

HOEGANAES ENGINEERED SOLUTIONS

ANCORBOND

ANCORBOND processing is a chemical bonding treatment of premixes that provides superior powder flow with reduced additive segregation, enabling greater depths of fill during compaction and the potential for higher compaction rates because of the enhanced flow. The greater alloying homogeneity of the powder premix offers reduced dimensional variation after sintering because of the diminished alloy segregation within any given lot. Continuous improvements to ANCORBOND processing yielded higher part densities and an ability to “chemically bond” greater concentrations of graphite and other fine particle additions.

AncorLube LV

AncorLube LV is a premier lubricant solution for high lubricity, improved compaction, and extended tool life. AncorLube LV provides superior lubricity to all other common admixed PM lubricants with no need for specialized or heated tooling, while still maintaining clean burn-out and reduced environmental impact (metallic stearate free). Parts can be produced with excellent green strength and better surface finish without a negative impact on mechanical properties of sintered parts. The highly lubricious nature of the lubricant also allows it to be used at lower additions, allowing for parts compacted to greater green and sintered densities.

AncorMax

Hoeganaes offers industry-leading warm die compaction binder-treated premixes, AncorMax 200 and AncorMax 225. These premixes utilize dies heated to 95-110 °C with no powder preheat required. Benefits of these materials include enhanced powder flow and higher part densities without the need to preheat the powder. Certain limitations regarding part size and geometry exist; however, this premix alternative has proven successful in numerous applications. Parts can be produced with green and sintered densities greater than 7.3 g/cm³.

AncorCut

AncorCut is a specially-engineered machining additive, offering an alternative to manganese sulfide (MnS) without the associated accelerated rusting issues. This additive was developed with improved stability and can therefore compliment MnS for use in a number of PM alloy systems. AncorCut has been found to improve turning behavior of PM parts, especially in FY-4500 and sinter-hardening type materials. It works with a number of tooling insert materials and a wide range of machining conditions (feeds and speeds) without a negative impact on part mechanical properties.

AncorLam

AncorLam is a family of high performance soft magnetic composite (SMC) materials meant for use in AC electromagnetic applications. The material is produced using a base iron with the highest cleanliness with a thin, uniform, insulating coating meant to reduce eddy core losses. The base iron and coating can be tailored to fit the needs of the end application, making the material suitable for a variety of soft magnetic applications that require low core losses.

Ancorbraz 72

Ancorbraz 72 is the premiere sinterbraz material for the joining of ferrous PM parts to each other, or ferrous PM parts to wrought substrates. Successful brazing can be done in the green or sintered condition. The chemical composition of the Ancorbraz 72 material – which can be utilized in the “as-atomized” or fluxed form — effectively limits the penetration of the braze compound to the area immediately adjoining the desired interface. Each brazing application has unique characteristics due to variations in part composition and processing/sintering parameters. The typical Ultimate Tensile Strength of a brazed joint is 55,000 – 60,000 psi.

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HOEGANAES PRODUCTS FOR STRUCTURAL PM APPLICATIONS



**A WORLD LEADER IN ATOMIZED IRON POWDER AND
ENGINEERED PREMIX SOLUTIONS**



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Powder Grades	Atomized Iron				Atomized Prealloyed								Diffusion Alloyed & Ancorbond Premixes					
	Ancorsteel AMH	Ancorsteel 1000	Ancorsteel 1000B	Ancorsteel 1000C	Ancorsteel 30 HP	Ancorsteel 50 HP	Ancorsteel 85 HP	Ancorsteel 150 HP	Ancorsteel 2000	Ancorsteel 4600V	Ancorsteel 721 SH	Ancorsteel 737 SH	Ancorsteel FD-4600A & Ancorloy 2	Ancorsteel FD-4800A & Ancorloy 4	Ancorsteel FLD-49DH & Ancorloy DH-1	Ancorsteel FLD-49HP & Ancorloy HP-1	Ancorsteel 4300	
Nominal Chemistry, wt%																		
Manganese	0.15	0.20	0.10	0.07	0.15	0.15	0.12	0.12	0.25	0.15	0.40	0.40	0.15	0.15	0.15	0.15	0.10	
Nickel	-	-	-	-	-	-	-	-	0.45	1.80	0.50	1.40	1.75	4.00	-	4.00	1.00	
Molybdenum	-	-	-	-	0.30	0.50	0.85	1.50	0.60	0.55	0.90	1.25	0.55	0.55	1.50	1.50	0.80	
Chromium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	
Copper	-	-	-	-	-	-	-	-	-	-	0.50	-	1.50	1.50	2.00	2.00	-	

ATOMIZED IRON POWDER GRADES

Ancorsteel AMH
Ancorsteel AMH is a low apparent density water atomized powder for structural applications. The spongy morphology of the powder particles gives the material superior green strength for an atomized powder combined with good compressibility.

Ancorsteel 1000
This is the workhorse of our atomized powders. More PM components have Ancorsteel 1000 as their base than any other atomized powder. It has low levels of carbon and oxygen along with good compressibility. Ancorsteel 1000 is also available with guaranteed low levels of inclusions for powder forging (PF) applications.

Ancorsteel 1000B
This is the second generation of atomized high compressibility iron powders. It's high purity provides greater compressibility than Ancorsteel 1000. The combination of purity, compressibility, and green strength makes Ancorsteel 1000B ideal for high strength, high density, multi-level structural components.

Ancorsteel 1000C
This is the highest compressibility iron powder available. Allowing green density compacts >7.1g/cm³ at 550 MPa provides outstanding sintered properties while extending the working range of your compaction press. Due to its low oxygen and nitrogen levels, Ancorsteel 1000C is also used extensively for electromagnetic applications.

MOLYBDENUM PREALLOYED POWDER GRADES

Ancorsteel 30HP
Ancorsteel 30 HP is a water-atomized, prealloyed, low-alloy steel powder for high performance applications. The prealloyed 0.30 weight % molybdenum addition results in moderate hardenability, suitable for heat-treated applications.

Ancorsteel 50HP
Ancorsteel 50 HP is a water-atomized, prealloyed, low-alloy steel powder for high performance applications. The prealloyed 0.50 weight % molybdenum addition results in high compressibility and provides good response to heat treatment. Ancorsteel 50 HP is an ideal base powder for a wide range of copper, nickel, chromium, and manganese hybrid alloy systems.

Ancorsteel 85HP
Ancorsteel 85 HP is a water-atomized, prealloyed, low-alloy steel powder for high performance applications. The prealloyed 0.85 weight % molybdenum addition allows exceptionally high compressibility and provides good response to heat treatment. Ancorsteel 85 HP is a good base powder for a wide range of hybrid alloy systems.

Ancorsteel 150HP
Ancorsteel 150 HP is a water-atomized, prealloyed, low-alloy steel powder for high performance applications. The higher prealloyed 1.50 weight % molybdenum addition permits good compressibility as well as good response to heat treatment and sinter-hardening.

PREALLOYED POWDER GRADES

Ancorsteel 2000
Ancorsteel 2000 is a water atomized low-alloy steel powder which satisfies Metal Powder Industries Federation (MPIF) material specification FL-4200. It has intermediate hardenability and is ideally suited for PF applications that require the hardenability and mechanical properties associated with cast and wrought steels.

Ancorsteel 4600V
Ancorsteel 4600V is a water atomized low-alloy steel powder which satisfies MPIF material specification FL-4600. It has high hardenability and is ideally suited for PF applications that require the hardenability and mechanical properties associated with cast and wrought steels.

Ancorsteel 721 SH
Ancorsteel 721 SH is a water atomized, prealloyed steel powder specifically developed for sinter hardening. It complements Ancorsteel 737 SH as it contains slightly lower levels of molybdenum and nickel. The material has good compressibility and stable dimensional change. Ancorsteel 721 SH is the powder of choice for small to medium size parts that are to be sinter hardened.

Ancorsteel 737 SH
Ancorsteel 737 SH is a water atomized, prealloyed steel powder specifically developed for sinter-hardening for a range of part sizes. The primary characteristics center on excellent hardenability in conjunction with good compressibility, particularly at higher compaction pressures. This unique combination of attributes differentiates its performance and optimizes both static and dynamic strength.

DIFFUSION ALLOYED & ANCORBOND PREMIXES

Ancorsteel FD-4600A/Ancorloy 2
These highly engineered premixes have the same nominal composition, relying on bonding of the nickel and copper additives to reduce segregation while maintaining good compressibility. These alloys are designed for high performance applications and can be tailored with graphite addition.

Ancorsteel FD-4800A/Ancorloy 4
These highly engineered premixes have the same nominal composition, relying on bonding of the nickel and copper additives to reduce segregation while maintaining good compressibility. These grades are more highly alloyed with 4% nickel and are ideal for high performance applications where ductility and impact are required.

Ancorsteel FLD-49DH/Ancorloy DH-1
These hybrid premixes are produced with prealloyed molybdenum and bonded copper to reduce segregation. These materials are designed for sinter-hardening.

Ancorsteel FLD-49HP/Ancorloy HP-1
These hybrid premixes are produced with prealloyed molybdenum and bonded nickel and copper to reduce segregation. These materials are designed for sinter-hardening, are more highly alloyed with 4% nickel, and are ideal for high performance applications where ductility and impact are required.

Ancorsteel 4300
This is a hybrid engineered high performance binder-treated premix utilizing molybdenum, chromium, silicon, and nickel. Because of the hybrid nature, good compressibility is maintained and optimal properties are achieved via the use of increased sintering temperatures and sinter-hardening.

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