96	0.9	128	9.5	0.15	80	27
PRINTEX® 25	LCF	230	89	0.6	45	9	0.30	48	47
PRINTEX® A	LCF	227	65	0.7	121	9	0.10	43	41
PRINTEX® G	LCF	223	57	0.7	104	9	0.10	35	51
SPECIAL BLACK 100 ¹⁾	LCF	217	60	1.6	100	3.3	0.10	35	51
LAMP BLACK 101	LB	209	26	–	135	8	0.02	29	95
Conductive black									
PRINTEX® HV ²⁾	CB	240	98	0.7	115	9	0.10	125	20
PRINTEX® MV ²⁾	CB	227	60	1	121	8.5	0.10	41	41
PRINTEX® L	CB	246	103	0.8	120	9	0.10	150	23
HIBLACK® 40B2 ²⁾	CB	–	105	1.5	150	8	0.20	112	23
PRINTEX® kappa 10 ²⁾	CB	–	89	0.6	145	9	0.02	74	30
PRINTEX® kappa 20 ¹⁾	CB	255	123	1.5	175	9	0.02	230	19
PRINTEX® kappa 70 ²⁾	CB	–	85	1.5	170	7.3	0.15	245	19
PRINTEX® XE2 B ²⁾	ECB	261	–	–	420	7.8	1.6	1000	30

Nomenclature

HCG

High color gas

MCG

Medium color gas

RCG

Regular color gas

(Degussa gas black process)

HCF

High color furnace

MCF

Medium color furnace

RCF

Regular color furnace

LCF

Low color furnace

LB

Lamp black

TB

Thermal black

CB

Conductive black

ECB

Extra conductive black

1) Only available as powder

2) Only available as beaded specialty carbon black

4) Total sulfur content ≤ 0.1 %

5) Following products, used for food contact applications, which complies 21 CFR 178.3297 (FDA) can be found in a separate brochure:

- PRINTEX® F 85 BEADS
- PRINTEX® F 80 BEADS/POWDER
- PRINTEX® F alpha BEADS
- PRINTEX® F P BEADS

6) Following products, used for spin fibres, can be found in a separate brochure:

- PRINTEX® L 6 SQ only available as beaded specialty carbon black
- PRINTEX® alpha SQ only available as beaded specialty carbon black

Selected polymers								Typical applications							
Polyolefines PE, PP, Copo	Biopolymers PLA	Styrene Polymers PS, SAN, ABS, ASA	Polyamides PA6, PA6.6, PA12	Polyesters PET, PBT	Polyvinylchlorides PVC-P, PVC-U	Engineered Polymers PMMA, PC, Blends	Thermosets UP, EP	Insulation & foams EPS, PUR, PP, PE	Wire & cables PE-Copo	Pipes PE, PP, PA, PVC	Films PE, PP, Copo, PVC	Fibres PET, PA, PP	Adhesive & sealants PUR, PIB, Polysulfide, Silicons, MS Polymers	Masterbatches & compounds	
		●			●									COLOUR BLACK FW 200	
●		●			●									COLOUR BLACK FW 1	
●		●			●									COLOUR BLACK FW 18	
		◐					◐◑				◐◑			SPECIAL BLACK 4	
◐		◐	◐		◐◑	◐	◐◑					◐◑		PRINTEX® U	
◐		◐	◐		◐◑	◐	◐◑					◐◑		PRINTEX® V ¹⁾	
●		●	●											PRINTEX® 95 ²⁾	
●		●	●		●	●								PRINTEX® 90	
●		●	●										●	PRINTEX® 85 ⁵⁾	
●		●				●							●	HIBLACK® 600L	
●												◐◑	●	PRINTEX® 80 ⁵⁾	
●		●											●	PRINTEX® 75	
												●		PRINTEX® 138 SQ ²⁾	
◐◑	◐◑	◐◑	◐◑	◐◑		◐◑		◐◑	◐◑	◐◑	◐◑		◐◑	PRINTEX® alpha, alpha A ²⁾⁵⁾⁶⁾	
◐◑		◐◑	◐◑	◐◑		◐◑	◐◑	◐	◐◑	◐◑	◐◑		◐◑	PRINTEX® P ²⁾⁵⁾	
					◐◑							◐◑		PRINTEX® 60 ¹⁾	
◐◑		◐◑	◐◑	◐◑		◐◑			◐	◐◑	◐◑		◐◑	PRINTEX® 60 A ²⁾	
◐◑	◐◑	◐◑	◐◑	◐◑		◐◑		◐◑	◐◑	◐◑	◐◑		◐◑	PRINTEX® zeta A ²⁾	
◐		◐	◐		◐	◐	◐		◐			●		PRINTEX® L6 ⁶⁾	
◐	◐	◐	◐		◐		◐◑					◐◑	◐	PRINTEX® 300	
◐		◐	◐		◐							◐◑	◐	PRINTEX® 30 ¹⁾	
												◐◑		PRINTEX® 3 ¹⁾	
◐		◐			◐			◐				◐		PRINTEX® 25	
◐◐		◐◐			◐			◐				◐		PRINTEX® A	
◐		◐	◐	◐	◐	◐							◐	PRINTEX® G	
					◐							◐		SPECIAL BLACK 100 ¹⁾	
◐	◐	◐	◐	◐	◐	◐	◐	◐◐			◐		◐	LAMP BLACK 101	
														Conductive black	
								◐						PRINTEX® HV ²⁾	
								◐						PRINTEX® MV ²⁾	
◐		◐	◐		◐	◐	◐		◐					PRINTEX® L	
◐		◐	◐		◐	◐	◐		◐				◐	HIBLACK® 40B2 ²⁾	
								◐						PRINTEX® kappa 10 ²⁾	
					◐		◐					◐◑		PRINTEX® kappa 20 ¹⁾	
◐		◐	◐	◐	◐	◐			◐	◐				PRINTEX® kappa 70 ²⁾	
◐		◐			◐	◐	◐		◐	◐			◐	PRINTEX® XE2 B ²⁾	

● Jet black coloring ◐ Coloring ◑ Tinting ◐ Conductivity ◐ UV-stabilizing ◐ Reinforcement / rheology

Orion specialty carbon black for printing inks, inkjet and toner applications



		Blackness value M_v following DIN 55979	Relative tint strength IRB 3 = 100 % following ASTM D 3265	Volatile matter at 950 °C following DIN 53552	Oil absorption number following ASTM D 2414	pH value following ISO 787-9	Ash content following ASTM D 1506	BET surface area following ASTM D 6556	Average primary particle size following internal method TGZ3
			%	%	ml/100g		%	m ² /g	nm
Type									
NIPex® 180 IQ ¹⁾	HCG	273	–	5	140	4.5	0.02	260	15
NIPex® 170 IQ ¹⁾	MCG	270	–	5	135	4.5	0.02	238	17
NIPex® 160 IQ ¹⁾	MCG	263	–	5	128	4.5	0.02	180	20
NIPex® 1601 IQ ¹⁾	MCG	263	–	10	128	4	0.02	245	20
NIPex® 150	RCG	–	–	9	120	4	0.02	175	25
NIPex® 60	RCF	244	–	1	118	10	0.1	115	21
NIPex® 35	LCF	236	–	0.5	42	9	0.3	60	31
SPECIAL BLACK 4	RCG	244	107	14	115	3	0.02	180	25
SPECIAL BLACK 4A ¹⁾⁷⁾	RCG	244	107	14	95	3	0.02	180	25
PRINTEX® U	RCG	246	112	5	115	4.5	0.02	92	25
PRINTEX® V ¹⁾	RCG	246	112	5	115	4.5	0.02	92	25
PRINTEX® 85	MCF	254	136	1	54	9.5	0.6	200	16
PRINTEX® 80	MCF	261	136	1.2	105	9	0.1	225	16
PRINTEX® L6	CB	249	114	1.2	126	9	0.1	270	18
PRINTEX® L	CB	246	103	0.8	120	9	0.1	150	23
PRINTEX® 60 ¹⁾	RCF	244	110	1	118	10	0.1	115	21
PRINTEX® 60 A ²⁾	RCF	244	109	0.5	102	10	0.1	115	21
NEROX® 555 ¹⁾	RCF	–	128	3	75	2.5	0.3	94	26
SPECIAL BLACK 550 ¹⁾	RCF	247	115	1.8	52	4	0.6	112	25
PRINTEX® 55	RCF	250	127	0.6	49	9.5	0.6	110	25
SPECIAL BLACK 535 ²⁾	LCF	–	101	1.3	44	3.6	0.3	62	31
PRINTEX® 45	RCF	246	117	0.9	54	9	0.3	90	26
SPECIAL BLACK 350 ¹⁾	LCF	232	104	1.4	43	3.5	0.3	62	31
NEROX® 3500 ¹⁾	LCF	–	104	1.8	52	2.5	0.3	63	31
PRINTEX® 35	LCF	236	100	0.5	42	9	0.3	60	31
PRINTEX® 300	RCF	242	108	0.8	68	9.5	0.2	80	27
PRINTEX® 30 ¹⁾	RCF	240	100	0.7	108	9.5	0.1	80	27
PRINTEX® zeta A ²⁾	RCF	239	98	0.5	99	8.7	0.1	79	25
PRINTEX® 3 ¹⁾	RCF	239	96	0.9	128	9.5	0.15	80	27
SPECIAL BLACK 275 ¹⁾	LCF	224	94	1.4	49	3	0.3	57	35
SPECIAL BLACK 250 ¹⁾	LCF	220	88	1.4	45	3.5	0.3	48	47
NEROX® 2500 ¹⁾	LCF	–	90	1.8	54	2.5	0.3	50	47
PRINTEX® 25	LCF	230	89	0.6	45	9	0.3	48	47

Products, used for black matrix applications, can be found in a separate brochure.
Please contact the address given on the back of this brochure.

1) Only available as powder

2) Only available as beaded specialty carbon black

7) Volatile Matter 105 °C approx. 7.5 %

Nomenclature

HCG

High color gas

MCG

Medium color gas

RCG

Regular color gas

(Degussa gas black process)

HCF

High color furnace

RCF

Regular color furnace

LCF

Low color furnace

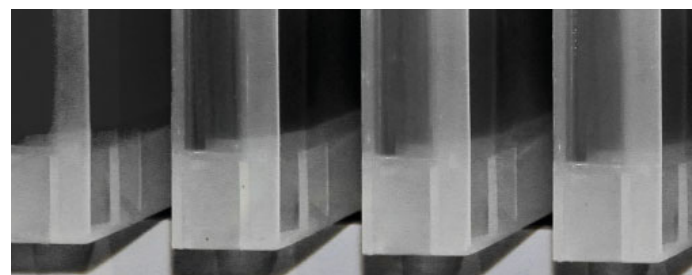
CB

Conductive black

Recommended for printing inks, inkjet and toner applications

Sheetfed/letterpress	Heatset	Coldset	Publication gravure inks	Liquid inks (flexo/gravure) solvent based	Liquid inks (flexo/gravure) water based	Screen printing	UV curing inks	UV curing inkjet inks	Aqueous inkjet inks	Non-aqueous inkjet inks	Toner	Type
									●			NIPex® 180 IQ ¹⁾
									●			NIPex® 170 IQ ¹⁾
									●			NIPex® 160 IQ ¹⁾
									●			NIPex® 1601 IQ ¹⁾
										●	●	NIPex® 150
										●	●	NIPex® 60
										●	●	NIPex® 35
				●	●	●	●					SPECIAL BLACK 4
				●	●	●						SPECIAL BLACK 4A ¹⁾⁷⁾
				●	●	●						PRINTEX® U
				●	●	●						PRINTEX® V ¹⁾
									●			PRINTEX® 85
									●			PRINTEX® 80
					●				●		●	PRINTEX® L6
					●						●	PRINTEX® L
					●	●						PRINTEX® 60 ¹⁾
					●	●						PRINTEX® 60 A ²⁾
				●			●					NEROX® 555 ¹⁾
●				●			●	●				SPECIAL BLACK 550 ¹⁾
●					●							PRINTEX® 55
				●			●					SPECIAL BLACK 535 ²⁾
●	●			●	●							PRINTEX® 45
●				●			●	●				SPECIAL BLACK 350 ¹⁾
●				●			●	●				NEROX® 3500 ¹⁾
●	●		●	●	●	●						PRINTEX® 35
●	●	●		●	●							PRINTEX® 300
		●			●							PRINTEX® 30 ¹⁾
		●			●							PRINTEX® zeta A ²⁾
		●			●							PRINTEX® 3 ¹⁾
				●			●	●		●		SPECIAL BLACK 275 ¹⁾
				●			●	●		●		SPECIAL BLACK 250 ¹⁾
				●			●	●				NEROX® 2500 ¹⁾
●	●		●	●		●						PRINTEX® 25

- Especially recommended
- Well suitable





The Americas

Orion Engineered Carbons LLC
1700 City Plaza Drive, Suite 300
Spring, TX 77389
USA
Phone +1 832 445 3300

AMERICAS@orioncarbons.com

Europe/ Middle East/ Africa

Orion Engineered Carbons GmbH
Frankfurter Straße 60 - 68
65760 Eschborn
Germany
Phone +49 6196 771 929 100

EMEA@orioncarbons.com

Asia Pacific

Orion Engineered Carbons (China) Investment Co., Ltd.
Room 2301, 2302, 2307, BM InterContinental Business Center
100 Yutong Road, Jing'an District, Shanghai 20007
P. R. China
Phone +86 21 6107 0966

APAC@orioncarbons.com

Incorporated in Luxembourg

Orion Engineered Carbons S.A., 6, Route de Trèves, 2633 Senningerberg, Luxembourg, Phone +352 270 48 06 0

www.orioncarbons.com

All statements given by Orion Engineered Carbons GmbH as well as its affiliates, including for example Orion Engineered Carbons S.A. ("Orion") herein are provided for information purposes only and are given as of the date of this document and are based on the knowledge on the date of the document. ORION DOES NOT GIVE ANY REPRESENTATION OR WARRANTY THAT THE CONTENTS OF THE GIVEN STATEMENTS AND INFORMATION ARE CORRECT OR ACCURATE. ANY LIABILITY OF ORION WITH REGARD TO THE CONTENTS PROVIDED ARE HEREBY EXPRESSLY EXCLUDED. Orion does not give a warranty with respect to any results to be obtained from such information, any uses of such information or with regard to the non-infringement of any proprietary right. Nothing stated herein shall be construed as a license of or recommendation for use, especially with concern to the potential infringement of any proprietary right. Use or application of such information or statements or the material or systems described herein are at user's sole discretion and risk. The user acknowledges that Orion shall bear no responsibility or liability for any use or application of such information or statements or the material or systems described herein. All sales are subject to the respective standard terms and conditions of Sale issued by Orion including but not limited to the limitation of liability contained therein. The Orion standard terms and conditions of Sale can be reviewed, downloaded and printed under https://orioncarbons.com/en/general_conditions_of_sale_and_delivery_orion_engineered_carbons_europe_africa.pdf. Any and all information disclosed by Orion herein shall remain the property of Orion.

© 2023 Orion Engineered Carbons GmbH

OEC-TD 0112-03/2023