

# BULK SYSTEMS

## PRODUCT REFERENCE CHART AUSTRALIA PACIFIC

Product		Application	Density (/cc)	RWS%	RBS%*	VOD (km/s)	Rec. Min. Blasthole Diam. (mm)	Rec. Max. Blasthole Depth (m)	Rec. Max. Charge Length (m)	Hole Type	Rec. Max. Sleep Time	Gassed	Reactive Ground				
ANFO		Dry blasting applications	0.80	100	100	2.5-4.8	76	80	75	Dry	42 days	No	No				
COAL	Fortan Coal	9	0.90	105	119	2.5-5.8	89	80	75	Dry	21 days	No	No				
		10	1.00	107	134	2.5-5.8	89			Dry							
		11	1.10	112	154	2.5-5.8	89			Dry							
		12	1.20	117	175	2.8-6.1	102			Dewatered							
	13	1.28	118	189	3.1-6.3	150											
Aquacharge Coal		Cost effective blasting for dewatered holes	1.20-1.25	111-116	166-173	4.0-6.3	120	80	45	Dry/dewatered	21 days	Yes	No				
Fortis Coal		Reliable wet hole blasting in open cut coal mines	1.15-1.25	100-106	144-166	3.7-6.5	115	50	45	Dry/wet/dewatered	21 days	Yes	No				
Flexigel Coal		Soft ground applications in open cut coal mines	0.8	68	68	3.3-5.0	200	-	45	Dry/dewatered	21 days	Yes	No				
9		0.9	84	84				45	Dry/dewatered								
9.5		0.95	93	93				45	Dry/dewatered								
10		1.00	101	101				45	Dry/dewatered								
11		1.11	121	121				25	Dry/wet								
Fortis Deep		Reliable wet hole blasting in deeper holes	1.25	114	178	4.5-6.5	250	70	65	Dry/wet	21 days	Yes	No				
HARD ROCK	Fortan Advantage	9	0.90	105	119	2.5-5.8	89	30	25	Dry	21 days	No	No				
		10	1.00	107	134	2.5-5.8	89			Dry							
		11	1.10	112	154	2.5-5.8	89			Dry							
		12	1.20	117	175	2.8-6.1	102			Dewatered							
	13	1.28	118	189	3.1-6.3	150											
Aquacharge Advantage		Cost effective blasting for dewatered holes	1.20-1.25	108-118	162-176	4.0-6.3	120	30	25	Dry/dewatered	21 days	Yes	No				
Fortis Advantage		Reliable wet hole blasting in open cut hard rock mines	1.10-1.25	100-110	137-172	3.7-6.5	89	20	15	Dry/wet/dewatered	21 days	Yes	No				
Advantage S				97-107	133-167												
Advantage H				103-113	142-177												
HOT AND REACTIVE GROUND	Fortan Eclipse	10	1.00	107	134	2.8-5.6	89	80	75	Dry	12 hrs reactive ground 21 days unreactive ground	No	Yes				
		11	1.10	112	154	3.6-6.0	89			Dry							
		12	1.20	117	175	3.5-6.0	102			Dry							
		13	1.30	121	194	4.0-6.8	150			Dewatered							
	Aquacharge Eclipse		Cost effective blasting for dewatered holes in mildly reactive environments	1.20-1.25	112-115	168-180	4.0-6.7	120	80	45	Dry/dewatered	12 hrs reactive ground 21 days unreactive ground	Yes	Yes			
	Fortis Eclipse		Reliable wet hole blasting in mildly reactive environments	1.10-1.25	102-112	140-175	3.7-6.6	90	45	40	Dry/wet/dewatered	12 hrs reactive ground 21 days unreactive ground	Yes	Yes			
	Eclipse S				98-108	135-169											
	Eclipse H				105-116	144-181											
	Fortan Eclipse Plus		High bulk strength products for dry holes in highly reactive environments	1.00	108	135	2.8-5.6	89	80	75	Dry	12 hrs reactive ground 21 days unreactive ground	No	Yes			
	11		1.10	113	155	3.2-6.1	89			Dry							
12		1.20	118	177	3.5-6.5	102			Dry								
13		1.30	122	198	3.8-6.9	150			Dewatered								
Aquacharge Eclipse Plus		Cost effective blasting for dewatered holes in highly reactive environments	1.20	114	171	4.0-6.5	120	80	45	Dry/dewatered	12 hrs reactive ground 21 days unreactive ground	Yes	Yes				
1.25		117	183	183	4.0-6.7												
Fortis Eclipse Plus		Reliable wet hole blasting in highly reactive environments	1.10-1.25	98-108	135-169	3.7-6.5	90	30	25	Dry/wet/dewatered	12 hrs reactive ground 21 days unreactive ground	Yes	Yes				
Eclipse Plus H				100-110	137-172												
Fortis Vulcan H		Reliable blasting in hot, or hot and reactive ground with in-hole temperatures up to 100°C	1.10-1.25	102-112	140-175	3.7-6.6	89	50	45	Dry/wet/dewatered	8 hrs - 100°C	Yes	Yes				
1.10-1.25		105-116	144-181	144-181	4.1-6.7												
Xtreme		Dry blasting applications for in-hole temperatures up to 100°C	0.80	100	100	2.5-4.8	76	80	75	Dry	Up to 50°C - 21 days Up to 100°C - 8 hrs	No	Yes				
Vistansi		High shock energy further assists to optimise fragmentation and expand blast patterns, particularly in hard rock metal mining operations.	1.20-1.35	138-149	224-251	4.0-6.0	100	30	25	Dry/dewatered	To be determined based on testing of the reactive ground	Yes	Yes				
Vistisi		Highest energy to optimise fragmentation and expand blast patterns, particularly in hard rock metal mining operations.	1.20-1.35	133-144	216-243	4.5-6.0	90	30	25	Dry/wet/dewatered	To be determined based on testing of the reactive ground	Yes	Yes				
CHALLENGING	Aquacharge Clear		To minimise fume generation in dewatered blastholes		1.20-1.25	113-116	169-181	4.0-6.6	120	80	45	Dry/dewatered	21 days	Yes	No		
	Aquacharge Clear i		To minimise fume generation in mildly reactive ground. For use in dewatered blastholes		1.20-1.25	113-116	169-181	4.0-6.6	120	80	45	Dry/dewatered	12 hrs reactive ground 21 days unreactive ground	Yes	Yes		
	Flexigel Clear	8	To minimise fume generation in soft ground applications		0.8	73	73	3.3-5.0	200	-	45	Dry/dewatered	21 days	Yes	No		
			9		0.9	80	90				45	Dry/dewatered					
			10		1.0	87	109				45	Dry/dewatered					
			11		1.1	93	128				25	Dry/wet					
	Fortis Clear S		To minimise fume generation in dry, dewatered or wet blastholes		1.15-1.25	102-108	147-169	3.7-6.6	115	50	50	Dry/wet/dewatered	21 days	Yes	No		
	100-106		144-166		3.7-6.5												
	Fortis Clear i S		To minimise fume generation in mildly reactive ground. For use in dry, dewatered or wet blastholes		1.15-1.25	100-106	144-166	3.7-6.5	115	50	50	Dry/wet/dewatered	12 hours reactive ground may be extended subject to testing 21 days unreactive ground	Yes	Yes		
	Fortis Clear i		Use where the generation of post blast fume could be experienced in reactive ground		1.15	102	147	3.7-6.2	115	30	50	Dry/wet	Determined based on reactive ground 21 days unreactive ground	Yes	Yes		
	1.20		105		158		3.7-6.4		115		45						
	1.25		108		169		3.7-6.6		115		50						
	Aquacharge Extra		Cost effective blasting with highest bulk strength for dewatered holes		1.20-1.25	116-119	174-186	4.0-6.5	120	80	45	Dry/dewatered	42 days	Yes	No		
Fortan Extra	9	Highest bulk strength with longer sleep time		0.90	106	121	2.5-5.2	89	80	75	Dry	42 days	No	No			
		10		1.00	110	137	2.5-5.6	89			Dry						
		11		1.10	116	159	2.5-6.0	89			Dry						
		12		1.20	122	183	2.8-6.5	102			Dewatered						
13		1.30	125	200	3.8-6.8	150											
Fortan Extra i		Specifically designed for difficult blasting in dry and dewatered applications in mildly reactive ground.		1.00	108	135	2.8-5.6	89	80	75	Dry	Determined based on reactive ground 21 days unreactive ground	Yes	Yes			
11		1.10	114	157	3.6-6.0	89			Dry								
12		1.20	119	178	3.5-6.5	102			Dry								
13		1.30	125	203	4.0-6.8	150			Dewatered								
Fortis Extra H		Highest bulk strength, longer sleep time		1.10-1.25	110-120	151-187	4.1-6.7	64	45	40	Dry/wet/dewatered	42 days	Yes	No			
110-121		151-189		4.1-6.7													
Vistan s		High shock energy further assists to optimise fragmentation and expand blast patterns, particularly in hard rock metal mining operations.		1.20-1.40	140-159	227-278	4.0-6.0	100	30	25	Wet/dewatered	21 days	Yes	No			
Vistis		Highest energy to optimise fragmentation and expand blast patterns, particularly in hard rock metal mining operations.		1.20-1.40	137-156	223-273	4.5-6.0	90	30	25	Dry/wet/dewatered	21 days	Yes	No			
UNDERGROUND	Subtek with Subtek Control		Suitable for use in Underground mining across all hole orientations		0.8	75	75	3.0-6.2	38	-	Density and application specific	Dry/wet	30 days	Yes	No		
	1.0		88		110												
	1.2		101		151												
	Subtek Control (Decoupled Charging)		Used in underground mining for development/headings		>0.55	58	40		45			7 days					
	Subtek Eclipse with Subtek Control		Used in underground mines with mildly reactive ground		0.8	75	75	3.0-6.2	38	-	Density and application specific	Dry/wet	Determined based on reactivity	Yes	Yes		
	1.0		88		110												
1.2		101		151													
Subtek Control (Decoupled Charging)		Used in underground development where there is reactive ground		>0.55	58	40		45									
Subtek Vulcan with Subtek Control		Used in underground mines with reactive and/or hot ground		0.8	73	75	3.0-6.2	38	-	Density and application specific	Dry/wet	Based on Ground Conditions	Yes	Yes			
1.0		81		101													
1.2		88		132													
Subtek Vulcan with Subtek Control (Decoupled Charging)		Used in underground development headings with reactive and/or hot ground		>0.55	63	43		45									
QUARRY/ CONSTRUCTION	Centra Gold	Designed specifically for use in wet blastholes		1.15-1.25	112	168	4.5-6.4	76	25	20	Dry/wet/dewatered	21 days	Yes	No			
		1.10		103		142		4.1-5.9		76							
		1.15-1.25		113-120		162-187		4.4-6.7		76							
Centra Extend		Dry hole bulk explosive		1.10	115	158	3.5-6.05	89	25	20	Dry	21 days	Yes	No			
Centra Eclipse		Designed for mildly reactive ground		1.15-1.25	102-112	140-175	3.7-6.6	90	30	25	Dry/wet/dewatered	21 days	Yes	Yes			
CIVIL TUNNELLING	Civec System with Civec Control		Designed for use in civil tunnelling and underground construction applications		0.80-1.20	72-98	72-147	4.5-6.2	38-64	-	-	Dry/wet	7 days	Yes	No		
	Civec Control (Decoupled Charging)				>0.55	58	40		38								

\* Relative to ANFO @ density 0.8 g/cc

Please refer to the Technical Data Sheets on [orica.com](http://orica.com) for the latest product updates for countries within Australia Pacific.

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