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UNITED STATES
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
986 NATIONAL CENTER
RESTON, VIRGINIA 20192

CONSUMPTION OF COPPER MATERIALS
Foundries, Manufacturers, Chemical Plants

INDIVIDUAL COMPANY DATA - PROPRIETARY

Unless authorization is granted in the section above the signature, the data furnished in this report will be treated in confidence by the Department of the Interior, except that they may be disclosed to Federal defense agencies, or to the Congress upon official request for appropriate purposes. Unless objection is made in wrting to the USGS, the information furnished in this report may be disclosed to the respondent's State Geological Survey (or similar State Agency) if the State has appropriate safeguards to prevent disclosing company proprietary data.

FACSIMILE NUMBER
1-800-543-0661

(Please correct if name or address has changed.)

Collection of nonfuel minerals information is authorized by 30 U.S.C. 1601 et seq. and the Defense Production Act. This information is used to support executive policy decisions pertaining to emergency preparedness, national defense, and analyses for minerals legislation and industrial trends. The USGS relies on your voluntary and timely response to assure that its information is complete and accurate. See instructions for minimum quantities to report.

SECTION 1. General Information.

(a) Classification of plant: ☐ Captive _____ ☐ Jobbing _____

(b) Type of operation: ☐ Brass foundry ☐ Aluminum foundry ☐ Iron foundry ☐ Other *(specify)* _____
☐ Chemical works ☐ Brass mill ☐ Wire mill

(c) Type of copper raw material used: ☐ Refined copper ☐ Brass & bronze ingot ☐ Purchased copper & copper-base scrap

(d) Other metallic scrap used: ☐ Aluminum-base ☐ Nickel-base ☐ Lead ☐ Tin-base ☐ Zinc-base

(e) Location of plant: State _____ City or town _____

SECTION 2. Stocks, receipts, consumption, and shipments of refined copper, copper-alloy ingot, billets, etc. *(pounds)*

Material	Line no.	Code	Stocks at beginning of year	Receipts during year	Consumed in production during year [1]	Shipments during year [2]	Stocks at end of year
Refined copper: Cathodes	1	021					
Wire bars	2	022					
Ingots and ingot bars	3	023					
Cakes and slabs	4	024					
Billets	5	025					
Copper powder	6	027					
Other *(specify)* _____	7						
TOTAL	8	099					
Copper-alloy ingot, billets, etc.: Tin bronze	9	331					
Leaded tin bronze	10	332					
Leaded red brass	11	333					
High-leaded bronze	12	334					
Leaded yellow brass	13	335					
Manganese bronze	14	336					
Aluminum bronze	15	338					
Hardeners	16	350					
Other *(specify)* _____	17						
_____							
TOTAL	18	399					

[1] *Report quantities of refined copper or ingot melted or rolled to make castings, wire, sheet, etc.*

[2] *Report shipments, if any, of refined copper or ingot in same form as received; do not report shipments of castings or other products.*

OVER

SECTION 3. Stocks, receipts, consumption, and shipments of purchased copper and copper-base scrap. *(pounds)*

Scrap item	Line no.	Code	Physical inventory adjustment only (0)	Stocks at beginning of year (a)	SCRAP RECEIVED DURING YEAR			Total scrap consumed during year [1] (e)	Scrap shipped during year (f)	Stocks at end of year (g)
					Quantity (b)	New scrap per-cent (c)	Old scrap per-cent (d)			
No. 1 wire and heavy copper	19	181								
No. 2 wire, mixed heavy, and light copper	20	182								
Composition turnings and solids	21	131								
Railroad-car boxes	22	135					100			
Cocks and faucets	23	136					100			
Yellow brass and castings	24	137								
Light brass	25	139								
Brass clippings and turnings	26	141				100				
Brass pipe	27	142								
Low brass	28	146								
Rod-brass turnings	29	144				100				
Aluminum bronze	30	111								
Tin bronze *(_____ % tin)*	31	152								
Nickel silver	32	109								
Cartridge cases	33	106								
Manganese bronze	34	148								
Commercial bronze and gilding metal	35	177								
Other *(specify)* _____	36									
_____										
TOTAL	37	199								

[1] *Include scrap processed by you on conversion basis. Worn-out equipment such as scrap salvaged by railroads from line operations and that melted by shipyards, which originated in salvage operations, should be reported even though technically it is not purchased scrap.*

SECTION 4. Secondary metal content of product. *(total metal recovered from copper-base scrap)*

Product	Line no.	Code	SECONDARY METAL CONTENT IN POUNDS					
			Copper	Tin	Lead	Zinc	Aluminum	Nickel
Brass and bronze castings	38	201						
Brass-mill alloy products	39	202						
Copper in chemical compounds	40	203						
Copper in iron and steel	41	204						
Copper and brass powder	42	205						
Aluminum alloys	43	206						
Brass-mill copper products	44	207						
Copper castings	45	209						
Other *(specify)* _____	46							
TOTAL secondary content of products	47	299						

Remarks:

Name of person to be contacted regarding this report	Tel. area code	No.	Ext.

Address No. Street	City	State	ZIP Code

May tabulations be published which could indirectly reveal the data reported above? ☐ (1) Yes ☐ (2) No

Signature	Title	Date

GENERAL INSTRUCTIONS AND OVERVIEW

The purpose of these instructions is not only to explain the schedules, but to simplify, and reduce the work of completing them.

This form provides for data on consumption and stocks of refined copper, copper-alloy ingot, and copper-base scrap, and on recovery of secondary metal from scrap. It should be filed by foundries, chemical plants, manufacturers, and miscellaneous users of copper refinery shapes, copper shot or powder, copper-alloy ingot, copper scrap, or copper-base scrap and by brass and wire mills not reporting on monthly Form 9-4084-M.

All published information is on an industry-wide basis and does not reveal individual company operations. Defense Mobilization Agencies, however, may receive copies of individual reports, as noted on the form.

Annual forms are sent to some plants which do not currently consume copper materials, but whose operations are of a type that could require such use. For example, some iron foundries use copper shot or scrap as an alloying element, whereas others do not. ***If your plant is canvassed, and you are not a consumer of copper, please return the form with a notation to that effect so your plant can be removed from the USGS mailing list.***

The data assembled from these reports are used in the Minerals Yearbook of the USGS, in periodic press releases, and in answering requests for information from the Congress, the Tariff Commission, the Department of Defense, other Government agencies, and private industry.

The Minerals Yearbook is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington DC 20402.

Please return this form in the enclosed envelope or fax to the above toll-free number **ON OR BEFORE MARCH 1**. Complete a separate form for each establishment that was active during the reporting period. If you do not have exact data, please enter your best estimates and mark with an /e. Use zero (0) when appropriate. Do not report decimals or fractions. Round to the nearest whole number. Please do not make entries in shaded areas. Please use the space for "Remarks" to provide any specific information that will help us in the use or interpretation of the data. Additional forms are available upon request.

If you have any questions concerning completion of this form, please contact the Mineral Commodities Data Unit, U.S. Geological Survey, 985 National Center, Reston, VA 20192, Telephone (703) 648-7960.

DEFINITIONS

A **captive foundry** is one owned and operated by a company to supply its own needs.

A **jobbing foundry** is one which is engaged in the production of castings for sale.

Scrap metal is a general term which includes metallic scrap and by-product residues. The scrap of any particular metal includes all scrap of that metal. For example, the term "copper scrap" includes unalloyed copper scrap, copper-alloy scrap, copper-base-alloy scrap, and copper, brass, and bronze skimmings, or other residues, but not primary residues. The scrap classified as that of a particular metal is scrap which contains a greater percentage of that metal than of any other.

Purchased scrap is a general term, excluding home scrap, but covering all scrap which has been purchased or transported from one plant to another. It includes new scrap, old scrap, toll scrap, and scrap generated at one plant and transferred to another plant of the same company for processing, which entails transportation costs. The term also includes worn-out metal equipment, parts and articles such as reclaimed in shipyard repair work and from line operations at railroad foundries, although no definite financial transaction may have resulted.

New scrap consists of process scrap (plant scrap) generated in the manufacture of articles from alloyed or refined metal and consumed at a plant of different location from the plant of generation. New scrap also includes defective, finished, or semifinished articles returned by purchasers to be reworked. Clippings, borings and turnings, and other items of process scrap are new scrap, whether clean, rusty, or oily, and whether generated recently or long before reclamation. Skimmings, slag, and drosses generated in processing scrap or refined metal are new scrap. Flue dust from smelting brass scrap is new scrap. Zinc chemical residues resulting from the consumption of zinc dust in the manufacture of sodium hydrosulfite are also new scrap. Aircraft plants melt zinc die alloys to make dies and remelt the dies to make new ones whenever necessary. The same material may be remelted several times during a year. In such cases, the dies are not considered to be scrap. If, however, they are sold to a smelter for redistillation or remelting, they are considered to be old scrap. Tailings from ore concentration are primary residues, not scrap.

Old scrap consists of metal articles that have been removed from service because of wear, damage, or obsolescence, usually after serving a useful purpose. Typical examples of old scrap are used trolley wire, battery plates from worn-out storage batteries, worn-out railroad car-boxes, fired cartridge cases, plumbing fixtures and wiring from building demolition, and obsolete military equipment (frequently unused).

Toll scrap is scrap treated for a toll or conversion charge. It is reported by the plant at which the scrap is consumed, but not by the plant owning the material.

Home (runaround) scrap is process scrap consumed in the plant of generation and should not be reported on Form 9-4082-A.

Consumed means "used", i.e., the quantity melted, rolled, drawn, or otherwise converted to castings, sheet, wire rod, chemicals, etc. It does not mean the melting loss. Consumption of scrap is always measured at the point where it loses its identity as scrap and becomes secondary metal.

Secondary metals are metals or alloys recovered from scrap and residues. The term "secondary" applies only to the source of the metal and has no relation to the type of product recovered, either as to quality, degree of purity, or physical characteristics. The total secondary metal content of products will ordinarily be less than the gross weight of scrap consumed because consumption of scrap involves melting loss.

A hardener is an intermediate alloy which is not suitable for direct use without combination with other materials and is designed to facilitate the introduction of one or more of the constituent metals into other alloys.

SPECIFIC INSTRUCTIONS

SECTION 1. General Information.

Items (a) & (b). **Classification of plant, type of operation.**
Please check classification of plant and type operation, and write in type of plant if it is not listed. This aids in correct understanding and tabulation of the reported figures.

Item (d). **Other metallic scrap used.**
Respondents checking any of these items will be sent appropriate forms if they are not already receiving them.

SECTION 2. Stocks, receipts, consumption, and shipments of refined copper, copper-alloy ingot, billets, etc.

Report here purchases of refined copper in the form of cathodes, bars, ingots, etc. Do not report intermediate products such as sheet, rod, or wire received for further processing. If you process refined copper for others on toll, report it, but do report toll operations done by others for you. Report copper shot and cast anodes as OTHER (SPECIFY). Consumption of all refined copper consumed in making them has been reported by the manufacturer.

The SECTION 2 TABLE of these instructions gives a list of the composition of the principal types of ingot and the classifications in which they should be reported on the form. If exact classification of ingot consumed is not given, report it in a classification which is as near as possible to that of the ingot being reported. Ingot which has wide divergence from those listed, such as 50-50 copper-lead alloy, should be reported on one of the blank lines of the Section. Low brass and nickel silver, which are not listed in this Section, should be reported on blank lines, and the titles written in. Special alloys which are not used in large quantities, such as manganese copper, should be reported as CODE 350. If an item title is not self-explanatory and is written in on a blank line in either SECTION 2 or SECTION 3, please give its approximate composition, in a footnote, if necessary, so that it can be properly classified.

Entries on each line should balance, that is, STOCKS, BEGINNING OF YEAR plus RECEIPTS DURING YEAR should equal CONSUMED IN PRODUCTION DURING YEAR, plus SHIPMENTS DURING YEAR, plus STOCKS, END OF YEAR.

In the CONSUMED IN PRODUCTION DURING YEAR column, report quantity of ingot melted to make castings, etc.

In the SHIPMENTS DURING YEAR column, report only shipments of refined copper or copper-alloy ingot ***in the same form as received; do not report shipments of products***. Users of these materials do not often ship any of them, but if they do, entries of such shipments are necessary to make the lines balance.

SECTION 3. Stocks and consumption of purchased copper scrap and copper-base scrap.

Columns (a), (g). **Stocks at beginning and end of year.**
Report here stocks of purchased scrap. (Machine-shop scrap from other plants should be considered as purchased scrap.)

Column (b). **Purchased scrap received.**
Report here scrap defined as "purchased" in DEFINITIONS SECTION. Include scrap treated at your plant on toll. Do not report scrap owned by you but treated at plants of others.

Columns (c), (d). **Percent of new and old scrap.**
Estimate percentages of new and old purchased scrap receipts only. See DEFINITIONS SECTION.

Column (e). **Total scrap consumed during year.**
Report here purchased scrap consumed, but not runaround scrap such as gates, risers, and defective castings returned to your foundry from your machine shop.

SECTION 4. Secondary metal content of products.

Report in SECTION 4 only the production resulting from the consumption of scrap reported in SECTION 3. If the weight and composition product is known, the secondary metal weight and composition may be determined by subtracting added alloying ingredients. This is the preferable and most accurate method, but necessary data may not always be available.

If necessary, SECTION 4 entries may be calculated by applying metallic recovery and composition percentages to weight of purchased scrap consumed. If the percentage method is used, the example in the following paragraph may be of value.

If a brass foundry melts 1,000 pounds of composition (85-5-5-5) scrap, the metallic recovery would be about 94 percent, or 940 pounds, of which 85 percent, or 799 pounds, would be copper; 5 percent, or 47 pounds, tin; 47 pounds, lead; and 47 pounds, zinc. These quantities of copper, lead, tin, and zinc, added to others obtained similarly, would be entered in SECTION 4 on the line for brass and bronze castings.

In many cases, refined copper or copper-alloy ingot will be added to the melt. Consumption of this material should be reported in SECTION 2, but the resulting production should be omitted from SECTION 4. TOTAL SECONDARY METAL CONTENT, CODE 299, means the totals of the SECONDARY METAL CONTENT columns. The total reported secondary metal content is always somewhat less than the total reported scrap consumption because there is always some melting loss.

SECTION 2 Table. Brass Ingot Classification.

Classification in SECTION 2	Code	PERCENTAGE COMPOSITION OF PRINCIPAL TYPES OF INGOT						Common name of ingot
		Copper	Tin	Lead	Zinc	Aluminum	Nickel	
Tin bronze.....	331	88	10		2			Tin bronze
		88	8		4			
		85	14		1			
		91	9					
		88	9		2		1	
		95	5					Phosphor bronze
Leaded tin bronze.....	332	88	6	1.5	4.5			Leaded tin bronze
		83	13.5	.5	3			
		81	13	5			1	Bearing bronze
		87	12	1				
		83	5	2	10			English metal
		91	3	3	3			
		87	4	1	4		4	
Leaded red brass.....	333	85	5	5	5			Soft red brass
		80	5	2.5	12.5			
		81	3	7	9			Valve compression
		83	4	6	7			
		76	2	8	14			
High-leaded bronze.....	334	80	10	10				High-leaded tin bronze
		84	6	8	2			
		75	5	20				
		71	13	15			1	
		75	10	15				
		75	1	24				Plastic bronze
		71	9	20				
Yellow brass.....	335	66	1	3	30			Leaded yellow brass
		61		2	37			
		70			30			
		60			40			Muntz metal
Manganese bronze.....	336	58	1		39	1		Manganese bronze
		62			27	5		
Aluminum bronze.....	338	95				5		Aluminum bronze
		92				8		
		89				10		
Low brass.....	[1]340	80			20			Low brass
		90			10			
		95			5			Gilding metal
		92			4	(1 to 5 Si)		Silicon bronze
		82			14	(2 to 5 Si)		
		94	2	2	2			Conductor bronze
Nickel silver.....	[2]339	58	2	7	18		14	Nickel silver or German silver
		65	4	3	5		22	
Copper hardeners and deoxidizers.....	[3]350							

[1] *Include in this category Everdur, Herculoy, Beryllium copper and Tombasil.*
[2] *Include in this category Everbrite, Cateract metal, Nickel brass, Nickel bronze, Nickel alloy and Copper nickel.*
[3] *Include in this category Phosphor copper, Manganese copper, Barium copper, and Silicon copper.*