

# BULK SYSTEMS

## PRODUCT REFERENCE CHART AUSTRALIA PACIFIC & INDONESIA

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	
COAL	ANFO	Dry blasting applications	0.80	100	100	2.5-4.8	76	80	75	Dry	42 days	No	No	
	Fortan Coal 10, 11, 12, 13	Increased bulk strength for dry holes in open cut coal mines	1.00, 1.10, 1.20, 1.30	106, 111, 115, 118	132, 153, 172, 189	2.5-5.8, 2.5-5.8, 2.8-6.1, 3.1-6.3	89, 89, 105, 150	80	75	Dry, Dry, Dry, Dewatered	21 days	No	No	
	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 5, Coal H	Reliable wet hole blasting in open cut coal mines	1.15-1.25	100-106, 97-103, 103-110	144-166, 139-161, 148-172	3.7-6.5	115	50	45	Dry/wet/dewatered	21 days	Yes	No	
	Flexigel Coal 50, 60, 70, 80, 90, 100	Soft ground applications in open cut coal mines	++Nominal density refer to TDS	47, 54, 71, 75, 78, 84, 90	29, 40, 70, 92, 100, 109, 128	2.5-4.1	200, 200, 200, 100, 150, 150	60		Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/wet	21 days	No	No	
	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	
	Fortan Advantage 10, 11, 12, 13	Increased bulk strength for dry holes in open cut hard rock mines	1.00, 1.10, 1.20, 1.28	107, 112, 117, 120	134, 154, 175, 192	2.5-5.8, 2.5-5.8, 2.8-6.1, 3.1-6.3	89, 89, 102, 150	30	25	Dry, Dry, Dry, Dewatered	21 days	No	No	
	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 5, Advantage H	Reliable wet hole blasting in open cut hard rock mines	1.10-1.25	100-110, 97-107, 103-113	137-172, 133-167, 142-177	3.7-6.5	89	20	15	Dry/wet/dewatered	21 days	Yes	No	
	Flexigel Advantage 50, 60, 70, 80, 90, 100	Soft ground applications in open cut hard rock mines	++Nominal density refer to TDS	47, 54, 71, 75, 78, 84, 90	29, 40, 70, 92, 100, 109, 128	2.5-4.1	200, 200, 200, 100, 150, 150	60		Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/wet	21 days	No	No	
HARD ROCK	Fortan Eclipse 10, 11, 12, 13	High bulk strength products for dry holes in mildly reactive environments	1.00, 1.10, 1.20, 1.30	107, 112, 117, 121	134, 154, 175, 194	2.8-5.6, 3.2-5.1, 3.5-6.0, 4.0-6.8	89, 89, 102, 150	80	75	Dry, Dry, Dry, Dewatered	12 hrs reactive ground, 21 days unreactive ground	No	Yes	
	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 5, Eclipse H	Reliable wet hole blasting in mildly reactive environments	1.10-1.25	102-112, 98-108, 105-116	140-175, 135-169, 144-181	3.7-6.6, 3.7-6.5, 4.1-6.7	90	45	40	Dry/wet/dewatered	12 hrs reactive ground, 21 days unreactive ground	Yes	Yes	
	Flexigel Eclipse 70, 80, 90, 100	Soft ground applications in highly reactive environments	++Nominal density refer to TDS	70, 77, 83, 90	74, 92, 108, 129	2.5-4.1	200, 100, 150, 150	60		Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/wet	Consult Orica for reactive ground, 21 days unreactive ground	No	Yes	
	Fortan Eclipse Plus 10, 11, 12, 13	High bulk strength products for dry holes in highly reactive environments	1.00, 1.10, 1.20, 1.30	108, 113, 118, 122	135, 155, 177, 198	2.8-5.6, 3.2-5.1, 3.5-6.5, 3.8-6.9	89, 89, 102, 150	80	75	Dry, Dry, Dry, Dewatered	12 hrs reactive ground, 21 days unreactive ground	No	Yes	
	Aquacharge Eclipse Plus	Cost effective blasting for dewatered holes in highly reactive environments	1.20, 1.25	113, 116	169, 181	4.0-6.5, 4.0-6.7	120	80	45	Dry/dewatered	12 hrs reactive ground, 21 days unreactive ground	Yes	Yes	
	Fortis Eclipse Plus H	Reliable wet hole blasting in highly reactive environments	1.10-1.25	98-108, 100-110	135-169, 137-172	3.7-6.5, 4.1-6.5	90	30	25	Dry/wet/dewatered	12 hrs reactive ground, 21 days unreactive ground	Yes	Yes	
	Fortis Vulcan H	Reliable blasting in hot, or hot and reactive ground with in-hole temperatures up to 100°C	1.10-1.25, 1.10-1.25	102-112, 105-116	140-175, 144-181	3.7-6.6, 4.1-6.7	89	50	45	Dry/wet/dewatered	8 hrs - 100°C	Yes	Yes	
	Fortan Xtreme	High bulk strength products for dry holes at in-hole temperatures up to 100°C	1.20	118	177	2.8-6.5	102	80	75	Dry	Up to 50°C - 21 days, Up to 100°C - 8 hrs	No	Yes	
	Fortis Xtreme	Reliable wet hole blasting for in-hole temperatures up to 100°C	1.20	113	169	4.4-6.5	76	50	45	Dry/wet/dewatered	Up to 50°C - 21 days, Up to 100°C - 8 hrs	Yes	Yes	
HOT AND REACTIVE GROUND	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. For use in dry or dewatered holes in reactive environments	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. For use in dry, dewatered or wet holes in reactive environments	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	
	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 70, 80, 90, 100	To minimise fume generation in soft ground applications	++Nominal density refer to TDS	70, 77, 83, 90	74, 92, 108, 129	2.5-4.1	200, 100, 150, 150	60		Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/wet	21 days	No	No	
	Flexigel Clear i 70, 80, 90, 100	To minimise fume generation in soft ground applications in mildly reactive ground. For use in dry or dewatered blasthole applications	++Nominal density refer to TDS	70, 77, 83, 90	74, 92, 108, 129	2.5-4.1	200, 100, 150, 150	60		Dry/dewatered, Dry/dewatered, Dry/dewatered, Dry/wet	Consult Orica for reactive ground, 21 days unreactive ground	No	Yes	
	Fortis Clear	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	
	Fortis Clear S	To minimise fume generation in dry, dewatered or wet blastholes	1.15-1.25	100-106	144-166	3.7-6.5	115	50	50	Dry/wet/dewatered	21 days	Yes	No	
	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	
CHALLENGING	Fortis Clear i	Use where the generation of post blast fume could be experienced in reactive ground	1.15, 1.20, 1.25	102, 105, 108	147, 158, 169	3.7-6.2, 3.7-6.4, 3.7-6.6	115, 115, 115	30, 45, 50	50	Dry/wet	Determined based on reactive ground, 21 days unreactive ground	Yes	Yes	
	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 10, 11, 12, 13	Highest bulk strength with longer sleep time	1.00, 1.10, 1.20, 1.30	110, 116, 122, 128	137, 159, 183, 208	2.5-5.6, 2.5-6.0, 2.8-6.5, 3.8-6.9	89, 89, 102, 150	80	75	Dry, Dry, Dry, Dewatered	42 days	No	No	
	Fortis Extra H	Highest bulk strength, longer sleep time	1.10-1.25	110-120, 110-121	151-189, 151-189	4.1-6.7, 4.1-6.7	64	45	40	Dry/wet/dewatered	42 days	Yes	No	
	Fortis Marathon	Longest sleep time, more robust, for the most challenging wet hole blasting	1.10-1.25	103-113	142-177	3.9-6.5	64-76	50	45	Dry/wet/dewatered	84 days	Yes	No	
	Vistan s	High shock energy further assists to optimise fragmentation and expand blast patterns, particularly in hard rock metal mining operations. For use in dry or dewatered holes in reactive environments	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. For use in dry, dewatered or wet holes	1.20-1.40	137-156	223-273	4.5-6.0	90	30	25	Dry/wet/dewatered	21 days	Yes	No	
	Subtek with Subtek Control (QLD, NSW, VIC, SA, NT, TAS)	Suitable for use in Underground mining across all hole orientations	0.8, 1.0, 1.2	75, 88, 101	75, 110, 151	3.0-6.2	38, 38, 45	—	—	Density and application specific	Dry/wet	30 days	Yes	No
	Subtek Control (Chemical Decoupled Charging)	Used in underground mining for development/headings	>0.55	58	40		45					7 days		
	Subtek with Subtek Control (WA only)	Suitable for use in Production blasting applications in all hole all orientations.	0.8, 1.0, 1.2	67, 79, 92	67, 99, 138	3.0-6.2	38, 45, 64	—	—	Density and application specific	Dry/wet	30 days	Yes	No
Subtek Control (Chemical Decoupled Charging)	Used in underground mining in development/headings	>0.55	—	36-138	2.5-6.2	45					7 days			
Subtek Eclipse with Subtek Control (QLD, NSW, VIC, SA, NT, TAS)	Suitable for use in Underground mining in reactive ground across all hole orientations	0.8, 1.0, 1.2	75, 88, 101	75, 110, 151	3.0-6.2	38, 38, 45	—	—	Density and application specific	Dry/wet	Determined based on reactivity	Yes	Yes	
Subtek Control (Chemical Decoupled Charging)	Used in underground mining for development/headings where there is reactive ground	>0.55	—	37-145	2.5-6.2	45								
Subtek Eclipse with Subtek Control (WA)	Used in underground mines with mildly reactive ground	0.8, 1.0, 1.2	71, 84, 97	71, 105, 145	3.0-6.2	38, 45, 64	—	—	Density and application specific	Dry/wet	Determined based on reactivity	Yes	Yes	
Subtek Control (Chemical Decoupled Bulk)	Used in underground development where there is reactive ground	>0.55	—	37-145	2.5-6.2	45								
QUARRY/ CONSTRUCTION	Centra Gold ES, Gold GT	Designed specifically for use in wet blastholes	1.20, 1.10, 1.20	112, 99, 115	168, 136, 172	4.5-6.4, 4.1-5.8, 4.4-6.5	76, 76, 76	25, 25, 25	20, 20, 20	Dry/wet	21 days	Yes	No	
	Centra Extend	Dry hole bulk explosive	1.10	114	157	3.5-6.05	89	25	20	Dry	21 days	Yes	No	
	Centra Eclipse	Designed for mildly reactive ground	1.10-1.25	102-112	140-175	3.7-6.6	90	30	25	Dry/wet/dewatered	21 days	Yes	Yes	
CIVIL TUNNELLING	Civec	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	

\* Relative to ANFO @ density 0.8g/cc

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

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