



WE IMPROVE EFFICIENCY



NIT
JAMSHEDPUR



vedanta
transforming for good



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NATIONAL INSTITUTE OF
TECHNOLOGY-JAMSHEDPUR
(TATANAGAR)
ENGINEERING IN METALLURGY

VEDANTA LIMITED
(BHARAT ALUMINIUM COMPANY)
Korba, CHATTISGARH
PRODUCTION ENGINEER

SEFSO
MANAGING DIRECTOR
(2009- PRESENT)

2005-2006

2007-2009

2001-2005

2006-2007

2009-2023

LEADER VALVES
JALANDHAR CITY, PUNJAB.
ASSISTANT ENGINEER

TAPMI- MANIPAL, KARNATKA.
MBA IN MARKETING



T. A. Pai Management Institute
Manipal



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PUNEET KAPOOR
Managing Director
SEFSO



“ Do you really want to
Improve Brass Casting Quality? ”

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Metallurgical Engineer



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MELTING FLUX - SEFCUPEX



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MELTING FLUX - SEFCUPEX

DESCRIPTION:

A **NEUTRAL FLUX** USED FOR THE REFINEMENT & PROTECTION OF COPPER & NICKEL ALLOYS, IT ALSO **HAS GOOD CLEANING ABILITY**. IT IS DESIGNED TO ATTACK & COALESCE NON-METALLIC IMPURITIES & ISOLATE THEM INTO A FLUID SLAG LAYER.

TO BE USED IN: ALL TYPES OF **COPPER & COPPER BASED ALLOYS**.

PACKING: 50 KGS BAG.

PHYSICAL FORM: POWDER CUM SEMI GRANULAR FLUX.

CONSUMPTION: **0.3% TO 2% OF MOLTEN METAL**.

INSTRUCTIONS FOR USE : AROUND 0.5% TO 2% OF FLUX SHOULD BE **THOROUGHLY MIXED WITH THE CHARGE (SCRAP, SKIMMINGS, SWARF ETC) AND THEN SHOULD BE FED INTO THE FURNACE**. IF NEEDED MORE OF FLUX CAN BE ADDED DURING MELTING ALSO.

BENEFITS: **REDUCES MELTING LOSSES**, IMPROVES METAL RECOVERY OF SCRAP, SWARF & SKIMMINGS, **REMOVES NON-METALLIC CONTAMINANTS**, NEUTRAL FLUX, HIGHLY PROTECTIVE, STRONG CLEANING ACTION, SUITABLE FOR WIDE RANGE OF ALLOYS, FURNACE WALLS REMAIN CLEANED.



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HOW TO USE



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WEIGHT OF SCRAP 100 KG.



+

WEIGHT OF FLUX 300 GMS.
(0.3% OF SCRAP WEIGHT)



+

TOTAL WEIGHT 100.3 KG.
FLUX THOROUGHLY MIXED



HOW TO USE



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WEIGHT OF TURNINGS 100 KG.

WEIGHT OF FLUX 500 GMS.
(0.5% OF TURNING WEIGHT)

TOTAL WEIGHT 100.5 KG.
FLUX THOROUGHLY MIXED



+



+



HOW TO USE



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WEIGHT OF DROSS 100 KG.

WEIGHT OF FLUX 1000 GMS.
(1.0% OF DROSS WEIGHT)

TOTAL WEIGHT 101.0 KG.
FLUX THOROUGHLY MIXED



+

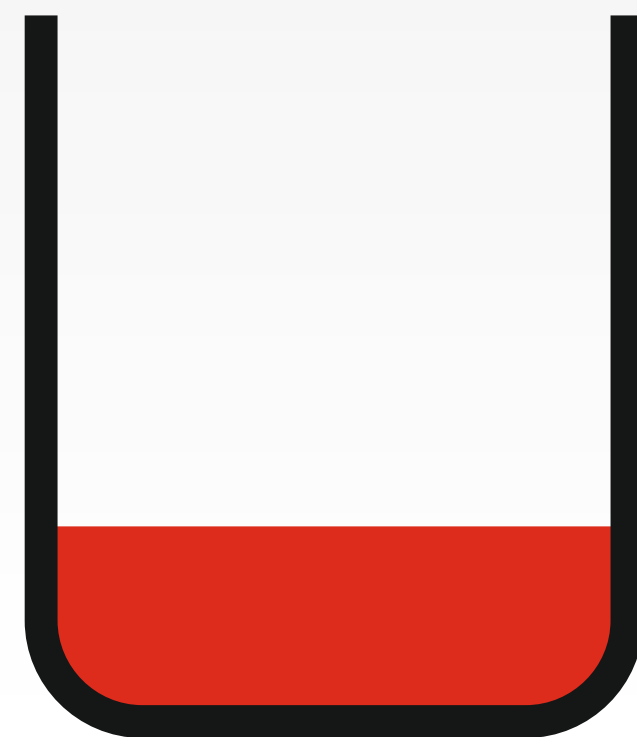


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HOW IT WORKS

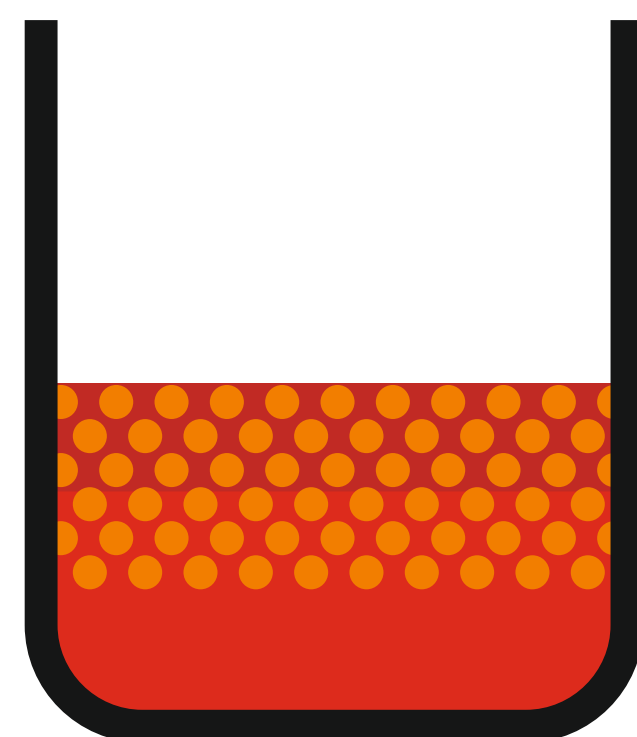
CRUCIBLE WITH
MOLTEN METAL IN IT TEMP. 900°C



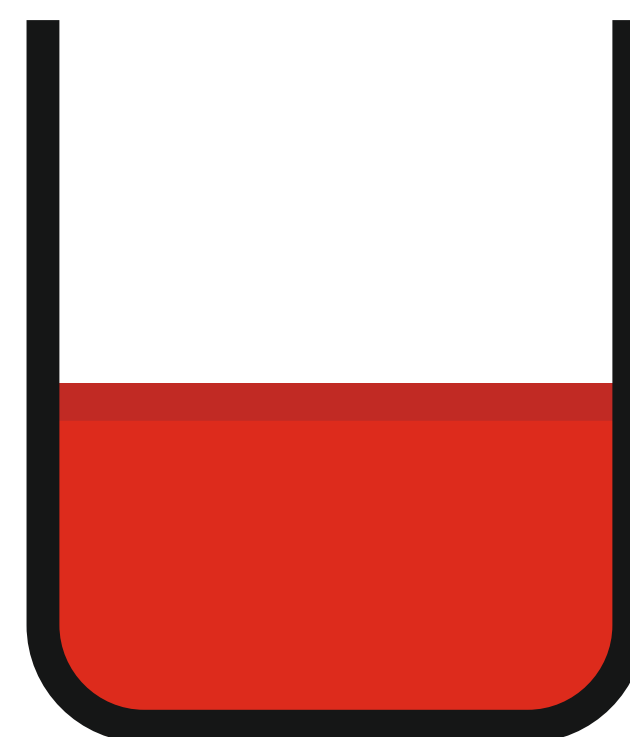
FLUX MIXED BRASS CHARGED
IN CRUCIBLE TEMP. 750-800°C



FLUX GETTING MELTED AT 850°C



SLAG READY TO BE
REMOVED AT 1000°C



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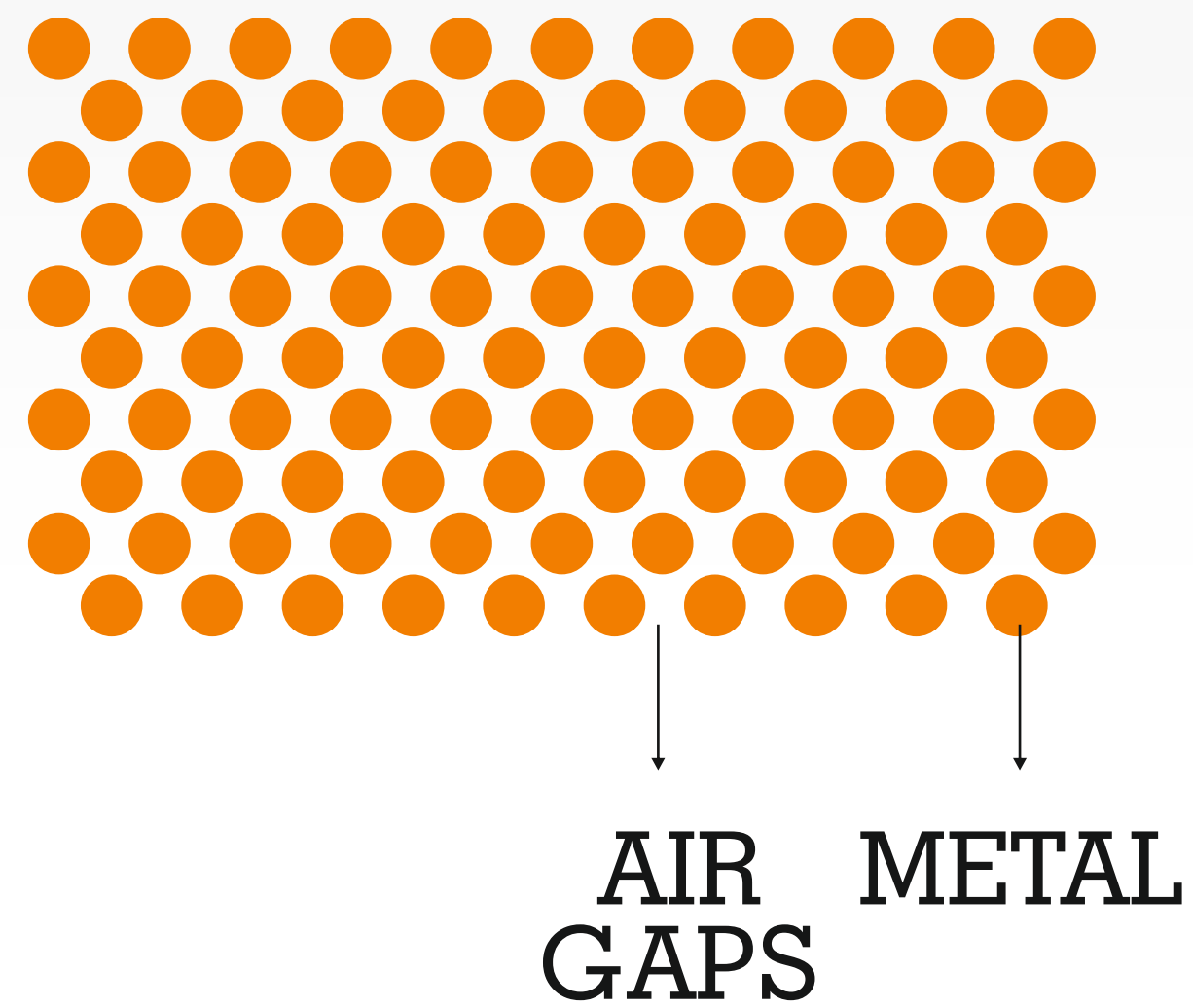


NOTE: IF SLAG IS REMOVED AT TEMP. LOWER THAN 1000°C MORE METAL CONTENT WILL COME OUT WITH SLAG.

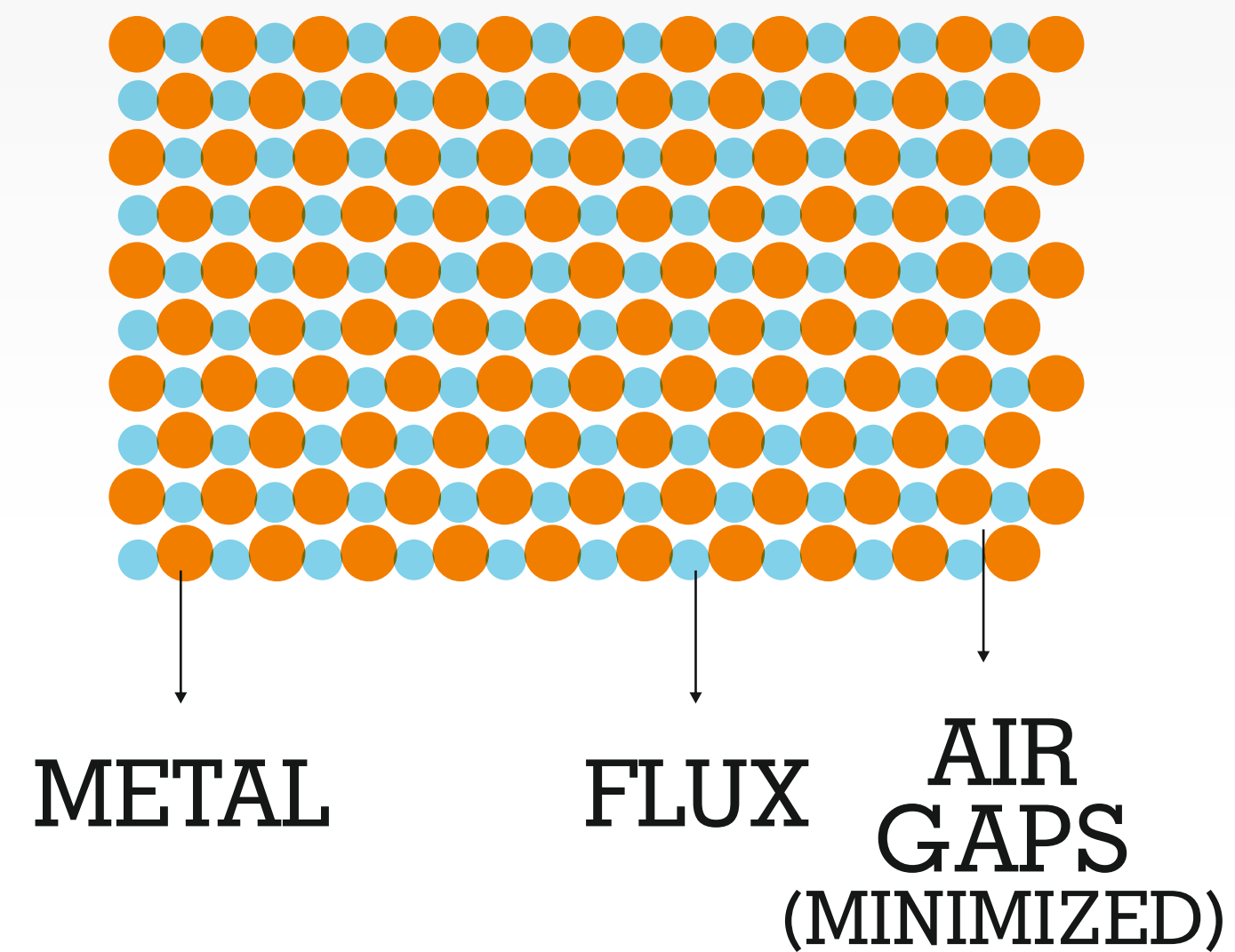
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HOW IT WORKS

BRASS CHARGE
(TURNING)



BRASS CHARGE
THOROUGHLY MIXED WITH FLUX



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RESULTS

SLAG WEIGHT WILL BE REDUCED

METAL CONTENT IN SLAG WILL BE REDUCED

METAL LOSS WILL BE REDUCED

METAL EFFICIENCY WILL BE IMPROVED

METAL LOSS IN FORM OF ZINC OXIDE FUMES WILL BE REDUCED



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“ Is your Faucet/Fitting getting leaked while being testing In House or sometimes after being sold? ”



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DEGASSING TABLET -NOGAS



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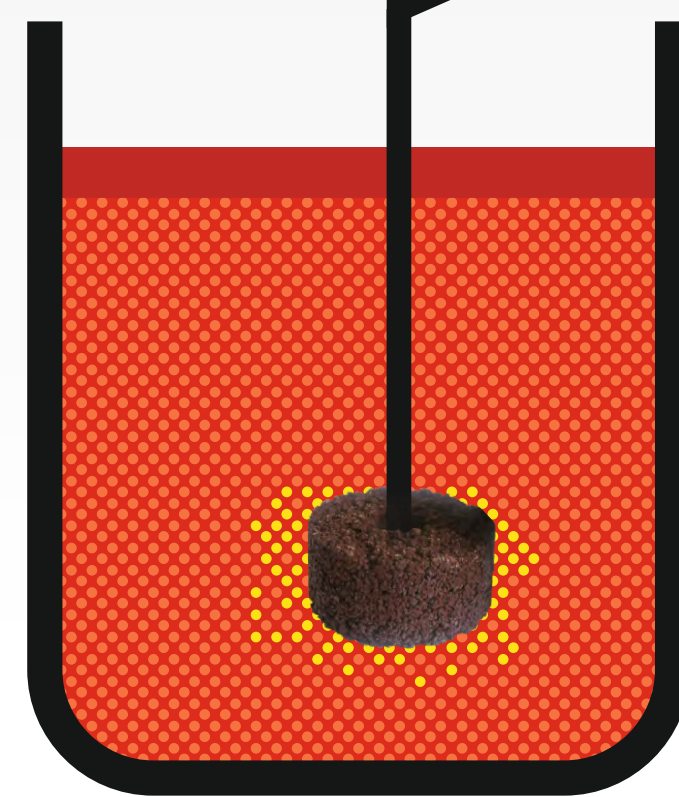
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HOW TO USE IT

MOLTEN METAL WITH
GAS INCLUSIONS AT 950°C



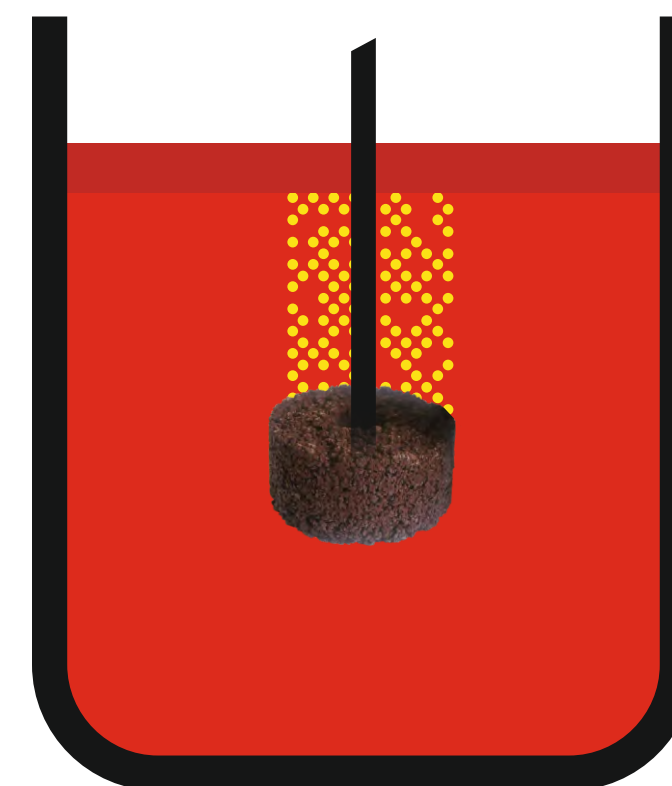
NOGAS DIPPED IN
MOLTEN METAL AT 950°C



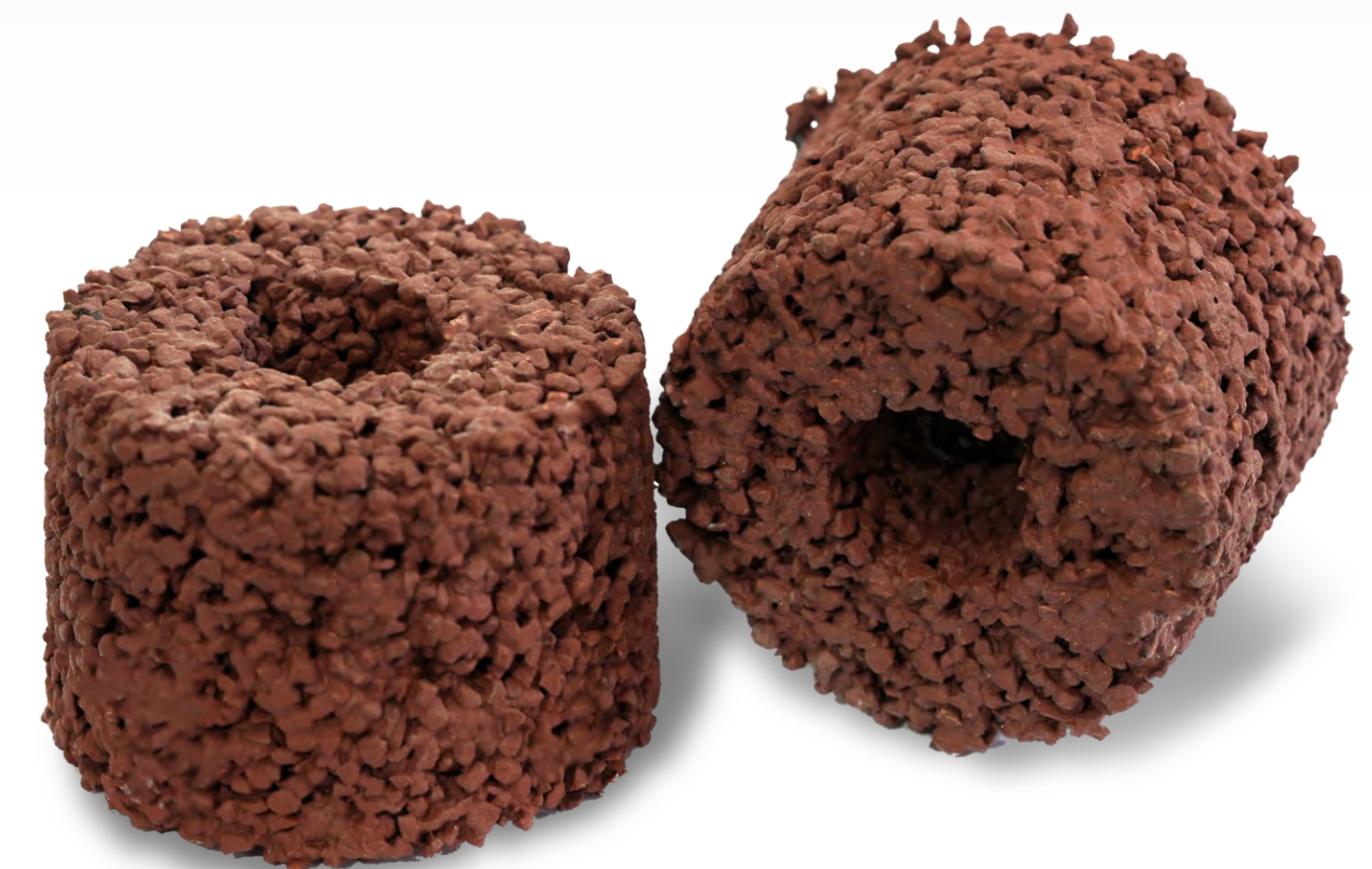
IN 3 - 5 MIN. GAS INCLUSIONS
GETTING REMOVED & TEMP. DECREASED



ALMOST GAS FREE MOLTEN
METAL SLAG CAN BE REMOVED



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DEGASSER - NOGAS

The NOGAS briquettes are so designed that they can be attached to or wedged on, to a variety of plunger rod shapes, etc. Perhaps the most suitable tool is a simple steel rod, furnished with a peg or stop to prevent the briquette riding up the rod, when plunged into molten metal.

The briquette may also be wired to a suitable plunger made from either steel or graphite or, if a suitable graphite rod is available, the end can be turned down into a cone shape and the briquette wedged on to it. This is the most satisfactory method since it leaves the largest surface area of the briquette exposed to produce the scavenging gases. For very large melts a dummy stopper rod is probably the best approach.

Advantages of using NOGAS

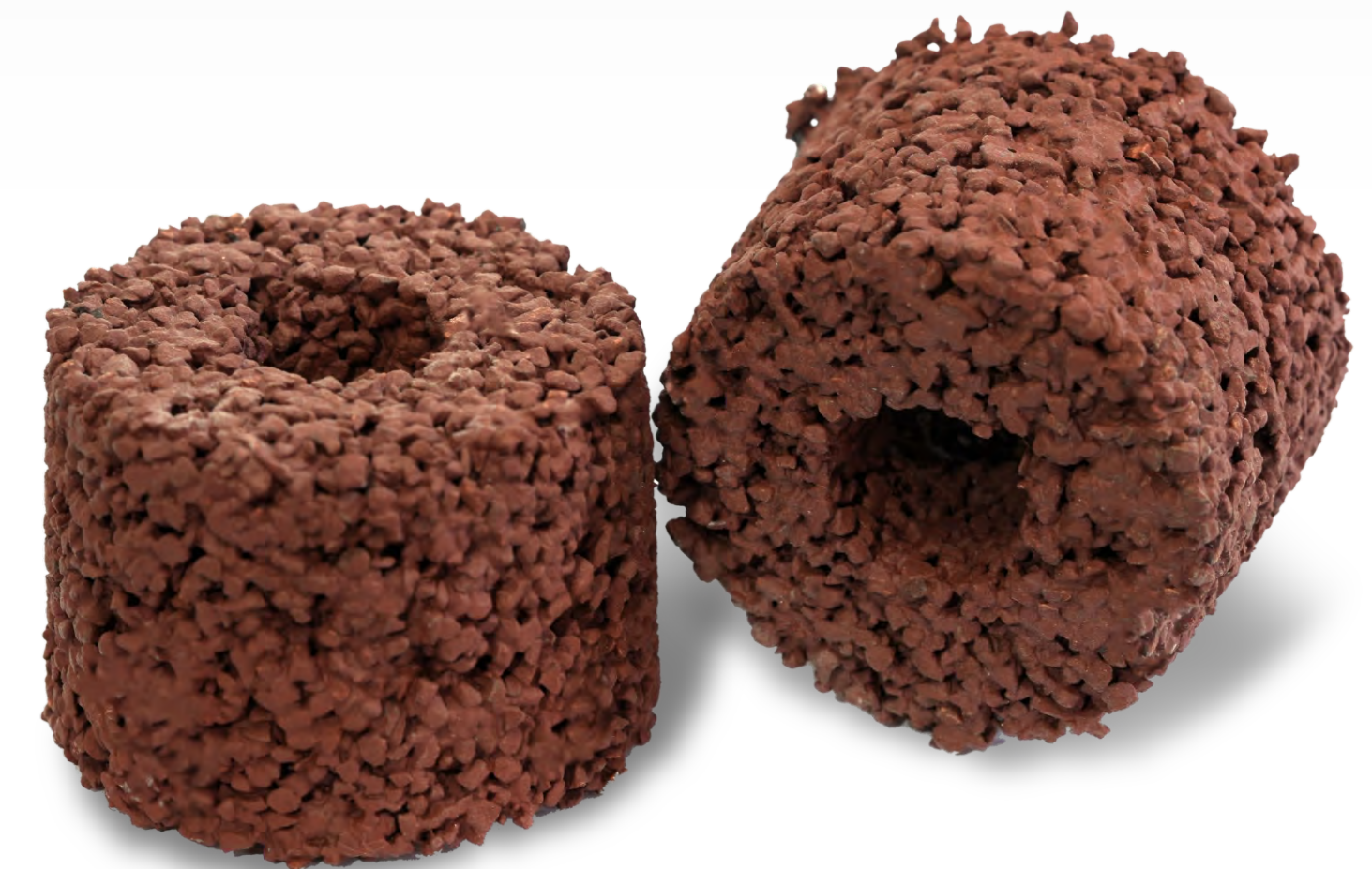
- ✍ inexpensive
- ✍ requires no costly equipment
- ✍ easy to apply
- ✍ considerably improves mechanical properties
- ✍ effectively eliminates gas porosity due to hydrogen
- ✍ safe - non-toxic
- ✍ easy to store.

• Consumption :

- One piece to be plunged beneath the molten metal for 8 to 10 minutes for 250 to 300 Kgs of metal. In case of more than 300 Kgs, additional piece has to be fixed in plunger for every 250 Kgs of metal. Piece will not get dissolved but the chemicals inside it will get used in a single use only.
- (Plunger rod needs to be designed as per number of pieces to be used.)



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DEGASSER - NOGAS

Introduction-

Nogas is briquette for plunging into Copper & Copper alloys to remove Hydrogen Gas. The solubility of hydrogen in copper and copper-base alloys decreases appreciably as the metal cools from the liquid to the solid phase. The metals normally alloyed with copper have varied effects on the solubility of hydrogen in copper.

Aluminium, zinc and tin additions decreases the solubility of hydrogen, while nickel additions increases it. Where solidification occurs over a range of temperature, the decrease in solubility from liquidus to the solidus is distributed over that range. The gas dissolved in the molten metal diffuses during solidification into the remaining interdendritic pools of liquid until, when these solidify, it is ejected as gas bubbles to form the familiar interdendritic gas porosity.

Thus, NOGAS is a must use to prevent gas porosity defects arising due to Hydrogen Gas.

Usage-

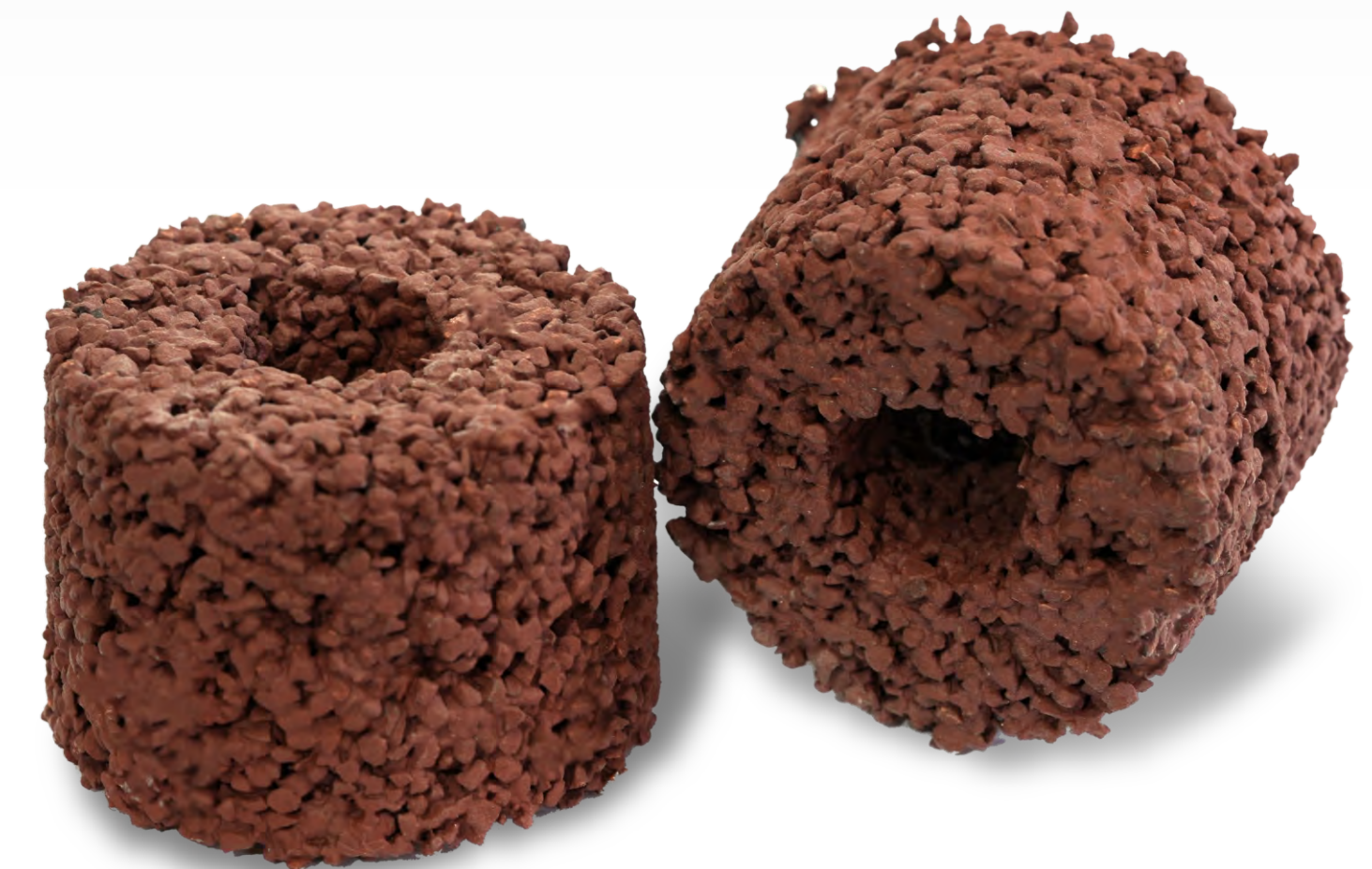
NOGAS briquettes are convenient to apply and most effective in removing dissolved hydrogen from molten copper and its alloys. A compacted degassing briquette is plunged beneath the metal surface to release a stream of scavenging gases from the decomposition which ensues. The scavenging gases do not produce any objectionable or toxic fumes and the only equipment required is a suitably protected plunger rod.

NOGAS is supplied as strong, robust briquettes that can be safely and easily stored, handled and applied.

Degassing with NOGAS briquettes can be carried out in the furnace in the case of lift-out, tilting and high frequency furnaces. For larger units it is recommended that degassing should be carried out in the transfer ladle.



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“ Are you suffering from problem named
"LOHA" or Hard Spots or Comet Tail Defects
in your Buffed/Polished Casting, Specially
Flat Polished Surface? ”



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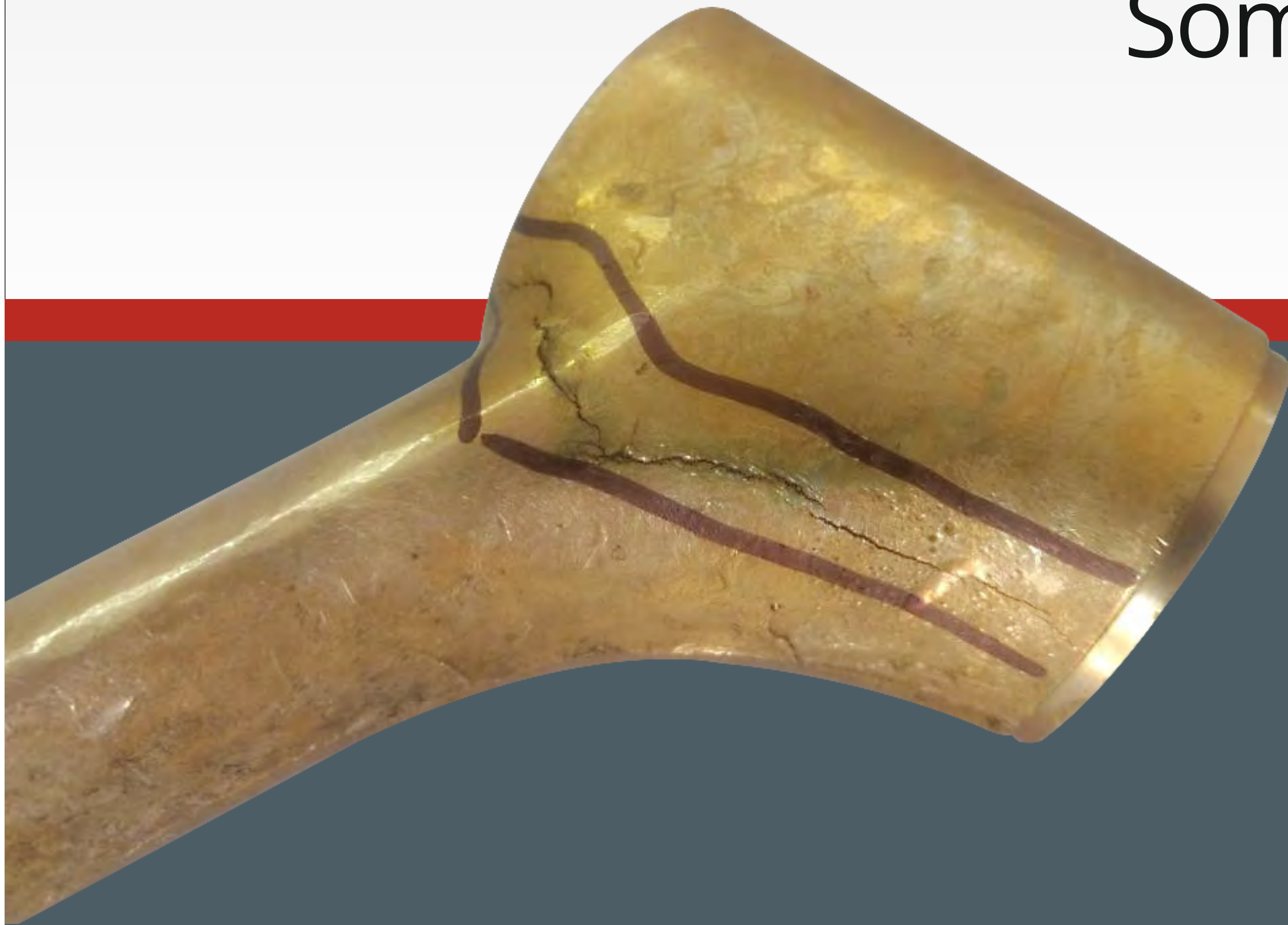
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“ Are you suffering from Cracks at Casting Surface or Inside the Casting or Sometimes while Installing? ”



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GRAIN REFINER - SEFREFINER



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GRAIN REFINER - SEFREFINER

PHYSICAL FORM: SEFREFINER is normally sold in capsules of 25 & 50 grams. It is a whitish Powder packed in Aluminum Sheet. (Customized sizes of tubes also available on request)

CONSUMPTION : 200 grams of SEFREFINER is recommended per metric ton of melted brass to be inoculated. This equates to one 50 gram capsule for each 250 kilograms of melted brass.

ALLOY REQUIREMENTS: Best casting results will occur with clean yellow brass ingot. Otherwise the basic Scrap Brass must be free of inclusions which are identified by a visual check of the polished surface. Good grain refinement usually occurs when the copper content is between 56 and 62 percent.

Optimal grain refinement usually occurs when the copper content is 59.5 percent the aluminum content is 0.6 percent.

SEFREFINER has been used to lower the casting temperatures and increase the castability and fluidity.

METHOD OF USE: As a safety precaution, care should be taken to preheat the SEFREFINER capsules on the furnace rim, shelf, etc. so they are free of any moisture.

Any adjustments to the Aluminum or Zinc content of the melt should be made prior to adding SEFREFINER. The surface of the melt should be reasonably free of slag.

SEFREFINER should be added to the melt by immersing the capsules about 50 cm-75cm (approx 25 inches or 2 feet) below the liquid metal surface using a bell shaped plunger.



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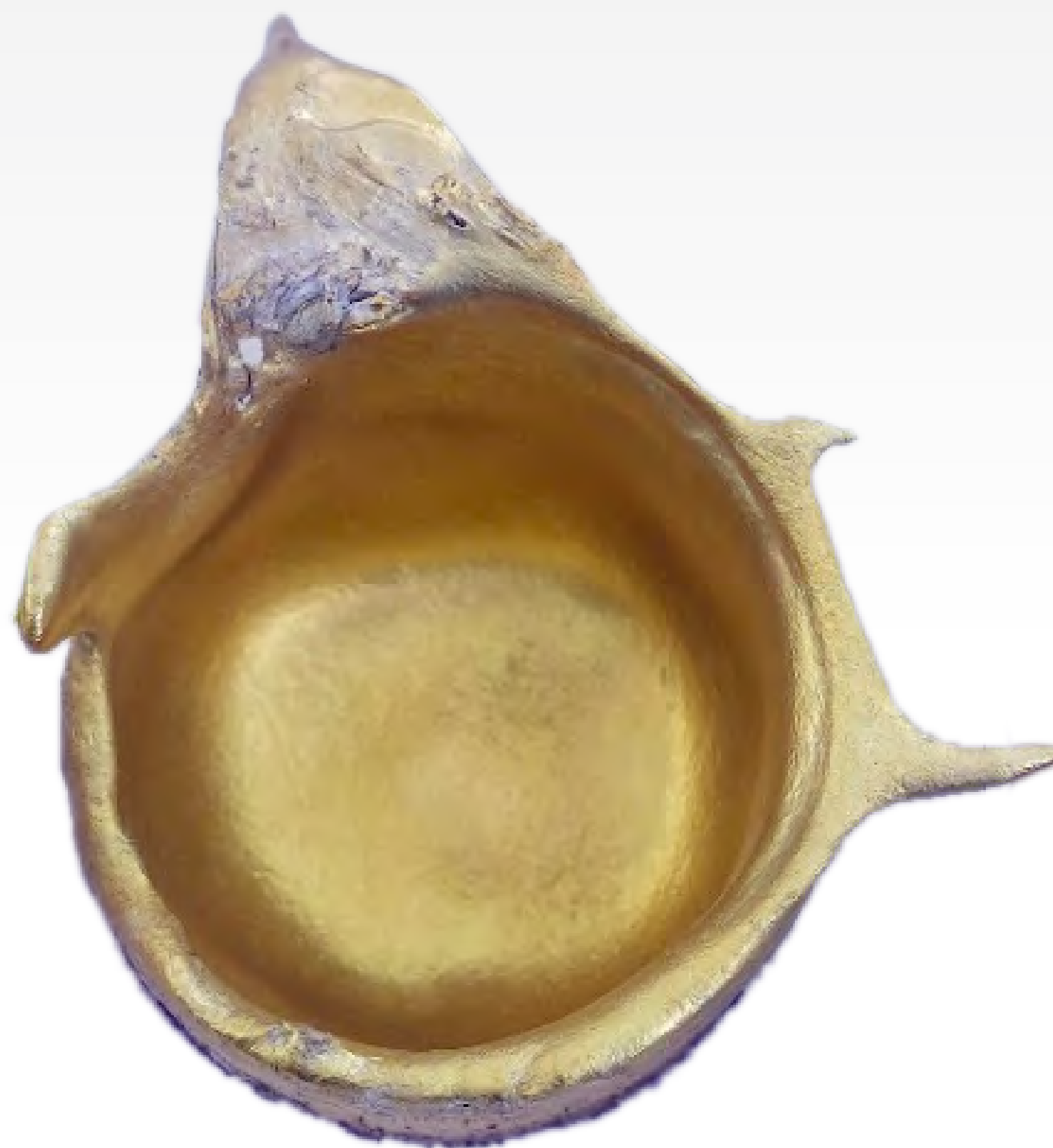


VISIBLE RESULTS

SLUSH CUP TEST



COARSE GRAIN



FINE GRAIN



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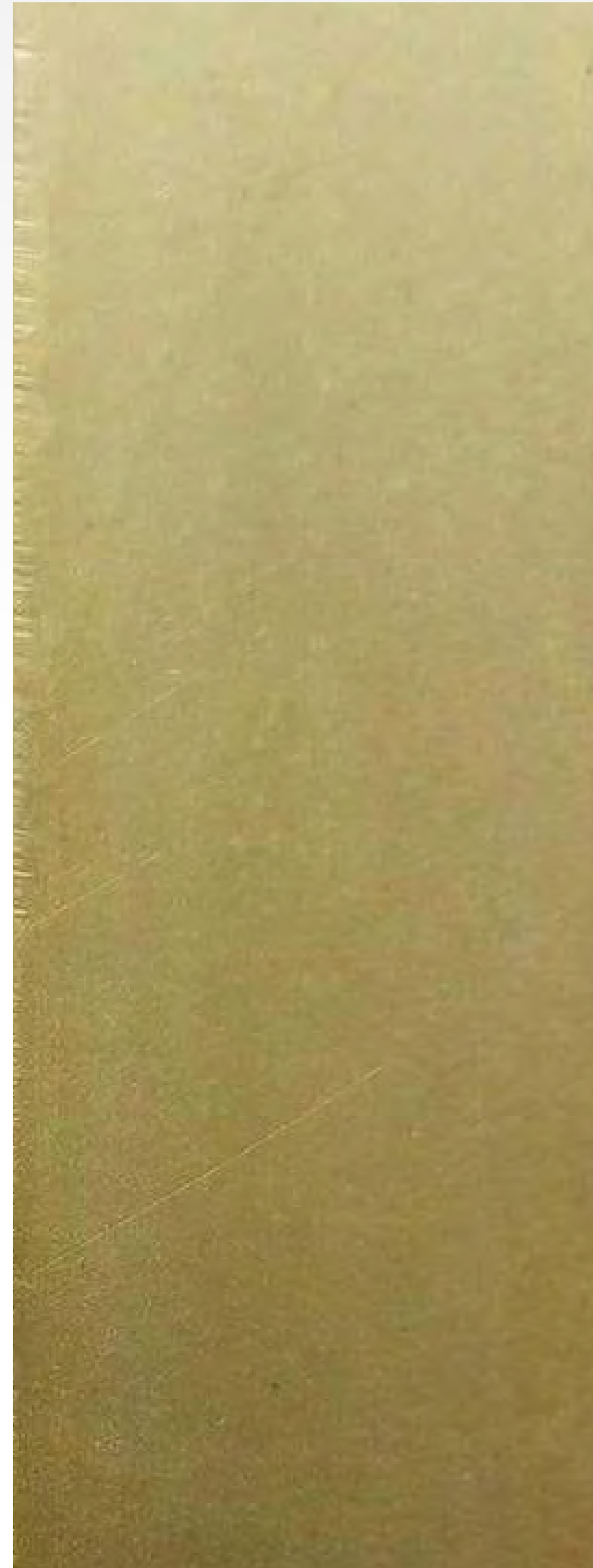
VISIBLE RESULTS

ETCHING TEST

COARSE GRAIN



FINE GRAIN



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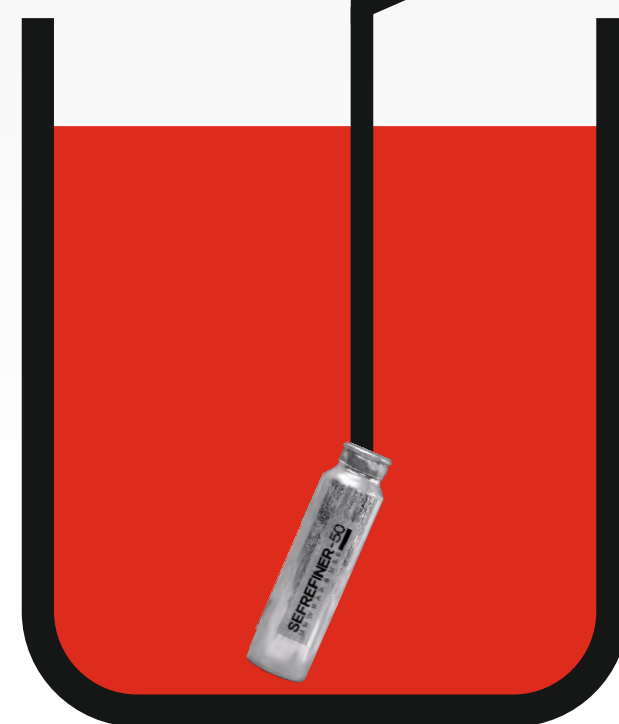


HOW TO USE

MOLTEN METAL READY TO CAST
SLAG ALREADY REMOVED
TEMP. 980°C PLUS



DIP THE GRAIN REFINER INSTANTLY
IN ONE GO TO THE BOTTOM
TEMP. DECREASES BY 10-15°C



IN 2 -3 MIN. GRAIN REFINED
MOLTEN METAL IS READY TO CAST



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WHAT IS GRAIN REFINEMENT

GRAIN REFINEMENT MEANS DECREASING THE SIZE OF GRAIN SIZE OF PARTICULAR METAL OR ELEMENT.

FOLLOWING ARE THE BENEFITS OF GRAIN REFINEMENT

- ✍ MECHANICAL PROPERTTIES ARE ENHANCED
- ✍ IMPROVES THE FLUIDITY OF MOLTEN METAL
- ✍ REDUCES THE HOT TEARING CAPACITY OF METAL.
- ✍ IMPROVES PRESSURE TIGHTNESS OF PLUMBING COMPONENTS
- ✍ ENHANCES SURFACE FINISH OF THE ALLOY

MAIN TYPES OF GRAIN REFINER ARE

- ✍ PHOSPHORUS, BORON & ZIRCONIUM.

BEST AVAILABLE GRAIN REFINER IS BORON BASED- SEFREFINER

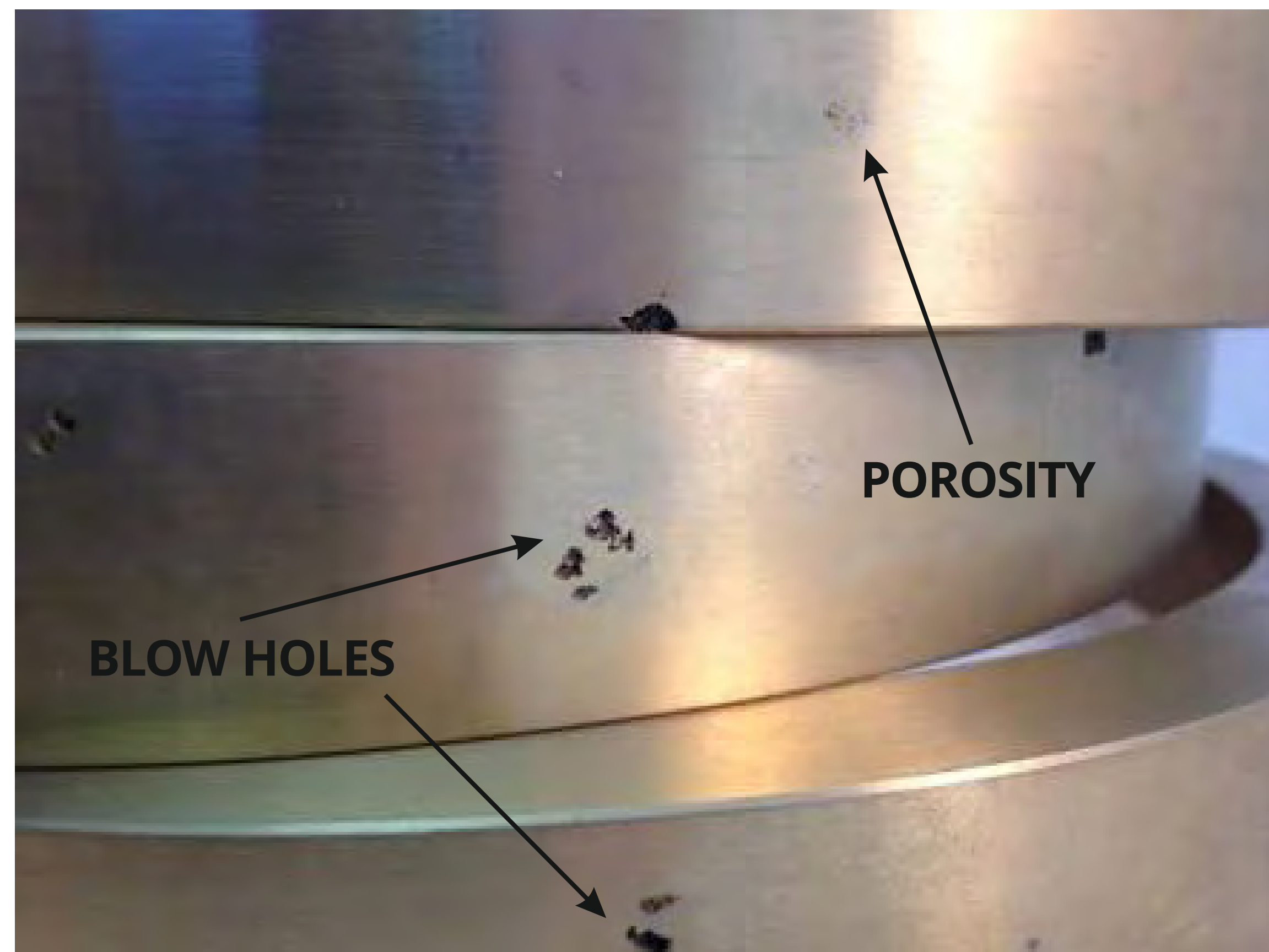
AT LEAST 50PPM OF IRON AND 30PPM OF BORON ARE NECESSARY TO CAUSE GRAIN REFINEMENT IN THESE ALLOYS.



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“ Are you suffering from
Casting Problems like Blow Holes,
Pin Holes or Porosity in Casting? ”



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“ Are you suffering from
Casting Problems like Shrinkage,
Cavities in Brass Casting? ”



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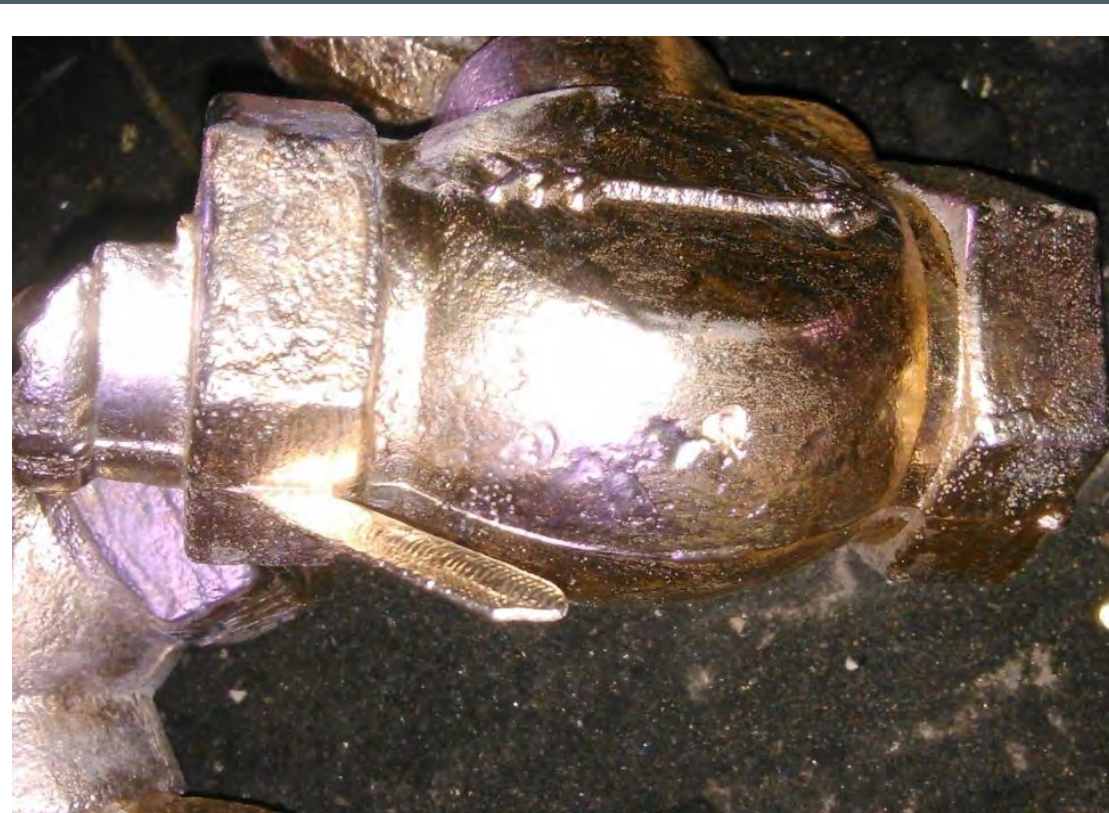
BORAX VS SEFCUPEX



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BORAX	DECAHYDRATE	PENTAHYDRATE	SEFCUPEX
	$\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$	$\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$	
Water %	47%	31%	0%
ON HEATING BORAX LOOSES IT'S WATER OF CRYSTALLIZATION, HENCE RELEASING HYDROGEN & OXYGEN IN MOLTEN METAL			
HYDROGEN & OXYGEN ARE THE ROOT CAUSE OF MANY CASTING DEFECTS AND BORAX IS CONTRIBUTING TOO			
BORON %	11.30%	14.80%	0%
HARDNESS OF BORON AS ELEMENT IS 9.5 ON MOH'S SCALE AS COMPARED TO JUST 3 TO 4 OF BRASSES			
MELTING POINT OF ELEMENT BORON IS ALMOST 2300°C CENTIGRADE AS COMPARED TO 950°C TO 1000°C OF BRASSES			
BORON FROM BORAX CAUSES MANY CASTING DEFECTS SUCH AS BRITLLENESS, HARDNESS, HARD SPOTS, COMET TAIL DEFECTS ON POLISHED SURFACE AND MANY MORE			
<div><div><div>SEFSO'S MELTING FLUX</div><div>SEFCUPEX IS BORAX & MOISTURE FREE</div></div><div></div></div>			
VISIBLE RESULTS	DECREASED DROSS WEIGHT		
	DECREASED METAL CONTENT IN DROSS		
	DROSS BECOMES POWDERY IN NATURE		

“ Are you suffering from Surface Casting Defects on Brass Casting? ”



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DEOXIDIZERS

MAGNESIUM & LITHIUM BASED



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OUR CLIENTELE

RODS, SHEETS, COILS, ETC.



Bright Metals
1968



RAJHANS METALS



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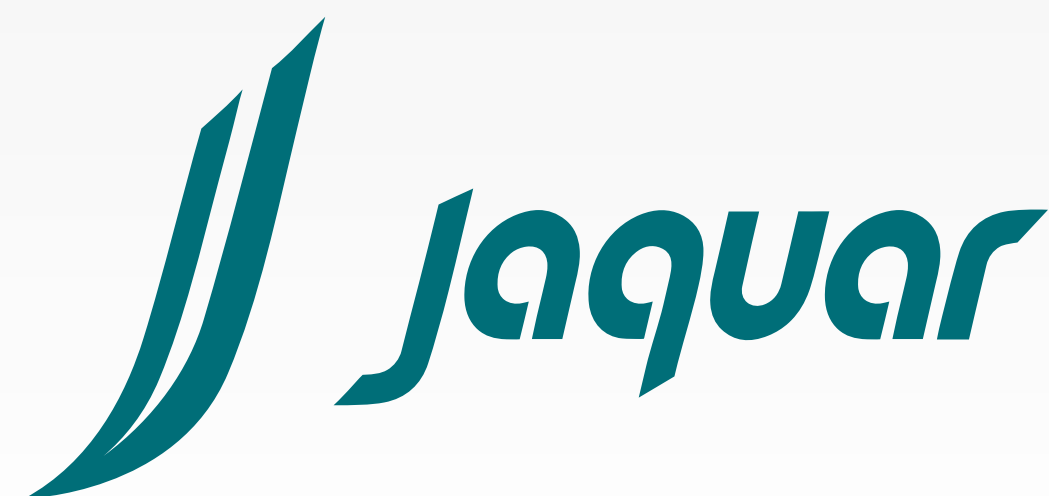
WHEN SAFETY MATTERS
Trans Valves (India) Pvt. Ltd.
Value Engineering Trough Quality



Rajhans
Impex Pvt. Ltd.

OUR CLIENTELE

FAUCETS & FITTINGS



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OUR CLIENTELE

OVERSEAS



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AKIJ GROUP
Quality first



AND MANY MORE.....