TECHNICAL DATA SHEET

PREMIXED BRASS COMPACTING POWDERS
(LEADED GRADES)

DESCRIPTION

These are low oxygen prealloyed leaded brass (copper-zinc-lead) powders produced by direct atomization and mixed with 3/4% Lithium Stearate for die lubrication. Particle size is nominally –60 mesh and an irregular particle shape to assist in compacting.

LEADED BRASS GRADES	CHARACTERISTICS
LOX-9010L-LS-075	A PM developed leaded brass alloy powder used to produce PM components that would normally use standard 90/10 brass but also require extensive secondary machining. Will provide parts with a dull brass color to MPIF Specification CZP-1002.
LOX-8020L-LS-075	A leaded 80/20 alloy brass for PM parts requiring machining. Parts have a classic brass color and meet MPIF Specification CZP-2002 and ASTM B282.
LOX-7030L-LS-075	The leaded version of 70/30 brass to produce PM parts to MPIF Specification CZP-3002. Parts will have a bright brass color and can be readily machined.

CHEMISTRY PROPERTIES TYPICAL	TESTING	LOX-9010L-LS-075	LOX-8020L-LS-075	LOX-7030L-LS-075
Copper, %		89.5	78.5	70.0
Zinc, %		Bal.	Bal.	Bal.
Lead, %		1.6	1.6	1.6
Iron, %		<0.01	<0.01	<0.01
Lithium Stearate, %		0.75	0.75	0.75
POWDER PROPERTIES (TYPICAL)				
Apparent Density, (Premix)	MPIF 04	3.6	3.5	3.4
Flow Rate, (Premix)	MPIF 03	32 s/50g	32 s/50g	32 s/50g
Screen Analysis, Tyler %	MPIF 05			
+ 60 mesh (>250 µm)		TR	TR	TR
- 60 +100 mesh		4	4	6
-100 +150 mesh		6	8	10
-150 +200 mesh		10	11	12
-200 +325 mesh		25	24	25
-325 mesh (<44µm)		55	53	47
COMPACTING PROPERTIES (TYPICAL)				
Determined on test bars pressed at 30 tsi (414N/mm^2) from powder admixed with 3/4% Lithium Stearate.				
Green Density,	MPIF 45	7.8	7.5	7.2
Green Strength, psi	MPIF 15	1300	1300	1200
Green Strength, N/mm^2		9.0	9.0	8.3
SINTERED PROPERTIES (TYPICAL)				
Determined on test bars pressed at 30 tsi (414 N/mm^2) and sintered for 30 minutes at 1600°F (872°C) in -40°F (-40°C) dew point dissociated ammonia atmosphere in a belt furnace under laboratory conditions.				
Sintered Density, g/cm^3	MPIF 42	8.00	7.8	7.7
T.R.S., psi	MPIF 41	52,000	65,000	70,000
T.R.S., N/mm^2		360	448	483
UTS, psi	MPIF 10	28,000	30,000	32,000
UTS, N/mm^2		195	205	220
Y.S., psi		10,000	12,000	13,000
Y.S., N/mm^2		69	83	90
Elongation, %	MPIF 10	18	20	22
Hardness, HRH	MPIF 43	72	74	76
Dimensional Change, %	MPIF 44	-0.60	-1.20	-2.6

APPLICATIONS

This particular family of brass powders contains lead and is specifically designed to be used for the manufacture of brass PM parts on which extensive secondary machining will be required. They can be used to produce parts to MPIF, ASTM, and ISO material specifications.

Note: See SCM Metal Products' Technical Data Sheets on unleaded brass powders for use in the manufacture of PM parts that do not require secondary machining.

PROCESSING

The manufacture of successful brass PM parts involves the control of many variables and is much more sensitive to processing than ferrous materials. Most properties are density sensitive.

Sintering temperatures from 1500° to 1700°F (815°to 926°C) are used. Higher sintering temperatures will give increased strength, elongation and electrical conductivity. However, dimensional control is extremely sensitive at high temperatures. In general, the higher zinc content grades should be sintered at the lower temperatures. The leaded brasses can be sintered slightly higher than equivalent non-leaded grades. All grades can be readily repressed to higher densities.

Successful processing involves close control of the processing variables. The guideline data contained in this TDS is intended to assist in this program. Contact SCM Metal Products' Technical Service Department for additional information and assistance.

MATERIAL SAFETY DATA

See the MSDS before using this product.

SAMPLES AND SERVICES

To obtain samples or additional information, please contact our Customer Service Department.
Visit our website at www.scmmetals.com

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TECHNICAL DATA SHEET

PREMIXED BRASS COMPACTING POWDERS (UNLEADED GRADES)

DESCRIPTION

These are low oxygen pre-alloyed brass (copper-zinc) powders produced by direct atomization and mixed with 3/4% Lithium Stearate for die lubrication. The particle size is nominally -60 mesh with an irregular particle shape to aid in compacting.

STANDARD BRASS GRADE	CHARACTERISTICS
LOX-9010-LS-075	A 90 Cu/10 Zn alloy powder, sometimes called Commercial Bronze, used to produce hardware, marine parts and mechanical components to MPIF CZ-1000 specifications. It has a reddish bronze color and the highest electrical conductivity of the standard PM brasses.
LOX-8020-LS-075	A 80 Cu/20 Zn alloy powder sometimes called Low Brass, used to produce battery caps, medallions, hardware and tokens. It has a classic brass color.
LOX-7030-LS-075	A 70 Cu/30 Zn alloy powder, sometimes called Cartridge Brass, used to produce automotive, ammunition, fasteners, plumbing and pump parts to MPIF CZ-3000 specifications. It has a bright brass color and the lowest electrical conductivity of the standard PM brasses.

APPLICATIONS

The family of brass powders is specifically designed for the manufacture of PM parts where secondary machining is not required. They can be used to produce hard parts to MPIF, ASTM, and ISO material specifications. They are generally selected where a nonferrous alloy is required.
NOTE: See Technical Data Sheet on Premixed Leaded Brass Powders to be used to manufacture PM parts requiring extensive machining.

Chemistry (Typical)	Testing	LOX-9010-LS-075	LOX-8020-LS-075	LOX-7030-LS-075
Copper, %		90.7	79.5	70.3
Zinc, %		Bal.	Bal.	Bal.
Lead, %		<0.01	<0.01	<0.01
Iron, %		<0.01	<0.01	<0.01
Powder Properties (Typical)				
Apparent Density, (Premix)	MPIF 04	3.50 g/cm^3	3.50 g/cm^3	3.40 g/cm^3
Flow Rate, (Premix)	MPIF 03	25 s/50g	30 s/50g	30 s/50g
Screen Analysis, Tyler %	MPIF 05			
+60 mesh		TR	TR	TR
-60 +100 mesh		6	7	8
-100 +150 mesh		10	12	10
-150 +200 mesh		14	15	14
-200 +325 mesh		25	26	25
-325 mesh (<44 μm)		45	40	43

Compacting Properties (Typical)	Testing	LOX-9010-LS-075	LOX-8020-LS-075	LOX-7030-LS-075
Determined on TRS bars pressed at 30 tsi (414 N/mm^2) from premix containing 3/4% Lithium Stearate.				
Green Density, g/cm^3	MPIF 45	7.8	7.5	7.2
Green Strength, psi	MPIF 15	1000	1250	1100
Green Strength, N/mm^2		6.9	8.6	7.6
Sintered Properties (Typical)				
Determined on TRS bars pressed at 30 tsi (414 N/mm^2) and sintered for 30 minutes at 1600°F (872°C) in dry dissociated Ammonia under laboratory conditions.				
Sintered Density, g/cm^3	MPIF 42	8.00	7.80	7.60
TRS, psi	MPIF 41	55,000	70,000	70,000
TRS, N/mm^2		380	483	483
UTS, psi	MPIF 10	26,000	28,000	30,000
UTS, N/mm^2		180	190	205
YS, psi	MPIF 10	12,000	13,000	14,000
YS, N/mm^2		83	90	97
Elongation, %	MPIF 10	10	12	14
Hardness, HRH	MPIF 43	75	77	79
Dimensional Change, %	MPIF 44	-0.60	-1.20	-2.05

PROCESSING

The manufacture of successful brass PM parts involves the control of many variables and is much more sensitive to processing than ferrous materials. Most properties are density sensitive.

Sintering temperatures from 1500° to 1700°F (815° to 925°C) are used. Higher sintering temperatures will give increased strength, elongation and electrical conductivity. However, dimensional control is extremely sensitive at high temperatures. In general, the higher zinc content grades should be sintered at the lower temperatures. The leaded brasses can be sintered slightly higher than equivalent non-leaded grades. All grades can be readily repressed to higher densities.

Successful processing involves close control of the processing variables. The guideline data contained in this TDS is intended to assist in this program. Contact SCM Metal Products' Technical Service Department for additional information and assistance.

MATERIAL SAFETY DATA

See MSDS before using this product.

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