

Brakes

Brakes with composite brake blocks – General conditions for the certification of composite brake blocks

Appendix M

Composite brake blocks certified for international traffic

- Appendix M consists of 3 tables – one table per friction coefficient category.
- For K-blocks the “Design rules for composite brake blocks (K)” (9th edition, August 2013) are to be applied.
- For LL-blocks the “Usage guidelines for composite (LL) brake blocks” (10th edition, August 2013) are to be applied

The tables given in this appendix:

- are updated regularly,
- correspond to the above date of update.



Appendix M - Composite brake blocks certified for international traffic

M.1: Composite brake blocks with high friction level (K)

Products with provisional certification for service tests as per UIC Leaflet 541-4

Manufacturer	Type description and abbreviated designation (if different) (organic / sintered)	Nominal wheel diameter $r \varnothing$ [mm]	Min./max. axle load [t]	Braking regime / speeds	Min./max. force per block holder [kN]	Configuration	Certified as per leaflet edition no.	Remarks	Certification begins/ expires
CoFren	C810 (organic)	920	3,6 22,5	ss (up to 20 t)	5 38	1 x Bgu	4	B 126 RP A7	01.02.2011 31.01.2021
CoFren	C333 (sintered)	920	3,6 22,5	ss (up to 20 t)	5 38	1 x Bgu	4	FS – DT/IRTB.SF.05	01.07.2011 30.06.2021
Knorr-Bremse	Cosid 704 (organic)	920	3,6 22,5	ss (up to 20 t)	2,5 19	2 x Bg	4	B 126 RP O3	09.01.2014 08.01.2018
Knorr-Bremse	Cosid 704 (organic)	840 760 730	7,5/17,65 7,5/15,75 7,5/14,25	ss	2,5 14,5	2xBg	4	B 126 RP O6	01.02.2017 31.01.2019
Federal Mogul	Jurid 822 (organic)	920	3,6 22,5	ss (bis 20 t)	5 38	1 x Bgu	4	B 126 RP N12	31.07.2015 30.06.2021

Fully certified products

Manufacturer	Type description and abbreviated designation (if different) (organic / sintered)	Nominal wheel Ø [mm]	Min./max. axle load [t]	Braking regime / speeds	Min./max. force per block holder [kN]	Configuration	Certified as per leaflet edition no.	Remarks	Certification begins/ expires
Becorit	K40 (organic)	920	3,6 22,5	s	1,8 19	2 x Bg	4	# 14	01.02.2015 31.01.2025
Becorit	K40 (organic)	920	3,6 22,5	ss (up to 20 t)	1,8 19	2 x Bg	4	# 14	03.07.2015 02.07.2025
Becorit	K40 (organic)	840 760 730	3,6/20 3,6/18 3,6/17,5	s and ss (up to max. axle load)	1,8/18 1,8/17 1,8/16	2 x Bg	4	# 22	01.02.2018 31.01.2028
CoFren	C333 (sintered)	920	3,6 22,5	s	5 38	1 x Bgu	4	# 1	01.07.2011 30.06.2021
CoFren	C333 (sintered)	920	3,6 22,5	s	2,5 19	2 x Bg	4	# 13	01.07.2014 30.06.2024
CoFren	C333 (sintered)	920	3,6 22,5	ss (up to 20 t)	5 38	2 x Bg	4	# 13	03.07.2015 02.07.2025
CoFren	C333 (sintered)	840	4,5 20	Empty 120 km/h Loaded 100 km/h	6 25	1 x Bgu	4	# 10	01.07.2013 30.06.2023
CoFren	C333 (sintered)	760	4,5 18	Empty 120 km/h Loaded 100 km/h	6 25	1 x Bgu	4	# 10	01.07.2013 30.06.2023
CoFren	C333 (sintered)	840	4,5 18	s and ss	6 30	1 x Bgu	4	# 24	01.02.2019 31.01.2029
CoFren	C810 (organic)	920	3,6 22,5	s and ss (up to 20 t)	2,5 19	2 x Bg	4	# 11	15.10.2003 30.06.2023
CoFren	C810 (organic)	920	3,6 22,5	s and ss (up to 20 t)	2,5 19	2 x Bgu	4	# 11	15.10.2003 05.05.2025
CoFren	C810 (organic)	920	3,6 22,5	s	5 38	1 x Bgu	4	# 2	01.03.2011 28.02.2021
CoFren	C810 (organic)	840	7,5 17,5	Empty 120 km/h Loaded 100 km/h	5,5 14,5	2 x Bg	4	# 3	01.08.2011 30.06.2023
CoFren	C810 (organic)	840	7,5 18	Empty 120 km/h Loaded 100 km/h	8,7 12,2	2 x Bg	4	# 4	01.02.2012 30.06.2023
CoFren	C810 (organic)	840	4,5 20	Empty 120 km/h Loaded 100 km/h	6 25	1 x Bgu	4	# 7	01.01.2013 31.12.2022
CoFren	C810 (organic)	760	4,5 18	Empty 120 km/h Loaded 100 km/h	6 25	1 x Bgu	4	# 7	01.01.2013 31.12.2022
CoFren	C810 (organic)	760	9,25 16	Empty 120 km/h Loaded 100 km/h	10,1 10,1	2 x Bg	4	# 8	01.02.2013 30.06.2023

Body responsible: UIC-SET 7 "Braking"

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Manufacturer	Type description and abbreviated designation (if different) (organic / sintered)	Nominal wheel Ø [mm]	Min./max. axle load [t]	Braking regime / speeds	Min./max. force per block holder [kN]	Configuration	Certified as per leaflet edition no.	Remarks	Certification begins/ expires
CoFren	C810 (organic)	920	5,8 25	Empty 120 km/h Loaded 100 km/h	4,5 16,5	2xBgu	4	# 15	06.05.2015 05.05.2025
Knorr-Bremse	Cosid 704 (organic)	920	3,6 22,5	s	2,5 19	2 x Bg	4	# 19	01.07.2016 30.06.2026
Knorr-Bremse	Cosid 704 (organic)	920	3,6 22,5	s and ss (up to 20 t)	2,5 19	2 x Bgu	4	# 19	01.02.2017 31.01.2027
Knorr-Bremse	Cosid 704 (organic)	840 760 730	7,5/17,65 7,5/15,75 7,5/14,25	s	2,5 14,5	2 x Bg	4	# 21	01.02.2017 31.01.2027
Knorr-Bremse	Cosid 704 (organic)	920	3,6 22,5	s	5 38	1xBgu	4	# 23	01.02.2019 31.01.2029
Knorr-Bremse	PROBLOCK J816M (Identical to Jurid 816M)	920	3,6 22,5	s and ss (up to 20 t)	2,5 19	2 x Bg	4	# 25	18.05.2020 15.04.2025
		840	5 20	Empty 120 km/h Loaded 120 km/h	5,5 18				
		760	5 18	Empty 120 km/h Loaded 120 km/h	5,5 17				
		730	7,5 17,5	Empty 120 km/h Loaded 100 km/h	5,5 14,5				
Knorr-Bremse	PROBLOCK J816M (Identical to Jurid 816M)	920	3,6 22,5	s and ss (up to 20 t)	2,5 19	2 x Bgu	4	# 25	16.07.2020 15.04.2025
Frenoplast	FR513 (organic)	920	3,6 22,5	s	2,5 19	2 x Bg	3	# 5	01.07.2012 30.06.2022
Frenoplast	FR513 (organic)	840 760 730	7,5 17,5	Empty 120 km/h Loaded 100 km/h	5,5 14,5	2 x Bg	4	# 9	01.05.2013 30.04.2023
Frenoplast	FR513 (organic)	840	3,6 20	Empty 120 km/h Loaded 100 km/h	2,5 18	2 x Bg	4	# 16	01.11.2014 31.10.2024
Frenoplast	FR513 (organic)	760	3,6 18	Empty 120 km/h Loaded 100 km/h	2,5 17	2 x Bg	4	# 16	01.11.2014 31.10.2024
Federal Mogul	Jurid 816 M abbreviated: J816M (organic)	920	3,6 22,5	s and ss (up to 20 t)	2,5 19	2 x Bg and 2 x Bgu	3	# 17	01.07.2005 15.04.2025
Federal Mogul	Jurid 816 M abbreviated: J816M (organic)	730	7,5 17,5	Empty 120 km/h Loaded 100 km/h	5,5 14,5	2 x Bg	4	# 6	01.07.2012 30.06.2022

Body responsible: UIC-SET 7 "Braking"

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Manufacturer	Type description and abbreviated designation (if different) (organic / sintered)	Nominal wheel Ø [mm]	Min./max. axle load [t]	Braking regime / speeds	Min./max. force per block holder [kN]	Configuration	Certified as per leaflet edition no.	Remarks	Certification begins/ expires
Federal Mogul	Jurid 816 M abbreviated J8 16M (organic)	840 760	Min 5 Max 20 (840 mm) 18 (760 mm)	Empty 120 km/h Loaded 120 km/h	Min 5.5 Max 18 (840 mm) 17 (760 mm)	2 x Bg	4	# 18	01.07.2016 30.06.2026
Federal Mogul	Jurid 822	920	3,6 22,5	Empty 120 km/h Loaded 100 km/h	6.5 38	1 x Bgu	4	# 20	01.02.2017 31.01.2027

1 In accordance with Report FS – DT/IRTB.SF.05 of 06.04.2011

2 In accordance with Report B126 RP A7

3 In accordance with Report B126 RP N5

4 In accordance with Report B126 RP C4

5 In accordance with Report B126 RP D2

It is recommended to observe the development of wear in wheels and blocks following this block's initial fitting.

6 In accordance with Report B126 RP N5 & N6

7 In accordance with Report B126 RP C7

8 In accordance with Report B126 RP C9, vehicle without load-changeover device

9 In accordance with Report B126 RP D3

#10 In accordance with Report B 126 RP C13

#11 In accordance with report B 126 RP C8

#12 In accordance with report B 126 RP N10

#13 In accordance with report B 126 RP C3

#14 In accordance with report B 126 RP A6

#15 In accordance with report B126 RP C15

#16 In accordance with report B126 RP D4

#17 In accordance with report B126 RP N9

#18 In accordance with report B126 RP N9

#19 In accordance with report B126 RP O3

#20 in accordance with report B 126 RP N12

#21 In accordance with report B126 RP O6

#22 In accordance with report B126 RP A16

#23 In accordance with report B 126 RP O3 (V8)

#24 In accordance with report B 126 RP C21

(See page 11) The thickness of the wheel rim is related to the diameter of the running surface (calculated from minimal wheel diameter $\varnothing a_{\min}$ minus inner wheel diameter $\varnothing b_1$) and must not be below a minimum value of 30 mm (Reason: thermal limits of worn wheel).

#25 In accordance with report B126 RP P10

Information on updates for K blocks

Date of update:	Body in charge:	Decision:
13.4.2011	B126.13	Inclusion of the list of certified products from the design rules for K blocks, 7th edition
13.4.2011	SET 7	Completion of the list by the product C810 in 1xBgu configuration in accordance with the decision made by SET 7 on 4.3.2011 (e-mail consultation)
1.7.2011	SET 7	Completion of the list by the product C333 in 1xBgu configuration in accordance with the decision made by SET 7 on 29.6.2011
1.7.2011	B126.13	Completion of the list of provisionally certified products by C333 in 1xBgu (SS) and 2xBg (S/SS) configurations Decision by B126.13 on 16.6.2011
10.8.2011	SET 7	Completion of the list by the products C810 & J816M for nominal wheel diameters of 840 mm under the stated general conditions, in accordance with the decision made by B126.13 on 8.8.2011 (outcome of e-mail consultation initiated on basis of decision taken at meeting on 29.6.2011)
01.06.2012	SET 7	Completion of the list by the product C810 for wheels with diameter 840 mm. Results documented in Report B126/C4. Decision taken at meeting/by email consultation on 26.01.2012
01.06.2012	B126.13	Completion of the list of approved products by Becorit K40 under above mentioned boundary conditions, decision of B126.13, 76 th meeting on 22 nd & 23 rd May 2012
01.08.2012	SET 7	Completion of the list by certification of Jurid 816M on wheels with diameter of 760 and 730 mm under above mentioned boundary conditions (certification for wheels with diameter 840 mm since 1 st August 2011). Decision of SET 7 during 224 th meeting on 28 th & 29 th June 2012
01.08.2012	SET 7	Completion of the list by certification of FR513 in configuration 2xBg under above mentioned boundary conditions, Decision of SET 7 during 224 th meeting on 28 th & 29 th June 2012
02.02.2013	SET 7	List extended to include certification of the C810 for wheels with diameter 840 – 760 mm. Results of expert appraisal contained in B126/C7. Decision taken at meeting / by email on 15.11.2012
02.02.2013	SET 7	List extended to include certification of the C810 for wheels with diameter 840 – 760 mm. Results of expert appraisal contained in B126/C7. Decision taken at meeting / 225 th meeting on 23./24.01.2013
30.04.2013	SET 7	List extended to include certification of the FR513 for wheels with diameter 840 – 730 mm. Results of expert appraisal contained in B126/D3. Decision taken by email inquiry from 20.02.2013
05.07.2013	SET 7	List extended to include certification of the C333 for wheels with diameter 840 – 760 mm. Results of expert appraisal contained in B126/C13. Decision taken 226 th meeting on 18/19.06.2013
05.07.2013	SET 7	List extended to renew certification of the C810. Results of expert appraisal contained in B126/C8. Decision taken at 226 th meeting on 18/19.06.2013
09.01.2014	B 126.13	Completion of the list of provisionally certified products by Cosid 704 in 2xBg configuration in accordance with the decision of B 126.13 at its 83 rd meeting on 13/14 November 2013
01.04.2014	B 126.13	Completion of the list of provisionally certified products by Cosid 704 in 2xBgu configuration in accordance with the decision of B 126.13 at its 85 th meeting on 25/26 March 2014
01.04.2014	SET 7	List extended to extend the certification of the Jurid 816M. Results of expert appraisal contained in B126/N10. Decision taken by E-Mail survey from 14 th April 2014





Date of update:	Body in charge:	Decision:
01.07.2014	SET 7	Completion of the list by certification of CoFren C333 in configuration 2xBg, Results of expert appraisal contained in B126/C3. Decision taken during 228 th meeting on 24 th & 25 th June 2014
01.11.2014	SET 7	List completed to extend the certification of the Frenoplast FR513. Results of expert appraisal contained in B126/D4. Decision taken by E-Mail survey from 29 th September 2014
01.02.2015	SET 7	Completion of the list by certification of Becorit K40 in configuration 2xBg, Results of expert appraisal contained in B126/A6. Decision taken during 228 th meeting on 21 st & 22 nd January 2015
15.05.2015	SET 7	List completed to extend the certification of the Jurid 816M. Results of expert appraisal contained in B126/N9. Decision taken by E-Mail survey from 23 rd March 2015
15.05.2015	SET 7	List completed to extend the certification of the CoFren C810. Results of expert appraisal contained in B126/C15. Decision taken by E-Mail survey from 20 th April 2015
01.08.2015	SET 7	Completion of the list by certification of Becorit K40 in configuration 2xBg and SS.brake, Results of expert appraisal contained in B126/A6. Completion of the list by certification of CoFren C333 in configuration 2xBg and SS.brake, Results of expert appraisal contained in B126/C3. Decision taken during 230 th meeting on 1 st to 3 rd July 2015
01.08.2016	SET 7	Completion of the list by certification of Cosid 704 in configuration 2xBg and S-brake, wheel Ø 920 mm, Results of expert appraisal contained in B126 RP O3. Completion of the list by extension of certification of Jurid 816M in configuration 2xBg, wheel Ø 840-760 mm and SS.brake, Results of expert appraisal contained in B126 RPN14. Decision taken during 232 nd meeting on 22 nd and 23 rd June 2016
01.02.2017	SET 7	Completion of the list by certification of Cosid 704 in configuration 2xBgu and SS-brake, wheel Ø 920 mm, & 2xBg with wheel Ø 730-840 mm .Results of expert appraisal contained in B126/O3 & B 126/O6. Completion of the list by certification of Jurid 822 in configuration 1xBgu, wheel Ø 920 and S-brake. Results of expert appraisal contained in B126 RP N12. Decision taken during 233 rd meeting on 18 th & 19 th January 2017
October 2017	B 126.13	Prolongation of preliminary certification of Jurid 822 in configuration 1xBgu, wheel-Ø 920 mm, SS-brake, based on report B 126 RP N12 Prolongation of preliminary certification of CoFren C810 in configuration 1xBgu, wheel-Ø 920 mm, SS-brake, based on report B 126 RP A7
01.02.2018	SET 7	Completion of the list by extension of certification of Becorit K40 in configuration 2xBg, wheel Ø 840-730 mm S- and SS.brake, Results of expert appraisal contained in B 126 RP A16. Decision taken during 235 th meeting on 17 th and 18 th January 2018
01.02.2019	SET 7	Completion of the list by extension of certification of Cosid 704 in configuration 1xBgu, wheel Ø 920 mm, axle load 22,5t, S-brake, Results of expert appraisal contained in B 126 RP O3 (V8). Completion of the list by extension of certification of CoFren C333 in configuration 1xBgu, wheel Ø 840 mm, axle load 18t, S- and SS-brake Results of experts appraisal contained in B126/RP C21 Decisions taken during the 237 th meeting on 16 th and 17 th January 2019



Date of update:	Body in charge:	Decision:
08.07.2019	SET 7	Prolongation of preliminary certification of Federal Mogul Jurid 822 in configuration 1xBgu , SS-brake. Prolongation of preliminary certification of Cofren C810 in configuration 1xBgu , SS-brake. Decisions taken during the 238 th meeting on 2 nd and 3 rd July 2019
22.11.2019	SET 7	Extension of Jurid 816M certificate for nominal wheel diameters 840-760 mm to a minimum axle load of 5t Decision taken by E-Mail enquiry from 8th November 2019
18.05.2020	SET 7	Certification of PROBLOCK 816M in configuration 2xBg by identity check with the J816M Decision taken by E-Mail enquiry from 7 th April 2020.
20.07.2020	SET 7	Prolongation of certification of C810 for nominal diameters 840-760 mm in configuration 2xBg and for configuration 2xBgu Certification of PROBLOCK J816M in configuration 2xBgu by identity check with the J816M Decision taken during the 240 th meeting on 15 th and 16 th July 2020

M.2: Composite brake blocks with medium friction level (L)

Fully certified products

Manufacturer	Type description	Permitted applications/ remarks	Certified in accordance with leaflet edition no..	Application for certification made by	End of certification
Knorr-Bremse / Icer Rail	Problock 903/62	Supplementary block brake for coaches up to 200 km/h	5	Knorr-Bremse	14.01.2030
Federal-Mogul Friction Products	Ferodo 3325 F	Supplementary block brake for coaches up to 200 km/h	4	Federal-Mogul	31.12.2019
Wabtec	Becorit L249	Supplementary block brake for coaches up to 200 km/h	4	Becorit	30.06.2022

Information on updates for L blocks

Date of update:	Body in charge:	Decision:
01.08.2012	UIC SET 7	Completion of list by certification of Becorit L249 under above mentioned boundary conditions, decision of SET 7, 224th meeting on 28 th & 29 th June 2012
23.04.2020	UIC SET 7	Prolongation of Icer 903/62 renamed Problock 903/62 Decision taken during the 239th meeting on 15th and 16th January 2020

M.2: Composite brake blocks with low friction level (LL)

Products with provisional certification for service tests as per UIC Leaflet 541-4

Manufacturer	Type description and abbreviated designation (if different) (organic / sintered)	Nominal wheel diameter Ø [mm]	Min./ max. axle load [t]	Braking regime / speeds	Min./ max. force per block holder [kN]	Configuration	Certified as per leaflet edition no.	Remarks	Certification expires
Federal Mogul	J847 (organic)	920	3,6 22,5	s and ss (up to 20 t)	6 50	2 x Bgu	4	#1	10.09.2021

Nota #1 According to B 126 RP N11

Products with full certification as per UIC Leaflet 541-4

Manufacturer	Type description and abbreviated designation (if different) (organic / sintered)	Nominal wheel diameter Ø [mm]	Min./ max. axle load [t]	Braking regime / speeds	Min./ max. force per block holder [kN]	Configuration	Certified as per leaflet edition no.	Remarks	Certification expires
CoFren	C952-1 (sintered)	920	3,6 22,5	s	6 50	2 x Bg	4	#1	30.04.2023
CoFren	C952-1 (sintered)	920	3,6 22,5	s and ss (up to 20 t)	6 50	2 x Bgu	4		30.04.2023
CoFren	C952-1 (sintered)	840	5 20	empty 120 km/h laden 100 km/h	12 45	2 x Bg	4	#1 #2 According B126 DT 444	31.01.2025
CoFren	C952-1 (sintered)	760	5 18	empty 120 km/h laden 100 km/h	12 40	2 x Bg	4	#1 #2 Acc. to B126 DT 444	31.01.2025
Federal Mogul	J847 (organic)	920	3,6 22,5	s	6 50	2 x Bg	4	Acc. to B 126 RP N11	30.04.2029
Icer Rail / Becorit	IB 116* (organic)	920	3,6 22,5	s	6 50	2 x Bg	4		30.04.2023
Icer Rail / Becorit	IB 116* (organic)	920	3,6 22,5	s and ss (up to 20 t)	6 50	2 x Bg and 2 x Bgu	4		30.04.2023
Icer Rail / Becorit	IB 116* (organic)	840	5 20	empty 120 km/h laden 100 km/h	12 45	2 x Bg	4	#1 #2 Acc. to B126 DT 444	31.01.2025
Icer Rail / Becorit	IB 116* (organic)	760	5 18	empty 120 km/h laden 100 km/h	12 40	2 x Bg	4	#1 #2 Acc. to B126 DT 444	31.01.2025



Icer Rail / Becorit	IB 116* (organic)	730	3,6 18	s and ss (up to 14t)	2,5 40	2 x Bg	4	#1 #2 Acc. to B126 RP A18	30.06.2028
Icer Rail / Becorit	IB 116* (organic)	680	3,6 14,6	s and ss	2,5 40	2 x Bg	4	#1 #2 Acc. to B126 RP A18	30.06.2028

- Nota #1 Until it is demonstrated that this block is interchangeable with cast iron determining the braking performance against UIC Leaflet 544-1 shall continue to be performed with this configuration prior to fitting vehicles with this block.
- Nota #2 The thickness of the wheel rim is related to the diameter of the running surface (calculated from minimal wheel diameter $\varnothing_{a_{min}}$ minus inner wheel diameter \varnothing_{b_1}) and must not be below a minimum value of 30 mm (Reason: thermal limits of worn wheel).

Information on updates for LL blocks

Date of update:	Body:	Decision:
16.6.2011	B126.13	Inclusion of the list of provisionally certified products from the design rules for LL blocks, 7th edition
01.06.2012	B126.13	Extension of provisional approval of the existing products by two years in accordance with the decision taken by WG B126.13 at its 75th meeting on 8.3.2012
01.05.2013	SET 7	Full certification issued for the C952-1 and IB116*: decision of SET 7 at its 225th meeting on 24.01.2013
01.06.2013	SET 7	Consideration of the decision by E-Mail survey from 24th April 2013 concerning unlimited interchangeability with cast iron brake blocks on the basis of report B 126 DT 440.
04.12.2014	B126.13	Provisional approval issued on the basis of report B126/N11, decided by WG B126.13 at its 88 th meeting on 04.12.2014
01.02.2015	SET 7	Consideration of the results of report B126 DT 444, approved at the 229th meeting SET 7 on 22.01.2015
15.07.2018	SET 7	Extension of the certification of the brake block IB 116* based on the results of B 126 RP A18 approved by SET 7 at the 236 th meeting (Agenda point 3.2.2) on 27 th & 28 th June 2018
16.05.2019	SET 7	Full certification issued for the J847 on the basis of report B126 RP N11. Decision of the SET 7 at its 237 th meeting (Agenda point 3.2.5) on 16 th and 17 th January 2019 and E-Mail survey from 11 th April 2019.
10.10.2019	B126.13	Prolongation of preliminary certification of Federal Mogul Jurid 847 in configuration 2xBgu , S and SS-brake.