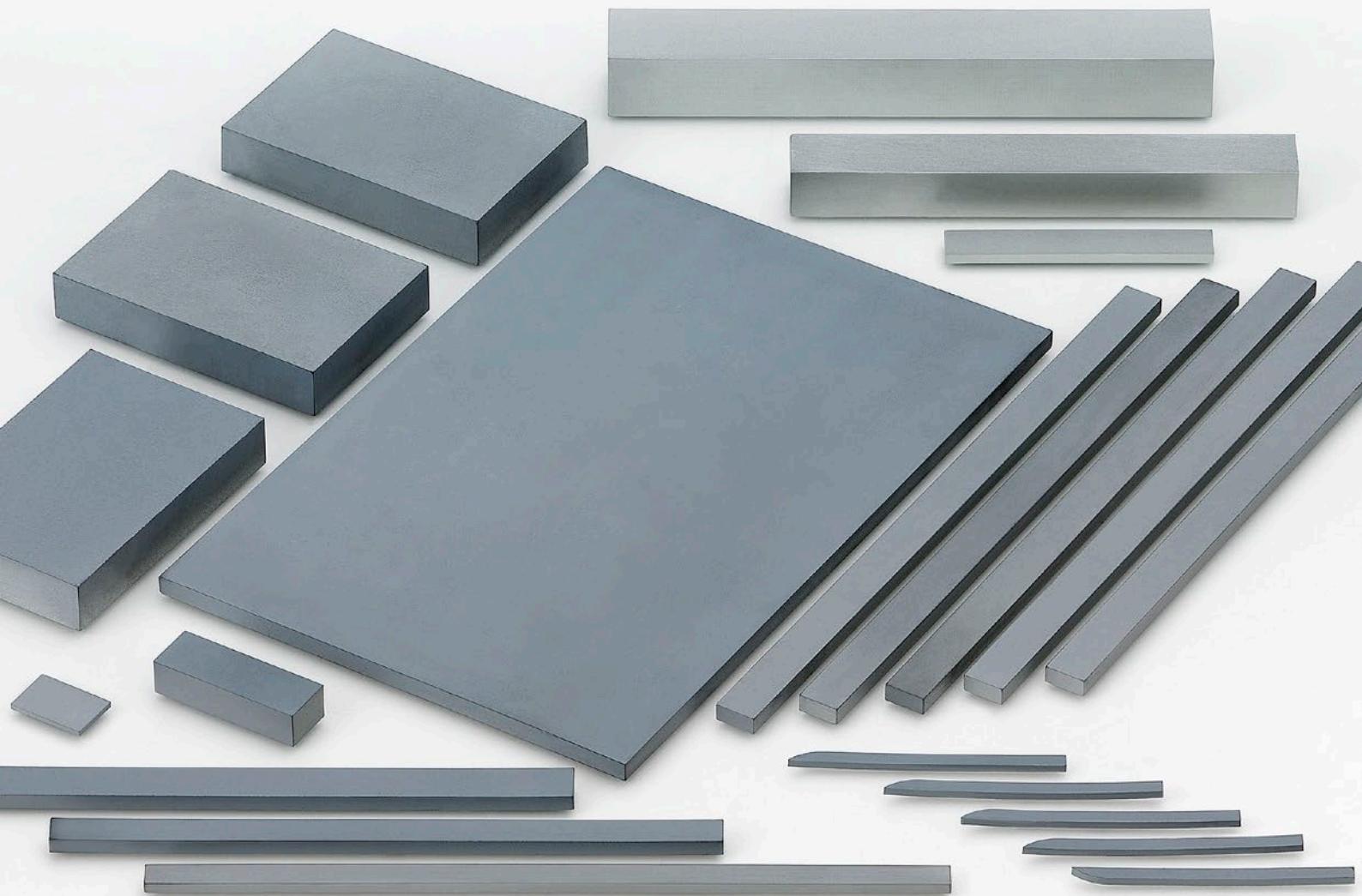


CEMENTED CARBIDE PLATES



MMC RYOTEC Corporation

A Group Company of  **MITSUBISHI MATERIALS**

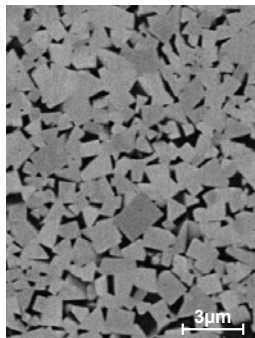
Cemented Carbide Plates

Grade Properties

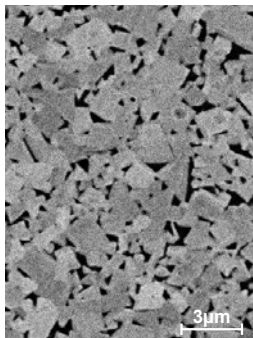
	Grade	ISO Code	Grain Size (μm)	Co (mass%)	TRS (GPa) *1	Hardness		Applications		Work Material				
						HRA *2	HV *3	For Automatic Lathes	Cemented Carbide Plates	General Steel	Stainless Steel	Cast Iron	Non-ferrous Metal	Heat Resistant Alloy
Cemented Carbide	TF15	K20	<0.9	10	2.5	91.0	1550	●	●					○
	HTi10	K10	<1.0	6	2.0	92.0	1700	●	●			○	○	
	UTi20T	M20	<3.0	9	2.0	90.5	1450	●	●	○	○			
Cermet	NX55	P10	<2.0	18	2.0	91.2	1500	●		○				
	TBF61	P20	<2.0	19	2.0	90.5	1450	●		○				

*1 ISO03327 *2 ISO03738 *3 ISO03878

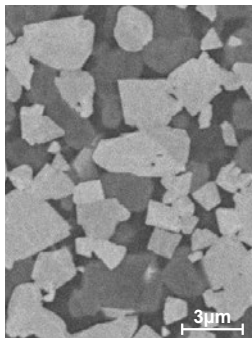
《SEM Pictures》



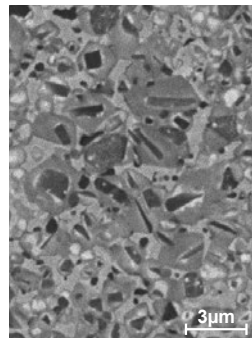
TF15



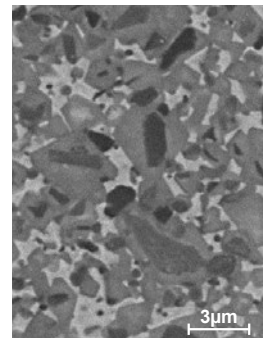
HTi10



UTi20T



NX55

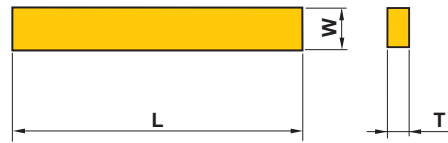
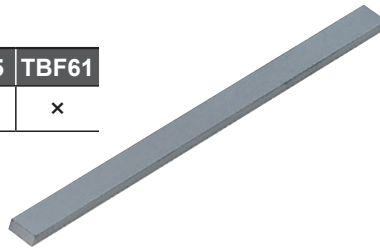


TBF61

Cemented Carbide Plates

Grade

UTi20T	HTi10	TF15	NX55	TBF61
○	○	○	×	×



Order Number	Dimensions (mm)					
	L		W		T	
TLB-8x3xT	8	±0.5	3	±0.5	2-4	+0.5 0
-8x5xT	8	±0.5	5	±0.5	2-7	+0.5 0
-8x6xT	8	±0.5	6	±0.5	2-8	+0.5 0
-8x7xT	8	±0.5	7	±0.5	2-8	+0.5 0
-8x8xT	8	±0.5	8	±0.5	2-8	+0.5 0
-9x6xT	9	±0.5	6	±0.5	2-8	+0.5 0
-9x7xT	9	±0.5	7	±0.5	2-8	+0.5 0
-9x8xT	9	±0.5	8	±0.5	2-6	+0.5 0
-10x2xT	10	±0.5	2	±0.5	2-4	+0.5 0
-10x3xT	10	±0.5	3	±0.5	2-8	+0.5 0
-10x4xT	10	±0.5	4	±0.5	2-8	+0.5 0
-10x5xT	10	±0.5	5	±0.5	2-8	+0.5 0
-10x6xT	10	±0.5	6	±0.5	2-4	+0.5 0
-10x7xT	10	±0.5	7	±0.5	2-8	+0.5 0
-10x8xT	10	±0.5	8	±0.5	2-7	+0.5 0
-10x9xT	10	±0.5	9	±0.5	2-6	+0.5 0
-10x10xT	10	±0.5	10	±0.5	2-10	+0.5 0
-11x4xT	11	±0.5	4	±0.5	2-7	+0.5 0
-11x5xT	11	±0.5	5	±0.5	2-8	+0.5 0
-11x6xT	11	±0.5	6	±0.5	2-6	+0.5 0
-11x8xT	11	±0.6	8	±0.6	2-8	+0.5 0
-11x9xT	11	±0.5	9	±0.5	2-8	+0.5 0
-11x11xT	11	±0.5	11	±0.5	2-8	+0.5 0
-12x2xT	12	±0.5	2	±0.5	2-7	+0.5 0
-12x5xT	12	±0.5	5	±0.5	2-8	+0.5 0
-12x7xT	12	±0.5	7	±0.5	2-8	+0.5 0
-12x8xT	12	±0.5	8	±0.5	2-8	+0.5 0
-12x9xT	12	±0.5	9	±0.5	2-8	+0.5 0
-12x10xT	12	±0.5	10	±0.5	2-10	+0.5 0
-12x12xT	12	±0.5	12	±0.5	2-8	+0.5 0
-13x4xT	13	±0.5	4	±0.5	2-6	+0.5 0
-13x6xT	13	±0.5	6	±0.5	2-8	+0.5 0
-13x7xT	13	±0.5	7	±0.5	2-8	+0.5 0
-13x8xT	13	±0.5	8	±0.5	2-8	+0.5 0
-13x9xT	13	±0.5	9	±0.5	2-7	+0.5 0
-13x10xT	13	±0.5	10	±0.5	2-8	+0.5 0
-13x12xT	13	±0.5	12	±0.5	2-10	+0.5 0
-13x13xT	13	+1/0	13	+1/0	2-7	+0.5 0
-14x3xT	14	±0.5	3	±0.5	2-8	+0.5 0
-14x5xT	14	±0.5	5	±0.5	2-8	+0.5 0

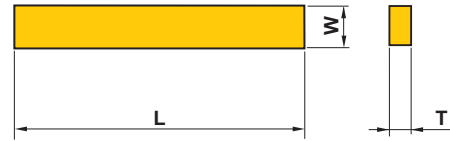
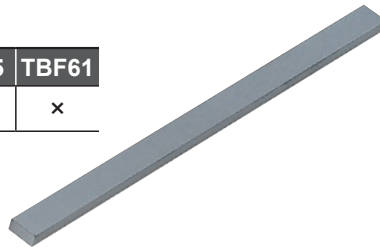
Order Number	Dimensions (mm)					
	L		W		T	
TLB-14x6xT	14	±0.5	6	±0.5	2-8	+0.5 0
-14x8xT	14	±0.5	8	±0.5	2-8	+0.5 0
-14x10xT	14	±0.5	10	±0.5	2-9	+0.5 0
-15x3xT	15	±0.5	3	±0.5	2-4	+0.5 0
-15x4xT	15	±0.5	4	±0.5	2-4	+0.5 0
-15x5xT	15	±0.5	5	±0.5	2-8	+0.5 0
-15x6xT	15	±0.5	6	±0.5	2-8	+0.5 0
-15x7xT	15	±0.5	7	±0.5	2-8	+0.5 0
-15x8xT	15	±0.5	8	±0.5	2-7	+0.5 0
-15x9xT	15	±0.5	9	±0.5	2-8	+0.5 0
-15x10xT	15	±0.5	10	±0.5	2-7	+0.5 0
-15x12xT	15	±0.6	12	±0.5	2-7	+0.5 0
-15x13xT	15	±0.5	13	±0.5	2-8	+0.5 0
-16x3xT	16	±0.6	3	±0.5	2-8	+0.5 0
-16x4xT	16	±0.6	4	±0.5	2-8	+0.5 0
-16x5xT	16	±0.6	5	±0.5	2-4	+0.5 0
-16x6xT	16	±0.6	6	±0.5	2-8	+0.5 0
-16x7xT	16	±0.6	7	±0.5	2-8	+0.5 0
-16x8xT	16	±0.6	8	±0.5	2-8	+0.5 0
-16x9xT	16	±0.6	9	±0.5	2-8	+0.5 0
-16x10xT	16	±0.6	10	±0.5	2-8	+0.5 0
-16x11xT	16	±0.6	11	±0.5	2-6	+0.5 0
-16x14xT	16	±0.6	14	±0.5	2-8	+0.5 0
-16x15xT	16	±0.6	15	±0.5	2-7	+0.5 0
-16x16xT	16	+1/0	16	±0.5	2-10	+0.5 0
-17x3xT	17	±0.6	3	±0.5	2-8	+0.5 0
-17x4xT	17	±0.6	4	±0.5	2-8	+0.5 0
-17x5xT	17	±0.6	5	±0.5	2-8	+0.5 0
-17x6xT	17	±0.6	6	±0.5	2-8	+0.5 0
-17x8xT	17	±0.6	8	±0.5	2-8	+0.5 0
-17x10xT	17	±0.6	10	±0.5	2-10	+0.5 0
-17x11xT	17	±0.6	11	±0.5	2-8	+0.5 0
-17x13xT	17	±0.6	13	±0.5	2-8	+0.5 0
-18x3xT	18	±0.6	3	±0.5	2-8	+0.5 0
-18x4xT	18	±0.7	4	±0.5	2-7	+0.5 0
-18x5xT	18	±0.6	5	±0.5	2-7	+0.5 0
-18x6xT	18	±0.6	6	±0.5	2-8	+0.5 0
-18x7xT	18	±0.6	7	±0.5	2-8	+0.5 0
-18x9xT	18	±0.6	9	±0.5	2-8	+0.5 0
-18x10xT	18	±0.6	10	±0.5	2-8	+0.5 0

Note) Please contact us for any geometry.

Cemented Carbide Plates

Grade

UTi20T	HTi10	TF15	NX55	TBF61
○	○	○	×	×



Order Number	Dimensions (mm)					
	L		W		T	
TLB-18x13xT	18	±0.6	13	±0.5	2-8	+0.5 0
-18x15xT	18	±0.6	15	±0.5	2-8	+0.5 0
-18x18xT	18	±0.6	18	±0.5	2-12	+0.5 0
-19x5xT	19	±0.6	5	±0.5	2-8	+0.5 0
-19x8xT	19	±0.7	8	±0.5	2-8	+0.5 0
-19x11xT	19	±0.6	11	±0.5	2-8	+0.5 0
-19x13xT	19	±0.6	13	±0.5	2-8	+0.5 0
-20x2xT	20	±0.7	2	±0.5	2-4	+0.5 0
-20x3xT	20	±0.7	3	±0.5	2-5	+0.5 0
-20x4xT	20	±0.7	4	±0.5	2-7	+0.5 0
-20x5xT	20	±0.7	5	±0.5	2-8	+0.5 0
-20x6xT	20	±0.7	6	±0.5	2-8	+0.5 0
-20x7xT	20	±0.7	7	±0.5	2-8	+0.5 0
-20x8xT	20	±0.7	8	±0.5	2-7	+0.5 0
-20x9xT	20	±0.7	9	±0.5	2-8	+0.5 0
-20x10xT	20	±0.7	10	±0.5	2-8	+0.5 0
-20x12xT	20	±0.7	12	±0.5	2-8	+0.5 0
-20x15xT	20	±0.7	15	±0.5	2-12	+0.5 0
-20x18xT	20	±0.7	18	±0.5	2-12	+0.5 0
-20x20xT	20	±0.7	20	±0.7	2-12	+0.5 0
-21x3xT	21	±0.7	3	±0.5	2-7	+0.5 0
-21x7xT	21	±0.7	7	±0.5	2-7	+0.5 0
-21x8xT	21	±0.7	8	±0.5	2-8	+0.5 0
-21x9xT	21	±0.7	9	±0.5	2-8	+0.5 0
-21x13xT	21	±0.7	13	±0.5	2-7	+0.5 0
-21x20xT	21	±0.8	20	±0.7	2-12	+0.5 0
-21x21xT	21	±0.7	21	±0.7	2-12	+0.5 0
-22x3xT	22	±0.7	3	±0.5	2-6	+0.5 0
-22x5xT	22	±0.7	5	±0.5	2-8	+0.5 0
-22x8xT	22	±0.7	8	±0.5	2-8	+0.5 0
-22x12xT	22	±0.7	12	±0.5	2-8	+0.5 0
-22x15xT	22	±0.7	15	±0.5	2-8	+0.5 0
-22x22xT	22	±0.7	22	±0.7	2-26	+0.5 0
-23x4xT	23	±0.8	4	±0.5	2-7	+0.5 0
-23x8xT	23	±0.8	8	±0.5	2-8	+0.5 0
-23x14xT	23	±0.8	14	±0.5	2-12	+0.5 0
-24x10xT	24	±0.8	10	±0.5	2-8	+0.5 0
-24x12xT	24	±0.8	12	±0.5	2-6	+0.5 0
-24x24xT	24	±0.8	24	±0.7	2-12	+0.5 0
-25x4xT	25	±0.8	4	±0.5	2-8	+0.5 0

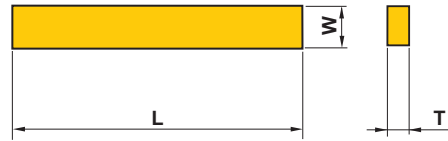
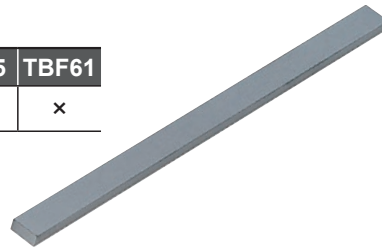
Order Number	Dimensions (mm)					
	L		W		T	
TLB-25x6xT	25	±0.8	6	±0.8	2-8	+0.5 0
-25x8xT	25	±0.8	8	±0.8	2-11	+0.5 0
-25x9xT	25	±0.8	9	±0.8	2-8	+0.5 0
-25x10xT	25	±0.8	10	±0.8	2-12	+0.5 0
-25x11xT	25	±0.8	11	±0.8	2-8	+0.5 0
-25x12xT	25	±0.8	12	±0.8	2-12	+0.5 0
-25x15xT	25	±0.8	15	±0.8	2-10	+0.5 0
-25x17xT	25	±0.8	17	±0.8	2-10	+0.5 0
-26x4xT	26	±0.8	4	±0.8	2-8	+0.5 0
-26x7xT	26	±0.8	7	±0.8	2-8	+0.5 0
-26x8xT	26	±0.8	8	±0.8	2-8	+0.5 0
-26x9xT	26	±0.8	9	±0.8	2-8	+0.5 0
-27x5xT	27	±0.8	5	±0.8	2-8	+0.5 0
-27x7xT	27	±0.8	7	±0.8	2-7	+0.5 0
-27x12xT	27	±0.8	12	±0.8	2-8	+0.5 0
-28x11xT	28	±0.8	11	±0.8	2-12	+0.5 0
-28x12xT	28	±0.8	12	±0.8	2-8	+0.5 0
-28x14xT	28	±0.8	14	±0.8	2-14	+0.5 0
-28x15xT	28	±0.9	15	±0.8	2-8	+0.5 0
-29x3xT	29	±0.8	3	±0.8	2-8	+0.5 0
-30x3xT	30	±0.9	3	±0.8	2-8	+0.5 0
-30x5xT	30	±0.9	5	±0.8	2-8	+0.5 0
-30x6xT	30	±0.9	6	±0.8	2-10	+0.5 0
-30x9xT	30	±0.9	9	±0.8	2-11	+0.5 0
-30x10xT	30	±0.9	10	±0.8	2-12	+0.5 0
-30x16xT	30	±0.9	16	±0.8	2-12	+0.5 0
-30x20xT	30	±0.9	20	±0.7	2-10	+0.5 0
-30x25xT	30	±0.9	25	±0.8	2-14	+0.5 0
-31x4xT	31	±0.9	4	±0.5	2-7	+0.5 0
-31x5xT	31	±0.9	5	±0.5	2-13	+0.5 0
-31x6xT	31	±0.9	6	±0.5	2-10	+0.5 0
-31x21xT	31	±0.9	21	±0.7	2-12	+0.5 0
-32x12xT	32	±0.9	12	±0.5	2-15	+0.5 0
-33x5xT	33	±0.9	5	±0.5	2-12	+0.5 0
-33x12xT	33	±0.9	12	±0.5	2-7	+0.5 0
-33x18xT	33	±0.9	18	±0.5	2-11	+0.5 0
-33x22xT	33	±0.9	22	±0.7	2-10	+0.5 0
-35x4xT	35	±1	4	±0.5	2-8	+0.5 0
-35x8xT	35	±1	8	±0.5	2-12	+0.5 0
-35x10xT	35	±1	10	±0.5	2-14	+0.5 0

Note) Please contact us for any geometry.

Cemented Carbide Plates

Grade

UTi20T	HTi10	TF15	NX55	TBF61
○	○	○	×	×



Order Number	Dimensions (mm)					
	L		W		T	
TLB-35x13xT	35	±1	13	±0.5	2-12	+0.5 0
-35x20xT	35	±1	20	±0.7	2-12	+0.5 0
-36x5xT	36	±1	5	±0.5	2-12	+0.5 0
-36x7xT	36	±1	7	±0.5	2-10	+0.5 0
-36x9xT	36	±1	9	±0.5	2-7	+0.5 0
-38x24xT	38	±1	24	±0.7	2-11	+0.5 0
-39x4xT	39	±1	4	±0.5	2-8	+0.5 0
-39x28xT	39	±1	28	±0.7	2-12	+0.5 0
-40x2xT	40	±1	2	±0.5	2-10	+0.5 0
-40x4xT	40	±1	4	±0.5	2-12	+0.5 0
-40x6xT	40	±1	6	±0.5	2-12	+0.5 0
-40x10xT	40	±1	10	±0.5	2-11	+0.5 0
-40x15xT	40	±1	15	±0.5	2-15	+0.5 0
-40x16xT	40	±1	16	±0.5	2-12	+0.5 0
-42x20xT	42	+2/0	20	±0.7	2-11	+0.5 0
-43x9xT	43	±1	9	±0.5	2-12	+0.5 0
-45x6xT	45	±1.2	6	±0.5	2-12	+0.5 0
-47x2xT	47	+2/0	2	±0.5	2-12	+0.5 0
-50x2xT	50	±1	2	±0.5	2-10	+0.5 0
-50x3xT	50	±1	3	±0.5	2-12	+0.5 0
-50x4xT	50	+2/0	4	±0.5	2-11	+0.5 0
-50x5xT	50	±1	5	±0.5	2-11	+0.5 0
-50x6xT	50	+2/0	6	±0.5	2-14	+0.5 0
-50x7xT	50	+2/0	7	±0.5	2-8	+0.5 0
-50x8xT	50	+2/0	8	±0.5	2-12	+0.5 0
-50x9xT	50	+3/0	9	±0.6	2-10	+0.5 0
-50x10xT	50	+2/0	10	±0.6	2-12	+0.5 0
-50x12xT	50	+2/0	12	±0.7	2-12	+0.5 0
-50x15xT	50	+2/0	15	±0.6	2-15	+0.5 0
-51x3xT	51	+3/0	3	±0.5	2-12	+0.5 0
-51x4xT	51	+3/0	4	±0.5	2-10	+0.5 0
-51x5xT	51	+3/0	5	±0.5	2-12	+0.5 0
-51x12xT	51	+3/0	12	±0.6	2-12	+0.5 0
-52x3xT	52	+3/0	3	±0.5	2-12	+0.5 0

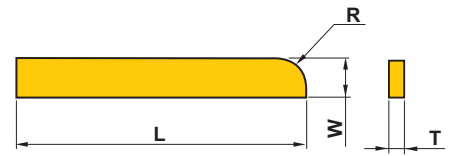
Order Number	Dimensions (mm)					
	L		W		T	
TLB-52x4xT	52	+3/0	4	±0.5	2-12	+0.5 0
-55x6xT	55	±2	6	±0.5	2-12	+0.5 0
-55x20xT	55	±2	20	±0.7	2-12	+0.5 0
-55x30xT	55	±2	30	+1/0	2-11	+0.5 0
-60x2xT	60	+3/0	2	±0.5	2-13	+0.5 0
-60x3xT	60	±1.5	3	±0.5	2-10	+0.5 0
-60x6xT	60	+3/0	6	±0.5	2-10	+0.5 0
-60x30xT	60	+3/0	30	±1	2-11	+0.5 0
-65x35xT	65	+3/0	35	+2/0	2-15	+0.5 0
-70x4xT	70	+3/0	4	±0.5	2-13	+0.5 0
-70x7xT	70	±2	7	±0.5	2-11	+0.5 0
-80x2xT	80	+4/0	2	±0.5	2-12	+0.5 0
-80x7xT	80	+4/0	7	±0.5	2-10	+0.5 0
-81x3xT	81	+4/0	3	±0.5	2-13	+0.5 0
-81x4xT	81	+4/0	4	±0.5	2-11	+0.5 0
-87x27xT	87	+4/0	27	±1	2-11	+0.5 0
-100x2xT	100	+10/0	2	+1/0	2-12	+0.5 0
-100x6xT	100	±5	6	±0.5	2-12	+0.5 0
-100x8xT	100	±5	8	±0.5	2-12	+0.5 0
-103x2.5xT	103	+10/0	2.5	±0.5	2-12	+0.5 0
-103x3xT	103	±5	3	±0.5	2-12	+0.5 0
-103x4xT	103	±5	4	±0.5	2-12	+0.5 0
-103x5xT	103	±5	5	±0.5	2-12	+0.5 0
-110x2.5xT	110	±5	2.5	±0.5	2-12	+0.5 0
-110x3xT	110	±5	3	±0.5	2-12	+0.5 0
-110x4xT	110	±5	4	±0.5	2-12	+0.5 0
-110x5xT	110	±5	5	±0.5	2-12	+0.5 0
-110x6xT	110	±5	6	±0.5	2-12	+0.5 0
-120x3xT	120	±5	3	±0.5	2-12	+0.5 0
-120x4xT	120	±5	4	±0.5	2-12	+0.5 0
-120x5xT	120	±5	5	±0.5	2-12	+0.5 0
-140x2xT	140	±5	2	±0.5	2-12	+0.5 0
-140x3xT	140	±5	3	±0.5	2-12	+0.5 0
-140x4xT	140	±5	4	±0.5	2-12	+0.5 0

Note) Please contact us for any geometry.

■ Tips for Automatic Lathes

Grade

UTi20T	HTi10	TF15	NX55	TBF61
○	○	○	○	○



Order Number	Dimensions (mm)						
	L		W		R	T	
TLR-15x3TxR3	15	±1.0	3	±0.5	R3	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-15x4TxR3	15	±1.0	4	±0.5	R3	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-20x2TxR4	20	±1.0	2	±0.5	R4	2-4	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-20x3TxR3	20	±1.0	3	±0.5	R3	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-20x4TxR3	20	±1.0	4	±0.5	R3	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-20x5TxR3	20	±1.0	5	±0.5	R3	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$

Note) Please contact us for any geometry.

Order Number	Dimensions (mm)						
	L		W		R	T	
TLR-20x6TxR3	20	±1.0	6	±0.5	R3	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-25x4TxR3	25	±1.0	4	±0.5	R3	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-30x4TxR3	30	±2.0	4	±0.5	R3	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-30x3TxR4	30	±2.0	3	±0.5	R4	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$
-30x4TxR4	30	±2.0	4	±0.5	R4	2-6	$\begin{matrix} +0.5 \\ 0 \end{matrix}$

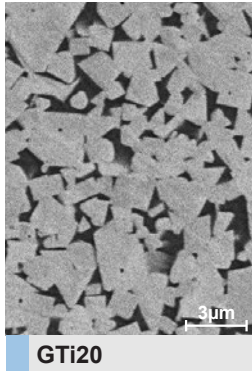
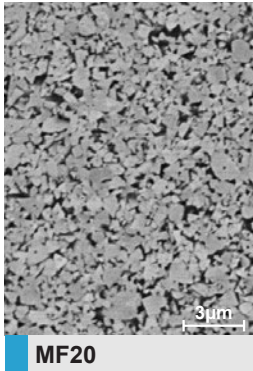
Carbide Materials (for die & mold)

Tungsten Carbide Grade Properties

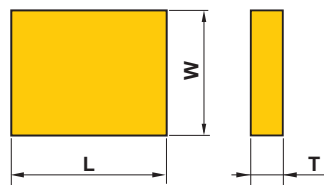
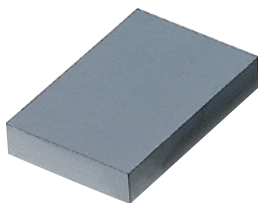
Grade	ISO Code	Grain Size (μm)	Co (mass%)	TRS (GPa) *1	Hardness		Fracture Toughness (MPa·m ^{1/2})
					HRA *2	HV *3	
MF20	K10	<0.6	12	2.6	92.0	1700	6.3
GTi20	V30	<2.5	11	2.7	89.0	1270	14.1

*1 ISO03327 *2 ISO03738 *3 ISO03878

《SEM Pictures》



Cemented Carbide Grade Classification



Order Number	Dimensions (mm)					
	L		W		T	
TLD-60x40xT	60	±3	40	±3	3-10	+1 0
-66x61xT	66	±3	61	±3	3-15	+1 0
-100x100xT	100	±8	100	±8	3-20	+1 0
-150x100xT	150	±8	100	±8	3-20	+1 0

Note) Please contact us for any geometry.



CARBIDE MATERIALS

MMC RYOTEC Corporation

SALES DEPT.

7F, KFC bldg., 1-6-1, YOKOAMI, SUMIDA-KU, TOKYO 130-0015, JAPAN

TEL +81-3-5819-5315 FAX +81-3-5819-5310

<http://www.ryotec.co.jp/en/>

