



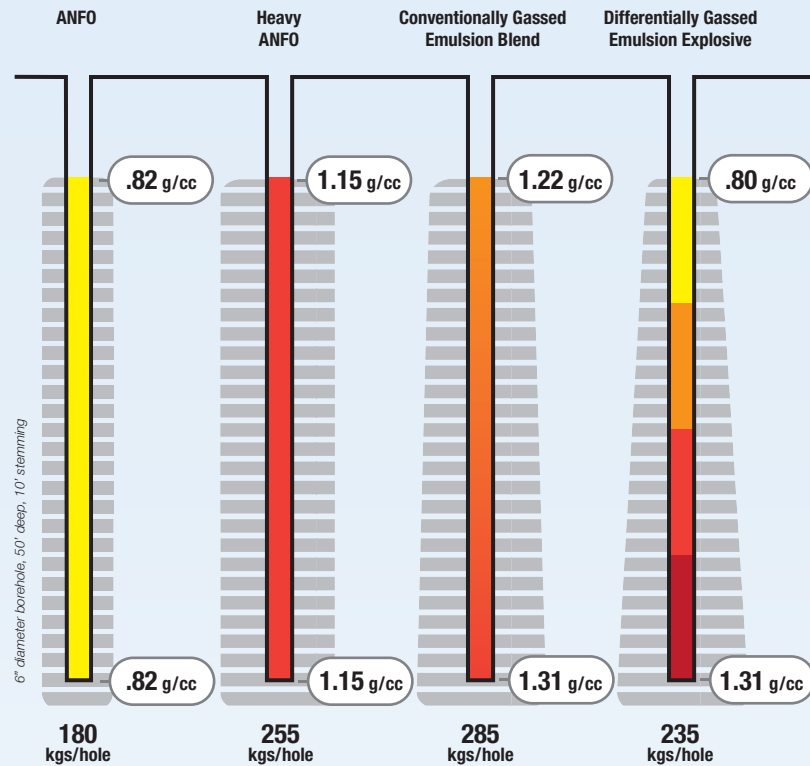
**DYNO**<sup>®</sup>  
Dyno Nobel

**Groundbreaking Performance**<sup>™</sup>

# What is DIFFERENTIAL ENERGY?

A proprietary method for controlling the explosive energy profile in a blasthole.

## Energy Distribution Comparison



## Bulk Explosives Comparison Matrix

- Efficient Rock Breakage in Dry Conditions
- Highly Water Resistant
- Reduced NOx Fumes in Wet Conditions
- Highly Efficient Use of Energy
- Variable Energy Profile in a Single Pass
- Precise Control of Energy Distribution
- Broadest Density Range in the Blasthole
- Automated Computer-Controlled Gassing
- Highest Resistance to Groundwater Contamination

ANFO  
Heavy ANFO  
Conventionally Gassed Emulsion Blend  
Differentially Gassed Emulsion Explosive

	ANFO	Heavy ANFO	Conventionally Gassed Emulsion Blend	Differentially Gassed Emulsion Explosive
Efficient Rock Breakage in Dry Conditions	✓	✓	✓	✓
Highly Water Resistant	-	-	✓	✓
Reduced NOx Fumes in Wet Conditions	-	-	✓	✓
Highly Efficient Use of Energy	-	-	✓	✓
Variable Energy Profile in a Single Pass	-	-	✓	✓
Precise Control of Energy Distribution	-	-	-	✓
Broadest Density Range in the Blasthole	-	-	-	✓
Automated Computer-Controlled Gassing	-	-	-	✓
Highest Resistance to Groundwater Contamination	-	-	-	✓



TITAN 1000ΔE Gassed Emulsion Explosive



Differential Energy MPU with ΔE Technology and Automated Controls



DIFFERENTIAL ENERGY breaks new ground in...

# Metal Mining & Coal Mining



DIFFERENTIAL ENERGY®

How does DIFFERENTIAL ENERGY improve safety, productivity, and the environment?

<b>SAFETY</b>	X Product is not sensitised until it is delivered to the blasthole
	X Reduces potential for flyrock by placing low density gassed emulsion near the collar and/or areas of low burden
	X Improves highwall stability, a result of accurate control of energy at the crest
	X Thickened emulsion resists flowing into cracks and voids
	X Emulsion densities can be tailored to the hardness of the rock
<b>PRODUCTIVITY</b>	X Single product for both wet and dry conditions
	X Reduces explosives inventory costs and simplifies budgeting
	X Blast pattern expansion possible, as a result of higher detonation pressure capabilities in the hole
	X Optimises quantity of product and minimises overuse of explosives to achieve desired breakage
	X Precise energy placement for the application, rock hardness, and blast profile
	X Matches energy with geologic requirements to break hard rock seams without damaging coal
	X Performance isn't compromised by wet conditions or long sleep times compared to ANFO and HANFO
	X Optimises blast fragmentation for increased productivity, reducing downstream processing costs
	X Improves blasthole loading accuracy and maximises blast energy efficiency
	X Optimises blast fragmentation reducing fines and oversize; blast energy is better distributed
X Reduces wear on loading, hauling, and crushing equipment; fragmentation is more consistent	
<b>ENV.</b>	X Minimises post-blast NOx generation with high performance water resistant emulsion
	X Reduces groundwater contamination because thickened emulsion detonates completely



# DIFFERENTIAL ENERGY Success Stories

**COAL MINE  
CUSTOMER #1**




- ↓ **10.8% Reduction**  
POWDER FACTOR
- ↑ **Improved**  
FRAGMENTATION
- ↓ **Eliminated**  
NOx FUMES
- **No Change**  
CRUSHER THROUGHPUT

**METAL MINE  
CUSTOMER #2 – Gold**



- ↓ **18% Reduction**  
POWDER FACTOR
- ↑ **8% Increase**  
SHOVEL PRODUCTIVITY
- ↓ **Eliminated**  
NOx FUMES
- **No Change**  
CRUSHER THROUGHPUT

**METAL MINE  
CUSTOMER #3 – Iron Ore**



- ↓ **10% Reduction**  
EXPLOSIVE LBS/HOLE
- ↑ **Improved**  
FRAGMENTATION
- ↓ **Eliminated**  
NOx FUMES
- ↑ **1.6% Increase**  
EXPLOSIVE DENSITY AT TOE

To see more customer success stories, visit [dynonobel.com/apac](http://dynonobel.com/apac)



\* DYNO, GROUNDBREAKING PERFORMANCE, TITAN and DIFFERENTIAL ENERGY are registered trademarks of the Dyno Nobel/Incitec Pivot Group.  
© Dyno Nobel Asia Pacific Pty Limited 2019. Reproduction without permission is strictly prohibited.  
Dyno Nobel Asia Pacific Pty Limited (ACN 003 269 010) is a subsidiary of Incitec Pivot Limited (ACN 004 080 264), 28 Freshwater Place, Southbank VIC 3006

[www.dynonobel.com](http://www.dynonobel.com)

**DYNO**  
Dyno Nobel

**Groundbreaking Performance™**