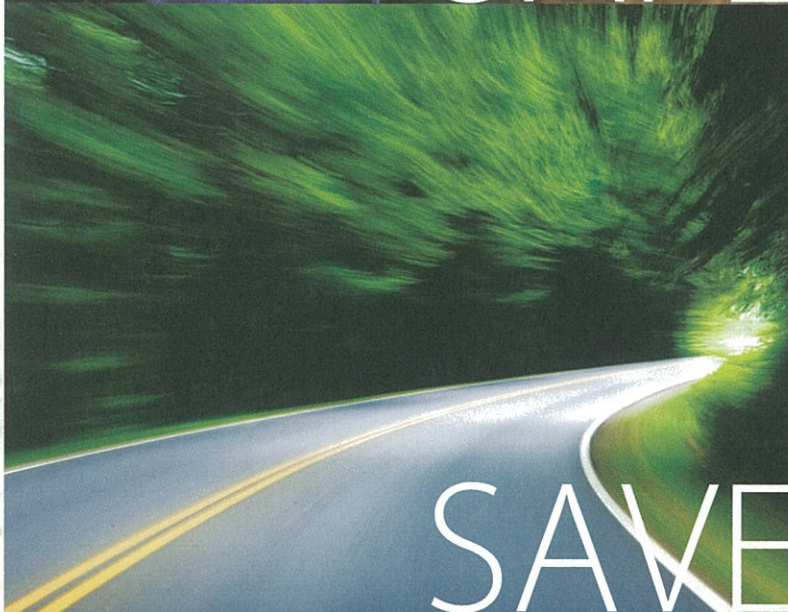


BRIDGESTONE

BANDAG TREAD PRODUCT GUIDE

FOR ASIA REGIONS ONLY



Bridgestone Bandag.
It's all about saving and safety.



SAVE SAFE SAVE

Saving costs. Safety in operation. Saving the earth. The benefits of Bridgestone Bandag retreads are obvious and immediate. From reducing running costs by reusing tyre casings, to meticulous pre- and post-retread inspections to being environmentally friendly with less resources used, less wastes, and less CO₂ emission, Bridgestone Bandag is all about technology with responsibility.



Total tyre offering

SAVE SAFE SAVE



Bridgestone's acquisition of Bandag Incorporated, the leading company in the retread industry, was completed on May 31, 2007. The new company's name is Bridgestone Bandag (BSBD).

This is the second-largest acquisition made by the Bridgestone Group, following the takeover of Firestone in 1988.



BANDAG, INC, America's leading retread company was founded in 1957 by Roy Carver who discovered the cold retread method in Germany after World War II and bought the rights to use this technology in North America.

Bandag milestones



1957

Roy Carver establishes Bandag Incorporated.



1963

Bandag develops its use of an envelope (a rubber envelope in which tyre casings are enclosed) to remove air from tread bonding before curing.

1968

Public offering of company stock.



1981

Bandag founder Roy Carver passes away. His son, Martin Carver is appointed president.



1996

Application Specific strategy is adopted, a strategy designed to create retread tyres that can deliver higher performance than new tyres.

2007

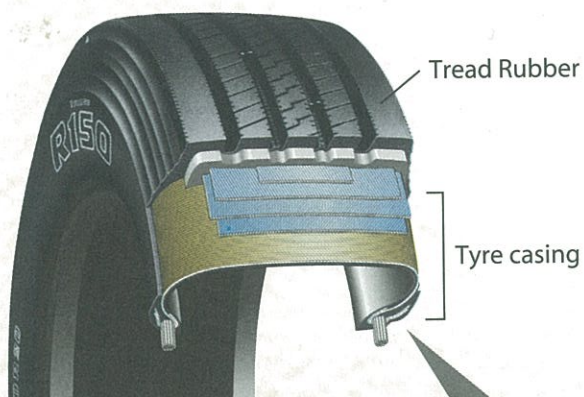
Bandag becomes a member of the Bridgestone Group. The company name is changed to Bridgestone Bandag, LLC.



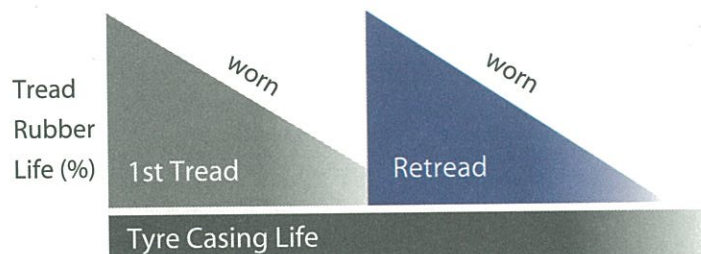
The Bridgestone Bandag Retread Advantage: REDUCED RUNNING COSTS

More often than not, tyre casings are usually still in good condition even after the main treads have worn out. Thus, the service life of tyre casings can be maximized through retreading.

At Bridgestone Bandag, we help you to significantly stretch your original investment dollar through retreading. And immediately reducing operating costs while maintaining performance and safety.



Even after the tread is worn, the tyre casing is still in good useable condition with proper tyre maintenance during its first service life.



The service life of tyre casing can be maximized through retreading, which significantly reduces the cost while performance remains the same.



The Bridgestone Bandag Retread Advantage: SAFETY WITH PERFORMANCE

Safety is the priority at Bridgestone Bandag. Out of the 10 steps in our retread process, 4 initial steps are focused on inspecting the used tyre and determining if it is the right candidate for retreading. The retreading process itself includes a final inspection to ensure safety.

That's not all. Customers of Bridgestone Bandag also enjoy regular after-sales safety inspections by our trained technicians. Retread tyres are inspected for wear and tear as well as maintenance and advice on the correct use of retread tyres.

This is the Bridgestone Bandag commitment to ensuring utmost safety for our users.

Inspection



Remove old tread & repair



Precured tread



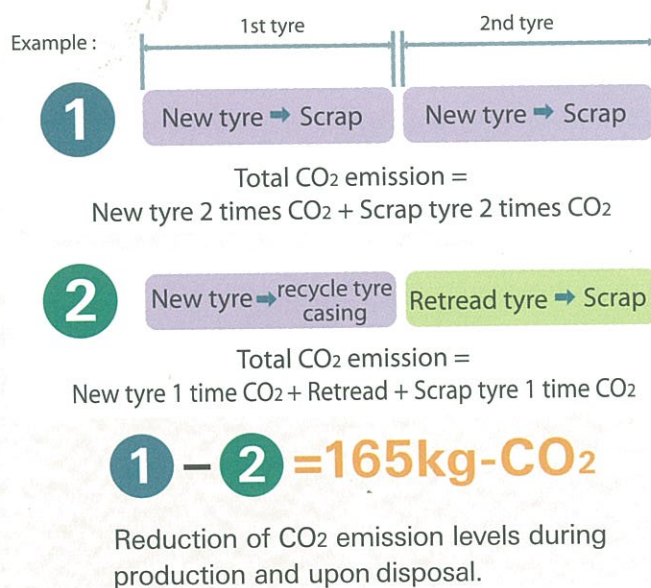
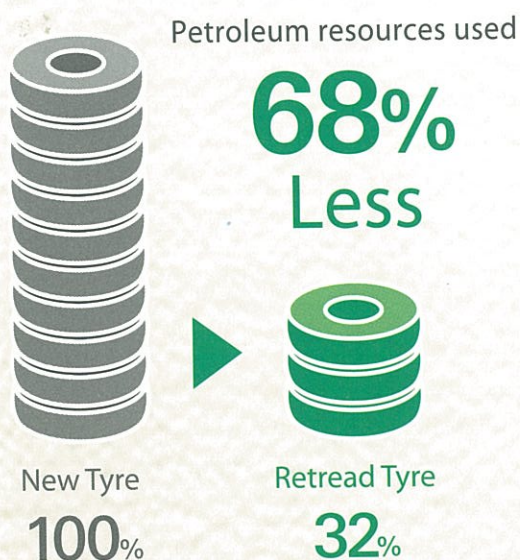
Final inspection



The Bridgestone Bandag Retread Advantage: ENVIRONMENTAL PROTECTION

Compared to new tyres, retread tyres require only 32% of the petroleum resources for production. Less than 1/2 of the rubber needed to make a new tyre is used to make a retread. Using retreads leads to reductions in CO₂ emissions in the production process. Retreading tyres also reduces the amount of industrial wastes.

Bridgestone Bandag's retreading process minimizes the environmental impact on our planet.



THE RETREAD PROCESS

STEP 1



Inspection process after tyre received

First the entire tyre casing is checked visually and by touch. Any visible defects are marked.

STEP 2



NDT (non-destructive testing) inspection process

The NDT process is used to inspect the internal parts of the tyre. Any nail holes or punctures in the tyre casing are marked for repair.

STEP 3



Laser inspection process

The tyre is placed in a machine in which a vacuum has been created. The tyre is exposed to a laser beam to check for internal defects. Any abnormalities found are shown on a display screen. After the first three tests have been completed, a trained inspector decides whether or not to go ahead with retreading. The decision is based on the tyre's condition and Bandag specifications.

STEP 4



The buffing process

Buffing removes the worn tread. After the manufacturer, product name, and size are input, the machine automatically strips away the tread. Bridgestone Bandag has data for every type of tyre to determine the thickness of the old tread that must be cut away.

STEP 5



The repair process

Punctures in tyres are filled with rubber, and rubber patches are affixed to complete the repair. Bridgestone Bandag offers repair patches in a wide variety of sizes along with engineering specifications.

STEP 6



Application of cushion gum

A rubber substance called cushion gum is applied to the tyre casing to enable the pre-cured tread to be bonded to the tyre.

STEP 7



Precured tread application process

The precured tread is applied automatically.

STEP 8



The envelope process

In a preparatory process before vulcanization, the tyre to which the precured tread has been applied is encased in a flexible rubber envelope to remove air. This is done to prevent air from getting between the tread and the tyre casing.

STEP 9



Curing process

Curing is conducted in a machine called a pressure chamber. Twenty-two tyres can be placed in the chamber at any one time.

STEP 10



Final inspection

Each cured tyre is thoroughly inspected to verify that there are no problems.



SAVE



SAFE



SAVE



3mm
Tread Depth

3x Tyre Life!

What's so important
about 3mm tread depth?

Tyres with at least 3mm of tread depth might still be used for a short period before they are totally worn out. But if we remove tyres with at least 3mm tread depth and send them for retreading, they might be able to offer more mileage and provide better CPK (Cost Per Kilometer).

So it's better to retread a tyre when it has at least 3mm tread left, than to use it until it is totally worn out.



SAVE
SAFE
SAVE

New Tyre

3mm
Tread Depth



Tyre needs to be maintained during first life in order to ensure good retreadability.

New Tyre

Worn out with 3mm tread depth remaining being sent for retreading.

Retreading



3mm
Tread Depth



1st Retread Life

Additional **168,000km** mileage.
Sent for 2nd retreading with 3mm tread depth.

Retreading



2nd Retread Life

Another **204,000km** mileage.

What is 3X tyre life?

If you remove a tyre with at least 3mm tread depth and send them for retreading, you can achieve up to 3 TIMES the life* of the tyre. The casings of these tyres will not be damaged due to exposure of steel belt for (TBR), reducing the possibility of rust and dirt which may cause belt separation in radial tyres.

Above mileage data is for illustration purpose and is based on OTD=17mm for new and retread tyre. Actual mileage may differ depending on applications.

Assuming retread wear rate = **12,000km/mm**.

* Casing retreadability depends on how well maintained the tyre is during operating conditions, such as proper inflation pressure, regular tyre checks, etc.

Application

Long Drive • Regional Drive • On/Off Road • Severe Service

Application position

ALL POSITION



DRIVE



TRAILER AND OTHERS



Usage & Driving condition



LONG LONG DRIVE

Fleets that are operating in long haul, line haul or regional operations. In over-the-road applications, turning and scrubbing are reduced based on the points of travel. Although this application may see some city services, the bulk of these operations have reduced turning and slow tyre wear rates. This application may include both single and tandem axle configurations.

(Note: The differentiation point between regional over-the-road and intra-city pickup and delivery is the type of service the operation truly sees. There are some grey areas based on the application service. Therefore, on occasion, tyres are mixed between these two applications.)



REGION REGIONAL DRIVE

Intra-city service which operates with high turning and high scrubbing which accelerate wear as compared to like tyres in over-the-road applications. There is increased braking and high torque on these tyres caused by sudden starts and stops. Tandem axle, single axle, and straight truck vehicle configurations are used in this application.

This application also includes pick up and delivery vans and trucks whose routes vary based on location from rural to inter-city. Turning, braking and frequent stopping cause these tyre products to experience rapid wear rates. Most applications operate on secondary or better highway conditions. Recent trends in this application have seen a dramatic shift to radial steel ply construction which enhances the potential for retreading opportunities.



ON/OFF ON/OFF ROAD

Tyres utilized in this application are used approximately 70% on the road, with the remaining usage in conditions similar to those encountered by severe service off-road applications. Mining, logging, construction and waste operations are typical of the end-users found in this application. The wide range of vehicle types and configurations that operate within this application are looking for a tyre product that combines both over-the-road and severe service characteristics.



SEVERE SEVERE SERVICE

70-90% off the road and 10-30% on the highway. Extreme off road conditions which require special compounding to resist chipping, chunking and possible tearing of the tread. Mixture of vehicle types based on service conditions.

ALL POSITION

LONG

REGION

For Radial only

R4200®

A five rib tread with ample skid depth. Delivers exceptional mileage in applications where above normal traction is not required.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
8.5*	211	15.9	20
9*	219	15.9	20
230*	230	15.9	16
12	252	15.9	16
14	276	15.9	16

* Only available with MilEdges®

ALL POSITION

LONG

REGION

For Radial / Bias

HIGHWAY

A truly universal all-wheel position rib tread with a long history of proven performance.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
1*	127	11.1	20
2*	143	11.1	15
3	153	11.1	35
4**	163	12.7	30
5	169	12.7	30
6**	178	12.7	30
7**	194	12.7	25
8**	203	12.7	25
8.5**	211	13.9	20
9**	219	15.1	20

* 2 rolls per package ** Also available with MilEdges®

ALL POSITION

LONG

REGION

For Radial only

RADIAL PLUS

An all-wheel position rib tread which is exceptionally versatile.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
6	178	13.9	24
7	194	13.9	20
8	203	13.9	20
8.5	211	14.3	20
9	219	14.3	20
10.5	238	14.3	16

ALL POSITION

REGION

ON/OFF

For Radial only

RTP™

An outstanding all-wheel position deep tread for superior mileage in on-and-off-the-road uses. Voids are designed to eject stones, which can extend casing life.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
6	178	14.3	24
7	194	14.3	20
8	203	14.3	20
8.5	211	14.3	20
9*	219	14.3	20
9.5	225	14.3	16
10.5	238	14.3	16

* Also available with MilEdges®

[MilEdges® : Small cuts are made across the tread width to improve traction of the retreads]

ALL POSITION

REGION ON/OFF

For Radial only

DSN III

Innovative tread starts as a lug design for winter traction; as it wears, it becomes a rib design for cool running during the summer.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
2	143	15.0	28
3	153	15.0	28
4	163	15.0	20
5	169	15.0	24
6	178	17.0	24
7	194	17.0	20
8	203	17.0	20
8.5	211	17.0	20
9	219	17.0	16
10.5	238	17.0	16

ALL POSITION

REGION ON/OFF SEVERE

For Radial / Bias

WH RIB™

A deep all-wheel position rib tread with excellent penetration resistance for on-and-off-the-road, slow-speed, short-haul applications. Non-uniform groove wall angles to fight stone retention.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
7	194	19.1	20
8	203	19.1	20
8.5	211	19.1	20
9	219	19.1	20
9.5	225	19.1	16
10.5	238	19.1	16
12	252	19.1	20
14	276	19.1	20

ALL POSITION

ON/OFF

For Radial / Bias

RIB LOGGER

A top performing 3-rib design with deep tread grooves. Designed to handle tough on-and-off-the-road applications that are slow speed and short haul.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
8	203	16.7	20
9	219	17.5	20

ALL POSITION

REGION

For Radial / Bias

BRAWNY® RV

An all-wheel position, power grip tread. The most aggressive, dynamic traction available for four-wheel-drive recreational vehicles.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
700*	178	12.7	30
750*	191	12.7	25
800*	203	12.7	25

* Also available with MilEdges®

[MilEdges® : Small cuts are made across the tread width to improve traction of the retreads]

ALL POSITION

REGION

For Radial / Bias

BRAWNY® RIB

A rib version of BRAWNY® which delivers excellent mileage in light truck applications.

Outstanding performance at any wheel position. Versatile enough for bias or radial casings.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
500	127	9.5	20
550	140	9.5	30
600	152	11.1	35
650	165	11.1	30
700	178	11.1	30
750	191	11.1	25
800	203	11.1	25
850	216	11.1	25

ALL POSITION

LONG

REGION

For Radial only

BDV

Built specifically for urban fleets with improved tread wear and wet braking traction through superior tread design.

Solid shoulders withstand punishing corners and curbs.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
190	190	17.5	20
200	200	17.5	20
210	210	17.5	20
220	220	17.5	20
230	230	17.5	20
240	240	17.5	16
250	250	17.5	16
260	260	17.5	16

ALL POSITION

ON/OFF

For Radial / Bias

WIDE BASE RIB

This 5-rib all-wheel position tread is ideal for wide base service where outstanding mileage is an important criterion.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
15	290	12.7	15
16.5	329	12.7	15
18	344	12.7	15

DRIVE

LONG

REGION

For Radial only

D4300®

A deep, all-weather tread that delivers excellent mileage while meeting the traction requirements of normal line-haul applications. Shoulder grooves have been deepened to enhance traction.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
6	178	17.5	20
7*	194	17.5	20
8*	203	17.5	20
8.5*	211	17.5	20
9*	219	17.5	20
9.5*	225	17.5	16

* Also available with MilEdges®

[MilEdges® : Small cuts are made across the tread width to improve traction of the retreads]

DRIVE

LONG

REGION

For Radial / Bias

D4310® & D4310® DEEP

A deep, all-weather, drive axle tread that delivers excellent mileage while meeting the traction requirements of normal line-haul applications.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
7	194	17.5	20
8	203	17.5	20
8.5	211	17.5	20
9	219	17.5	20
9.5	225	17.5	16
10.5D	238	19.1	16
250D	250	19.1	16

* D : D4310® DEEP

DRIVE

REGION

ON/OFF

For Radial / Bias

CROSS BAR

Deep sculpted traction-bar design offers excellent mileage and penetration resistance for all industrial applications.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
2	143	11.9	35
3	153	11.9	35
4	163	15.1	24
6	178	15.1	24
7	194	15.1	20
8	203	15.1	20
9	219	15.1	16
11	246	15.1	16

DRIVE

ON/OFF

For Radial / Bias

WASTE HAULER LUG™

A deep, drive-axle tread designed for severe on-and-off-the-road, slow-speed, short-haul applications requiring maximum traction. Deep tread depth for extraordinary penetration resistance.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
7	194	20.6	20
8	203	20.6	20
8.5	211	20.6	20
9	219	20.6	20
9.5	225	20.6	16
10.5	238	22.2	16
12	252	25.4	20
14	276	25.4	20

DRIVE

LONG

REGION

For Radial / Bias

DRIVE TRAC™

A lightweight, cool-running tread that offers excellent traction in a variety of applications.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
6	178	14.3	24
7	194	14.3	20
8	203	14.3	20
8.5	211	14.3	20
9	219	14.3	20

DRIVE

ON/OFF

For Radial / Bias

LUG TRAC

A deep, aggressive drive-axle tread offering long mileage and excellent penetration resistance for short-haul, slow-speed over-the-road and off-the-road applications.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
7	194	22.2	20
8	203	22.2	20
8.5	211	22.2	20
9	219	22.2	20
10	232	22.2	16
12	252	22.2	16

DRIVE

ON/OFF

SEVERE

For Radial / Bias

**LUG LOGGER &
LUG LOGGER EXTRA DEEP**

A solid traction, drive-axle tread engineered to provide maximum service under rigorous on-and-off-the-road conditions.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
6	178	16.7	24
7	194	16.7	20
8	203	16.7	20
11	243	19.1	16
8.5XD	211	25.4	25
9XD	225	25.4	25
12XD	252	25.4	20

* XD : LUG LOGGER EXTRA DEEP

DRIVE

SEVERE

For Radial / Bias

ROCK LUG DEEP UNDERTREAD

A deep, dynamic, hard-pulling tread designed for drive axles in short-haul, slow-speed and severe off-the-road applications. Exceptional mileage and penetration resistance.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
9	219	23.8	20
12	243	28.6	16
13	303	28.6	12
14	318	32.5	12

DRIVE

REGION

For Radial / Bias

COMMERCIAL TRACTION

Dependable, aggressive, drive axle tread. Its built-in versatility allows it to be used in either bias or radial applications.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
550	140	11.1	30
600	152	12.7	30
650	165	12.7	30
700	178	12.7	30
750	191	12.7	25
800	203	12.7	25
850	216	12.7	25

DRIVE

REGION ON/OFF

For Radial / Bias

COMMERCIAL TRACTION DEEP

A deep, aggressive, drive axle tread. Its built-in versatility allows it to be used in either bias or radial applications.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
600*	152	15.9	28
650*	165	15.9	24
700*	178	17	24
750*	191	17	20
800*	203	17	20
850*	216	17	20

* Also available with MilEdges®

TRAILER

LONG

For Radial / Bias

HI SPEED

A light weight 5-rib tread design that was created to achieve good performance for over-the-road trailer applications.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
4	163	8.7	48
5	169	8.7	48
6	178	8.7	48
7	194	8.7	32
8	203	9.5	32
8.5*	211	9.5	32
9*	219	9.5	32

* Also available with MilEdges®

TRAILER

LONG

For Radial only

T4100®

A 5-rib tread with deep tread depth which assures exceptional tread wear and excellent wet-road stability.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
7*	194	11.9	25
8*	203	11.9	25
8.5*	211	11.9	25
9*	219	11.9	25
9.5*	225	11.9	20
10.5*	238	11.9	20

* Also available with MilEdges®

OTHERS

INDUSTRIAL

For Radial / Bias

BUILD UP

Solid rubber, with no tread design. Buffed on both sides.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
8	203	11.9	25
13	305	12.7	15

[MilEdges® : Small cuts are made across the tread width to improve traction of the retreads]

OTHERS

INDUSTRIAL

For Radial / Bias

SLICK



Solid rubber, with no tread design. Buffed and cemented on one side only.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
8	203	25.4	25
11.5	254	25.4	20
13	305	25.4	15

OTHERS

ON/OFF

SEVERE

For Radial / Bias

GRADER



An extremely aggressive drive-axle tread for on-the-road and off-the-road applications. Performs equally well with either bias or radial casings.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
12.5	270	25.4	12
13	302	25.4	12
14	325	25.4	12

OTHERS

SPECIALTY

For Radial / Bias

ML70™



Delivers maximum traction and long wear in short-haul, slow-speed, off-the-road applications.

TREAD SIZE CODE	BASE WIDTH (mm)	TREAD DEPTH (mm)	ROLLS / PALLET
16	320	24.6	15
18	354	24.6	12

OTHERS

BANDAG HD30 CUSHION GUM

CUSHION GUM SIZE	WIDTH (mm)	BOXES / PALLET
140	140	36
160	160	36
180	180	36
200	200	27
210	210	27
220	220	27
230	230	27
240	240	27

CUSHION GUM SIZE	WIDTH (mm)	BOXES / PALLET
250	250	27
260	260	27
270	270	27
280	280	27
310	310	18
340	340	18
360	360	18
380	380	18

BANDAG HD30 CUSHION GUM

Item Descriptions	BOXES / PALLET
HD30 Strip Stock	1
Bandag 75 Repair Gum 200	27
Extruder Repair Gum	18
Highway Extrusion	18
Grader Extrusion	18
Light Truck Shoulder Extrusion	18
Bandag HD30 30mm	36
Bandag HD30 50mm	27

**BANDAG TREAD
PRODUCT MATRIX**

	 ALL POSITION	 DRIVE	 TRAILER
LONG LONG DRIVE	BDV HIGHWAY R4200® RADIAL PLUS	D4300® D4310® D4310® DEEP DRIVE TRAC™	HI SPEED T4100® T4100® w MilEdges®
REGION REGIONAL DRIVE	BDV HIGHWAY R4200® RADIAL PLUS RTP™ DSN III WH RIB™ BRAWNY® RV BRAWNY® RIB RIB LOGGER WIDE BASE RIB	D4300® D4310® D4310® DEEP DRIVE TRAC™ CROSS BAR COMMERCIAL TRACTION COMMERCIAL TRACTION DEEP	
ON/OFF ON/OFF ROAD	RTP™ DSN III WH RIB™ RIB LOGGER WIDE BASE RIB	COMMERCIAL TRACTION DEEP WH LUG™ CROSS BAR LUG TRAC LUG LOGGER LUG LOGGER EXTRA DEEP	
SEVERE SEVERE SERVICE	WH RIB™	LUG LOGGER LUG LOGGER EXTRA DEEP ROCK LUG DEEP UNDERTREAD	WH RIB™

OTHERS / SPECIALTY

INDUSTRIAL

BUILD UP

ON/OFF

SEVERE

GRADER

INDUSTRIAL

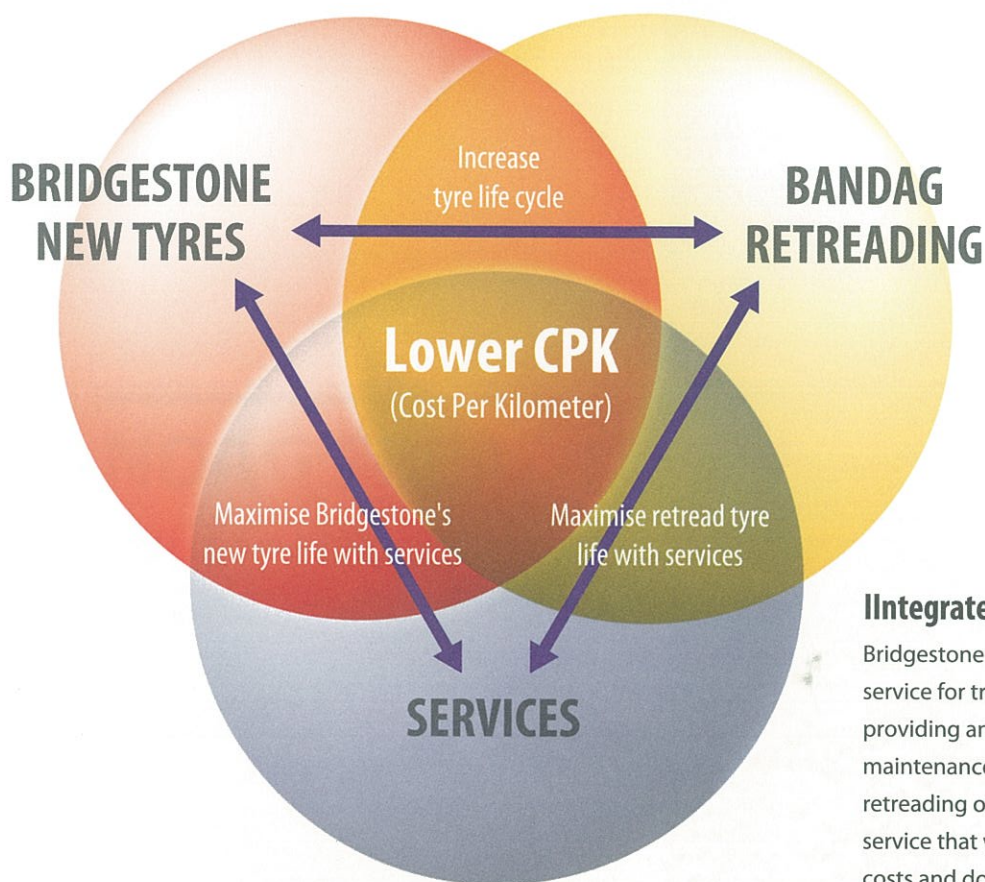
SLICK

SPECIALTY

ML70™

SOLUTION

Added **advantage** for Bridgestone users



Integrated Solution For Fleet Owners

Bridgestone B Solution is a total-solution service for truck and bus fleet owners. By providing an all-in-one service from buying, maintenance, roadside service, recycling to retreading of tyres, B Solution is a one-stop service that will help to reduce operating costs and downtime.



New!

1

Bridgestone New Truck Bus Radial (TBR) Tyres

- Full range of truck and bus tyres with superior performance and high retreadability

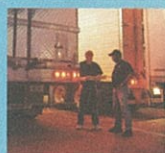


Retread!

2

Bandag Retread

- World-renowned retreading methods
- Reliable retread tyres for safety, excellent mileages and further cost savings



Service!

3

Full Support Service / Packages

- 24/7 customer support services
- IT support for your tyre maintenance
- Attractive cost-saving packages
- Extensive Bridgestone Professional Service Network (BSPN)
- Trained tyre mounting technicians at authorised Bridgestone TBR dealers

Benefits

► **LOWER CPK** (COST-PER-KILOMETER)

by maximizing tyre mileage and life cycle through maintenance

► **SAFETY**

with durable and superior tyres and extensive 24/7 Bridgestone network

► **ECO-FRIENDLY**

with Bridgestone Reduce, Reuse, Recycle policy



Bridgestone Asia Pacific Pte. Ltd.