

## 5703-9-21 Sales and use tax; manufacturing.

(A) For purposes of this rule, all purchases of tangible personal property are taxable, except those in which the purpose of the consumer is to incorporate the thing transferred as a material or a part into tangible personal property to be produced for sale by manufacturing, assembling, processing, or refining or to use the thing transferred, as described in section 5739.011 of the Revised Code and this rule, primarily in a manufacturing operation to produce tangible personal property for sale.

This means that a person who buys tangible personal property and will make it a part or constituent of something that he is ~~being manufacturing~~ manufactured for sale, or buys something that is used in a manufacturing operation, does not have to pay sales or use tax on the thing purchased.

Tangible personal property purchased by a manufacturer as a component or constituent of a product to be manufactured for sale is exempted from sales and use tax. The purchase of all such tangible personal property is not taxable, even though a portion will be lost or removed as waste or for testing. The manufacturer must pay use tax on the price, as defined in division (G) of section 5741.01 of the Revised Code, of any completed product not sold and stored or used by the manufacturer in a taxable manner, except such product that is consumed in testing or is disposed of because it is defective or otherwise unsalable.

(B)

(1) "Manufacturing operation" means a process in which materials are changed, converted, or transformed into a different state or form from which they previously existed and includes refining materials, assembling parts, and preparing raw materials and parts by mixing, measuring, blending or otherwise committing such materials or parts to the manufacturing process. "Manufacturing operation" does not include packaging.

Tangible personal property purchased by a manufacturer for use in packaging is taxable unless exempted pursuant to division (B)(15) of section 5739.02 of the Revised Code.

Any business whose sole activity is a process that does not include conversion or alteration of tangible personal property into a different state or form is not a manufacturer and is not covered by this rule.

The manufacturing operation begins when the raw materials or parts are committed to the manufacturing process. If the raw materials or parts are stored after being received at the manufacturing facility, the raw materials or parts are not committed until after they are removed from such initial storage. ~~Initial storage applies to multiple locations that serve a similar purpose.~~ The point of commitment is where the materials handling from such initial storage has ceased or the point where the materials or parts have been mixed, measured, blended, heated, cleaned, or otherwise treated or prepared for the manufacturing process, whichever first occurs. ~~However, the agitating or heating of raw materials to maintaining these materials in the same state or form as they are received or measuring raw materials to verify quantities received, does not constitute commitment.~~ If the raw

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materials or parts are not stored, they are committed at the point where materials handling from the place of receipt ceases or where they are mixed, measured, blended, heated, cleaned, or otherwise treated or prepared for the manufacturing process, whichever first occurs. The commitment of the materials or parts need not be irrevocable, but they must have reached the point, after materials handling from initial storage has ceased, where they normally will be utilized within a short period of time. The point of commitment frequently will be different for particular materials and parts, since they are introduced at different times in the manufacturing operation.

Things used in any activity, including movement or storage of the materials or parts before they are committed are taxable.

See examples 1, 2, 3, 4, 6, 9, 40, 61, 63, ~~and 64,~~ and 65.

(2) "Refining" means removing or separating a desirable product from raw or contaminated materials by distillation or physical, mechanical, or chemical processes.

This definition of "refining" describes a type of manufacturing process and is not limited to the petroleum industry. A business whose sole activity is sorting material by size or other physical characteristic, or washing dirt or other contaminants from the surface of parts or other materials is not engaged in refining.

See examples 4, 5, and 63.

(3) "Assembly" and "assembling" mean attaching or fitting together parts to form a product, but do not include packaging a product.

Assembly generally refers to the process whereby previously manufactured parts or components are brought together and attached to create a complete, or more complete, item.

See example 15.

(4) "Manufacturer" means a person who is engaged in manufacturing, processing, assembling, or refining a product for sale and, solely for the purposes of division (B)(12) of section 5739.011, a person who meets all the qualifications of that division.

(5) "Manufacturing facility" means a single location where a manufacturing operation is conducted, including locations consisting of one or more buildings or structures in a contiguous area owned or controlled by the manufacturer.

The manufacturer does not have to own or lease the property, but must have the legal right to use it. If the property under the control of the manufacturer is not contiguous, it is not a single manufacturing facility.

See examples 21, 23, and 57.

(6) "Materials handling" means the movement of the product being or to be manufactured, during which movement the product is not undergoing any substantial change or alteration in its state or form.

(7) "Testing" means a process or procedure to identify the properties or assure the quality of a material or part.

(8) "Completed product" means a manufactured item that is in the form and condition as it will be sold by the manufacturer. An item is completed when all processes that change or alter its state or form or enhance its value are finished, even though the item subsequently will be tested to ensure its quality or be packaged for storage or shipment.

A product may be completed, as far as a particular manufacturer is concerned, even though it is not in the form in which it will be sold to the ultimate consumer because it will be further manufactured by another manufacturer. If the product will be further manufactured by the same manufacturer at a different manufacturing facility, the product is still in-process and is not completed.

See examples 8, 13, and 64.

(9) "Continuous manufacturing operation" means the process in which raw materials or components are moved through the steps whereby manufacturing occurs. Materials handling of raw materials or parts from the point of receipt or pre-production storage or of a completed product, to or from storage, to or from packaging, or to the place from which the completed product will be shipped, is not a part of a continuous manufacturing operation.

The continuous manufacturing operation begins at the point where the raw materials or parts are committed and ends at the point where the product is completed.

There may be several continuous manufacturing operations at the same manufacturing facility, each producing a different product.

The things used in the continuous manufacturing operation include all production machinery, the materials handling equipment that moves the product between the production machines, and any equipment, such as tanks, shelves, or racks, that temporarily store or hold the product in between production machines. Even though testing equipment used to test in-process product is not taxable under this rule, no testing procedure is part of the continuous manufacturing operation unless it is physically and functionally integrated between steps on the production line.

See examples 1, 6, 8, 11, 19, and 63.

(C) Things transferred for use in a manufacturing operation include, but are not limited to, any of the following:

(1) Production machinery and equipment that act upon the product or machinery and equipment that treat the materials or parts in preparation for the manufacturing operation.

Production machinery is the equipment that actually changes the state or form of the product, that is, the tangible personal property being manufactured for sale. Also included is the equipment that treats the product by blending, mixing, measuring, washing, agitating, filtering, heating, cooling, or similar processes after the material or parts have been committed to the manufacturing operation and before the product is completed.

See examples 1, 4, 7, 8, 18, 24, 27, 32, 35, 56, 60, 61 and 63.

(2) Materials handling equipment that moves the product through a continuous manufacturing operation; equipment that temporarily stores the product during the manufacturing operation; or, excluding motor vehicles licensed to operate on public highways, equipment used in intraplant or interplant transfers of work in process where the plant or plants between which transfers occur are manufacturing facilities operated by the same person.

Any equipment, except motor vehicles registered for highway operation, used to move or transport the in-process product between manufacturing facilities of the same manufacturer, is considered to be used in the manufacturing operation.

See examples 1, 8, 9, 10, 11, 57, 59, 60, 63, and 64.

(3) Catalysts, solvents, water, acids, oil, and similar consumables that interact with the product and that are an integral part of the manufacturing operation.

This describes those substances that do not appreciably become a component part of the product, but which usually come in contact with the product during the manufacturing process.

See examples 1, 13, 14, 28, 35, and 62.

(4) Machinery, equipment, and other tangible personal property used during the manufacturing operation that control, physically support, produce power for, lubricate, or are otherwise necessary for the functioning of production machinery and equipment and the continuation of the manufacturing operation.

Materials which are used to make foundations, supports, and other things which are incorporated into a building or structure and become accessions to the real estate may not be purchased without payment of tax under this rule. Foundations, structural steel, and similar items which provide physical support and which retain their status as personal property must be treated for purposes of taxation separately from the equipment which they support.

Foundations and supports for production machinery, materials handling equipment, and other equipment used in a continuous manufacturing operation are not taxable. Similarly, foundations and

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supports for tangible personal property used to manufacture tangible personal property used in the manufacturing operation, as described in paragraph (C)(5) of this rule; for testing equipment, as described in paragraph (C)(6) of this rule; and for equipment used to handle or store scrap for recycling at the same facility, as described in paragraph (C)(7) of this rule, are deemed necessary for the continuation of the manufacturing operation and are not taxable.

Tangible personal property that monitors in-process product or that lubricates, cools, monitors, or controls production machinery, materials handling equipment, and other equipment used in a continuous manufacturing operation is not taxable. Similarly, tangible personal property that lubricates, cools, monitors, or controls equipment used to manufacture tangible personal property used in the manufacturing operation, as described in paragraph (C)(5) of this rule; testing equipment, as described in paragraph (C)(6) of this rule; and equipment used to handle or store scrap for recycling at the same facility, as described in paragraph (C)(7) of this rule, is deemed necessary for the continuation of the manufacturing operation and is not taxable. However, all equipment that makes or stores records of monitoring is taxable.

See examples 1, 15, 16, 17, 18, 25, 29, 52, 55, 57, and 59.

(5) Machinery, equipment, fuel, power, material, parts, and other tangible personal property used to manufacture machinery, equipment, or other tangible personal property used in manufacturing a product for sale.

If a manufacturer makes an item that is used in the manufacturing operation as described in this rule, such as tools, tooling, replacement parts for machinery, or consumable substances, such as acid or solvents, the raw materials and components that go into that item are not taxable.

Certain things used by the manufacturer to make the item that will be used in the manufacturing operation are also not taxable. These things include the machinery which manufactures the item by changing the state or form of the raw materials or components, the materials handling equipment which moves the item between such machinery, and any fuel or power used to operate the machinery or materials handling equipment.

After the item is in the form in which it will be used in the manufacturing operation, any equipment that stores it or moves it to or from the manufacturing operation is taxable.

See example 18.

(6) Machinery, equipment, and other tangible personal property used by a manufacturer to test raw materials, the product being manufactured, or the completed product.

The equipment and supplies that the manufacturer uses to perform testing, and tangible personal property used to physically support, control, lubricate, cool, or monitor such equipment are not taxable. Those things that are merely used in the lab or other area where testing occurs, but play no part in the actual testing procedures, such as furniture, storage equipment, and computers that record

or store the test results, are taxable. The testing activity is not part of the continuous manufacturing operation unless it is physically and functionally integrated between steps on the production line. Materials handling equipment used to transport test samples is taxable. Equipment and supplies used to test fuel, consumables, equipment, or anything else that is not a raw material, the product being manufactured, or a completed product are taxable.

See examples 3, 4, 19, and 60.

(7) Machinery and equipment used to handle or temporarily store scrap that is intended to be reused in the manufacturing operation at the same manufacturing facility.

In this context, scrap is any portion or component of the product being manufactured that is removed, intentionally or unintentionally, from the manufacturing process or that is residual after the process is completed. If the manufacturer recycles the scrap back into the manufacturing operation at the same facility, the equipment which moves or stores the scrap is not taxable.

Scrap which is to be sold or to be reused as a raw material by the manufacturer at another facility, is considered to be processed in a manufacturing operation if the state or form of the scrap is changed or altered. In such a case, the scrap, as it is removed from the manufacturing operation, is a raw material and the equipment which transports or stores it before it is committed to the operation where it undergoes manufacturing is taxable. After such manufacturing is over, the processed scrap is a completed product.

See examples 22 to 24, 47, and 61.

(8) Electricity, coke, gas, water, steam, and similar substances used in the manufacturing operation; machinery and equipment used for, and fuel consumed in, producing or extracting those substances; and machinery, equipment, and other tangible personal property used to treat, filter, pump, alter voltage, or otherwise make the substance suitable for use in the manufacturing operation.

Anything that is a fuel or a source of power for machinery used in the manufacturing operation, or that provides energy for the manufacturing process itself, is not taxable. Similarly, substances which transmit energy, such as steam or cooling water which transmits heat to or from the process or machinery, are not taxable. Any equipment that the manufacturer uses to generate, produce, or extract these substances, as well as fuel used to power such generation or extraction, is not taxable.

Tangible personal property which treats the fuel or power is not taxable. Such things may include coal crushers, electrical transformers, fuel or water filters, and water treatment chemicals.

See examples 22 to 32, 59, and 64.

(9) Machinery, equipment, and other tangible personal property used to transport or transmit electricity, coke, gas, water, steam, or similar substances used in the manufacturing operation from the

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point of generation, if produced by the manufacturer, or from the point where the substance enters the manufacturing facility, if purchased by the manufacturer, to the manufacturing operation.

Such equipment includes wires, conduit, pipes, larry cars, and conveyors.

See examples 12, 22 to 32.

(10) Machinery, equipment, and other tangible personal property that treats, filters, cools, refines, or otherwise renders water, steam, acid, oil, solvents, or similar substances used in the manufacturing operation reusable, provided that the substances are intended for reuse and not for disposal, sale, or transportation from the manufacturing facility.

See examples 1, 20, 33, 34, 35, 36, 37, and 64.

(11) Parts, components, and repair and installation services for items used in the manufacturing operation as described in paragraph (C) of this rule.

Replacement parts for nontaxable equipment are not taxable. Any repair service or installation service purchased from an independent contractor for repairing or installing nontaxable equipment is not taxable.

See examples 38, 44, 55, and 56.

(12) Machinery and equipment, detergents, supplies, solvents, and any other tangible personal property located at a manufacturing facility that are used in the process of removing soil, dirt, or other contaminants from, or otherwise preparing in a suitable condition for use, towels, linens, articles of clothing, floor mats, mop heads, or other similar items, to be supplied to a consumer as part of laundry and dry cleaning services as defined in division (BB) of section 5739.01 of the Revised Code, only when the towels, linens, articles of clothing, floor mats, mop heads, or other similar items belong to the provider of the services.

(13) Equipment and supplies used to clean processing equipment that is part of a continuous manufacturing operation to produce milk, ice cream, yogurt, cheese, and similar dairy products for human consumption.

See examples 63 and 64.

(D) Things transferred for use in a manufacturing operation do not include:

(1) Tangible personal property used in administrative, personnel, security, inventory control, record keeping, ordering, billing, or similar functions.

Those things that are used in the "non-manufacturing" aspects of the manufacturer's business are generally taxable. This includes what is broadly known as office equipment, furniture, and supplies.

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Anything, including computers and software, used for communication, ordering, billing, inventory control, or record keeping, including testing or production records, is taxable.

Things used in providing security include devices to monitor or observe personnel or detect intruders.

See examples 7, 15, 16, 19, 39, and 55.

(2) Tangible personal property used in storing raw materials or parts prior to the commencement of the manufacturing operation or used to handle or store a completed product, including storage that actively maintains a completed product in a marketable state or form.

(3) Tangible personal property used to handle or store scrap or waste intended for disposal, sale, or other disposition, other than reuse in the manufacturing operation at the same manufacturing facility.

(4) Tangible personal property used to store fuel, water, solvents, acid, oil, or similar items consumed in the manufacturing operation.

All types of storage, be it of raw materials or parts, product (except in-process product), completed product, consumables, fuel, waste, scrap, equipment, tools, supplies, repair parts, etc., is taxable.

Similarly, anything used to handle, move, or transport people or personal property in the manufacturing facility is taxable, except for materials handling during a continuous manufacturing operation or during the manufacture of an item which will be used in the manufacturing operation, as described in paragraph (C)(5) of this rule, or the transmission of fuel, power, and similar substances as described in paragraph (C)(9) of this rule.

See examples 1, 2, 3, 4, 6, 9, 11, 20, 37, 40, 41, 42, 43, 44, 47, 59, 60, 61, and 64.

(5) Tangible personal property that is or is to be incorporated into realty.

Any tangible personal property that will become part of the real estate is taxable under this rule.

See examples 32, 45, and 46.

(6) Machinery, equipment, and other tangible personal property used for ventilation, dust, or gas collection, humidity or temperature regulation, or similar environmental control, except machinery, equipment, and other tangible personal property that totally regulates the environment in a special and limited area of the manufacturing facility where the regulation is essential for production to occur.

All equipment and supplies that monitor, regulate, or improve the environmental conditions in the manufacturing facility are taxable. This includes all lighting, heaters, air conditioning equipment, fans, heat exhaust equipment, air make up equipment, dust control or collection equipment, and gas detection, collection, and exhaust equipment. This should not be read to change the traditional classification of real and personal property.



The only exception to the taxing of these items is equipment which totally regulates the environment in a special and limited area of the facility, such as a clean room or paint booth, where such total regulation is essential for production to occur. Even in such a special area, things that do not provide essential environmental regulation, such as safety or communication equipment, are taxable.

See examples 7, 47, 48, ~~and 49, and 6654.~~

(7) Tangible personal property used for the protection and safety of workers, unless the property is attached to or incorporated into machinery and equipment used in a continuous manufacturing operation.

Protective clothing and devices, such as safety shoes, gloves, earplugs, hard hats, respirators, first aid supplies, etc. are taxable. Similarly, equipment installed to protect workers or shield them from harm is taxable, unless it is made a part of machinery or equipment used in a continuous manufacturing operation.

Equipment and supplies used to detect, extinguish, prevent, cure, or mitigate fire, explosion, flood, or other calamity in the manufacturing facility are taxable.

See examples 9, 43, 50, 51, 52, ~~and 53, and 6654.~~

~~(8) Machinery, equipment, and other tangible personal property used for research and development, except for qualified research and development equipment exempted in division (B)(42)(i) of section 5739.02 of the Revised Code.~~

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~~See examples 18 and 54.~~

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~~(9) Machinery, equipment, and other tangible personal property used to clean, repair, or maintain real or personal property in the manufacturing facility.~~

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Tools, equipment, and supplies made or purchased by the manufacturer for use in maintaining, installing, repairing, or cleaning its property, real or personal, are taxable. This includes any such items used on nontaxable equipment. This does not apply to repair or replacement parts or supplies which are taxable or not, depending on the taxability of the equipment into which they are installed.

See examples 32, 55, 56, and 58.

~~(10)(9) Motor vehicles registered for operation on the public highways.~~

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See examples 21, 57, and 63.

(E) For purposes of this rule, any tangible personal property used by a manufacturer in both a taxable and a nontaxable manner shall be totally taxable or totally exempt from taxation based upon its

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quantified primary use. If the tangible personal property consists of fungibles, they shall be taxed upon the proportion of the fungibles used in a taxable manner.

See examples 19, 25, 59 and 64.

(F) Persons whose only activity is printing and whose product produced for sale consists wholly of printed matter are not manufacturers under this rule. The taxability of things used by printers must be determined pursuant to division (E)(8) of section 5739.01 of the Revised Code.

If a portion of a manufacturer's manufacturing process involves printing, the taxability of the tangible personal property primarily devoted to the printing operation shall be determined pursuant to division (E)(8) of section 5739.01 of the Revised Code.

(G) Nothing in this rule restricts or denies any exception or exemption that may be available to a manufacturer under other provisions of the sales tax statutes or rules of the tax commissioner.

#### EXAMPLES

##### **Example 1**

A steel manufacturer galvanizes its flatroll steel to provide its customers with a corrosion resistant product. Through electrolysis and a recirculating zinc solution, zinc is chemically bonded to the steel. Recirculation of the zinc solution involves an intricately-woven system of fibrecast pipes, pumps, dissolution tanks, and electrolytic recirculating tanks, all of which are controlled by computers. As with many other types of manufacturing-related equipment, the size, weight, and configuration of these items require special foundations and supports. The entire system provides the necessary recipe and volume of solution for precise applications of zinc in a high velocity rolling mill.

\* The zinc solution is a raw material which becomes a component of the completed product.

\* The solution in which the zinc is dissolved is a consumable that interacts with the product and is not taxable.

\* The piping system, dissolution tank, pumps, and electrolytic holding tanks are all used in a continuous manufacturing operation and are not taxable.

\* The computers are used to control production machinery and in-process materials handling. The foundations and structural supports similarly are used in connection with production machinery. Therefore, these items are all not taxable.

### Example 2

A manufacturer of concrete owns a ready-mix batch plant. Cement and aggregate are purchased from and delivered by outside suppliers. Cement is removed from delivery trailers by a vacuum system, which deposits the cement in a storage silo. Aggregate of particular sizes is delivered by dump trucks. The aggregate is stored in piles, segregated by size. As needed, cement is removed from the silo by screw conveyor and batched into a mixing drum. Aggregate is ~~measured and~~ moved from the proper pile(s) by a front loader, which deposits the aggregate on a belt conveyor which lifts the stone up and into the mixing drum. Water is added into the drum and mixing commences. After a short time, concrete is discharged into mixer trucks. The mixing drums on the trucks operate via power take off from the truck engines. The concrete continues to be mixed as the trucks deliver it to the customer. One hundred per cent of this batch plant's output is sold to others by the manufacturer.

\* The cement and water are committed to the manufacturing operation at the mixing drum. The cement vacuum system, storage silo, and screw conveyor are taxable.

\* The aggregate is committed to the manufacturing operation when materials handling (via the front loader) from initial storage ceases and the aggregate is ~~measured and~~ deposited on the conveyor which deposits it into the mixing drum.

\* The aggregate conveyor and mixing drum are not taxable.

\* The manufacturing operation continues in the mixer truck and is not completed until the concrete is discharged from the truck's mixer. Because the truck's mixer operates by power take off from the truck engine, the entire vehicle is production machinery and is not taxable.

### Example 3

A secondary smelter of aluminum uses a scale as part of an automated process which measures out quantities of purchased aluminum scrap for use in the casting process in the foundry. The aluminum is delivered to the scale by a crane which removes the material from storage and puts it into a hopper which feeds the scale.

\* The aluminum scrap is a purchased material, not scrap which is generated at this manufacturing facility; therefore, the equipment for its storage and handling are taxable. This includes whatever storage facility is set up for it and the crane.

\* Because the raw material is committed to the manufacturing process at the hopper, neither the hopper nor the scale is taxable.

### Example 4

An oil refinery obtains supplies of raw crude from numerous sources. It stores this crude in various tanks, withdrawing samples from each so that, in a laboratory in another part of the plant, it can

conduct tests to determine the composition of each lot. Subsequently, various crude is metered and piped to another tank for blending to meet process specifications. Thereafter, the blended crude is desalted to remove impurities such as bottom sediments and water, and then is pumped to a preheat furnace to commence the distillation process.

\* The storage tanks in which the raw crude is placed upon receipt are taxable. The fact that the tanks store the crude while laboratory tests are being conducted upon the samples makes no difference to the status of these tanks.

\* The meters and piping used to transport the raw crude to the blending tank are not taxable from the point of metering. The crude is committed to the manufacturing process when it is metered after initial storage.

\* The equipment used to blend the crude is not taxable as the crude has been committed to the manufacturing process.

\* The storage and handling equipment used after the blending tank is not taxable.

\* The desalting equipment and preheat furnace treat the crude in preparation for the manufacturing operation after it has been committed to the process and are thus not taxable.

\* The equipment used to test the raw crude is not taxable.

#### **Example 5**

A cement manufacturer purchases limestone which is stored in piles at its facility. Prior to committing the limestone to the process, the manufacturer periodically hoses down the limestone to keep down the dust.

\* This activity does not constitute refining. Consequently, the hose and other equipment used to hose down the pile would be taxable.

#### **Example 6**

A manufacturer makes roofing shingles. It first makes a paper felt. This is passed through a saturator tank which contains asphalt that has been heated with steam to a very high temperature. This saturates the felt with the asphalt. The saturated felt is coated with granite dust; colored granules are then applied to one side and talc to the other. The material is then cooled and either cut to size or rolled up for shipment.

The colored granules are placed in storage when they are purchased. When they are to be used, they are transported to the blending box, where different colors are mixed together and applied to the roofing material. The purchased talc is also placed in a storage tank and then is transported to the

manufacturing line by a series of pneumatic handling devices, which deposit it into a hopper over the production line. It then falls onto the shingle material passing underneath the hopper.

\* The storage facilities for the granules and talc are taxable as they are storing raw materials which will be incorporated into the product.

\* The handling devices for both the granules and talc are also taxable as they are handling raw materials from their initial storage and before they are committed to the manufacturing process.

\* The blending box is the point at which the processing involving the colored granules begins, as the granules are mixed and applied to the roofing material at that point. It is therefore not taxable.

\* The talc hopper is also not taxable as it is the point where handling from initial storage has ceased and the material is committed to the manufacturing process.

#### **Example 7**

A paper manufacturer makes special paper for use in full color photocopying. The process to apply the paper coating must be done in a dust and pollution free environment. Rolls of paper are passed through a machine where the coating is applied and dried. This process occurs in a clean room, which is separated from the rest of the plant by airtight partitions and ceiling coated with an easily cleaned plastic. Three of the walls and the ceiling are free standing and not part of the walls and ceiling of the building itself; the fourth wall, however, is a section of a wall of the larger structure. Employees can only enter the clean room through two airlocks, which prevent dirty air from entering. All air is filtered and regulated as to temperature and humidity by heat pumps, electric heaters, dehumidifiers, and exhaust fans that serve only the clean room and maintain a positive air pressure in the room. This equipment is automatically controlled by a small computer using data from air monitoring sensors in the room. Employees must wear disposable paper coveralls, overshoes, and caps. The room has an intercom to minimize personnel traffic in and out of the room. Lighting in the room is by normal fluorescent fixtures attached to the ceiling.

\* The paper coater is production machinery and is not taxable.

\* The clean room, including the heaters, heat pumps, light fixtures, etc., remains tangible personal property, since its special use primarily serves the business rather than the real estate.

\* Since the clean room provides environmental regulation in a special and limited area, and such regulation is essential for the manufacturing to occur, it is not taxable. This includes the partitions and ceiling, airlocks, heat pumps, heaters, dehumidifiers, exhaust fans, ductwork, air monitors, lights, regulating computer, and the special clothing used by the workers to prevent product contamination within the room.

\* The intercom is taxable.

**Example 8**

In manufacturing glassware, molten glass is dropped into molds in a forming machine, where it is spun into the desired form. The formed glassware is released from the molds onto a conveyor where it gradually cools. The conveyor enters and annealinglehr which tempers the glass. From annealing, the glassware moves on a long conveyor which again allows it to cool. The glassware is then sprayed with silicone which makes it scratch resistant.

\* The manufacturing operation ends with the silicon sprayer.

**Example 9**

A manufacturer purchases castings which will be a component part of the manufacturer's product. The castings are received on trucks in metal boxes on pallets. The pallets are unloaded by forklift and placed in racks in the receiving area of the warehouse. As they are needed, a pallet is removed from storage by a different forklift and moved to a cleaning process. A worker removes the castings from the box by hand, placing them in a wire basket that is attached to a counterweighted arm which allows the worker to lower the basket into a tank containing chemicals which remove dirt, grease, and similar contaminants. After dipping, the worker, who wears rubber gloves ~~to protect her hands~~ for hand protection from the strong chemicals, places the castings on a conveyor which moves them to a grinding operation.

\* The holding of the castings after receipt is initial storage. Both forklifts and the storage racks are taxable.

\* The castings have been committed to the manufacturing operation when deposited by the second forklift at the washing operation. The chemicals, dip tank, basket, and arm are not taxable, since they treat a component part after materials handling from initial storage has ended.

\* The conveyor that moves the castings to the first production machine (the grinder) is not taxable because the continuous manufacturing operation began at the dip tank.

\* The rubber gloves used to protect the worker are taxable.

**Example 10**

A manufacturer of clay pipe uses forklift tractors to transport the pipe from the machine in which it is formed to the kiln.

\* The forklift tractors are used to handle an in-process product and are are not taxable.

**Example 11**

A petroleum refinery produces an intermediate feed, such as naphtha, which is temporarily stored. It eventually will be further processed into a completed product which will be sold.

\* The equipment used to transport the feed to and from the storage tank, as well as the storage tank, are used to handle an in-process material and are not taxable.

**Example 12**

Water purchased from a public utility is used by a refiner to quench (cool) a gaseous product stream flowing from a distillation tower so as to lower its temperature or convert it to a liquid for further processing. Since the water does not touch the product directly, it does not need any treatment to make it suitable for use in the manufacturing operation.

\* The water is used in the manufacturing operation. Any equipment used to handle it from the point where it enters the manufacturing facility is not taxable. Any piping from the utility supply line is therefore not taxable.

**Example 13**

A steel fabricator purchases coil steel. After the steel is committed to the manufacturing operation, it is dipped in solvent to remove dirt, oil, and grease. It is then further cleaned by dipping in an acid bath. After fabrication is completed, the steel is sprayed with oil to prevent formation of rust on the surface of the product. After the oil spray, the steel is transported to the truck dock for loading and shipping.

\* The solvent and acid are consumables used to prepare the product during the manufacturing operation and are not taxable.

\* The spraying of the protective oil on the completed product constitutes the end of the manufacturing operation.

\* The oil is a consumable which interacts with the product and is therefore not taxable.

**Example 14**

A catalyst is used by a chemical manufacturer to facilitate or cause a reaction between other chemicals during the processing operation.

\* The catalyst interacts with the product, is an integral part of the manufacturing operation, and is therefore not taxable.

**Example 15**

At a motor vehicle assembly plant, the manufacturer uses a bar code system to track the flow of components. As components are received from other manufacturing facilities or outside suppliers, a

bar code label is attached and then scanned with a wand to record it in the plant mainframe computer, along with pertinent data keyed in by the employee to identify the part. This computer is also used for various administrative functions. It does not control the assembly line. Particular components are assigned to particular vehicles, in order to assemble vehicles conforming to those ordered by dealers, etc. After the vehicle is fully assembled, an employee scans all labels. A printout is made that permits a comparison between what components were supposed to be included in each vehicle and which components actually were assembled. The label on the emissions equipment is also scanned prior to emissions testing, in order to record the component in the emissions test data base. Purchases include labels, label printers, scanners, printers, computer terminals, and equipment to interface with the plant mainframe.

\* This bar code system is primarily used to monitor the progress of the product in the continuous manufacturing operation. The labels and scanning wands are not taxable, except for first scanner and the scanner used prior to emissions testing. The first scanner is used to record a part in inventory and is therefore taxable. The scanner prior to emissions testing is taxable because the vehicle is completed before it is used. The scanner is not testing equipment.

\* Since the bar code labels are used in the manufacturing operation, the label printers are not taxable.

\* The computer terminals allow employees to monitor the progress of the scanned parts and are not taxable.

\* The equipment that interfaces with the mainframe computer is taxable. The computer printers, similarly, produce records of the information and are taxable.

#### **Example 16**

The functioning of the melt furnace in a glass manufacturing facility is monitored and controlled from an operator's booth, which is on a raised platform about fifty feet from the furnace. Heat sensors in the furnace are wired to the control booth, where the temperature data is drawn on a continuous graph. The operator watches the graph and can adjust the furnace by altering the flow of fuel (natural gas) or oxygen, batch material proportions, or by adjusting the flue in the furnace stack.

\* The sensors in the furnace monitor production and are not taxable.

\* The control booth and the equipment and controls in it are not taxable.

\* The temperature graphing device which records the temperature data is taxable since it functions as a recordkeeping device.

\* The platform that supports the control booth is not taxable, since it supports the operator of production machinery.



\* The furnace stack and flue assembly within the stack are not taxable, since they provide regulation of the furnace temperature.

**Example 17**

A manufacturer of high technology electronic equipment provides its workers with microscopes which enable them to manipulate the components as they are assembled into the product.

\* The microscopes are not taxable because they are necessary for the continuation of the manufacturing operation.

**Example 18**

A castings manufacturer upgrades its foundry by installing a new computer controlled mold maker and an automatic caster. Because of their size and weight, both machines require special concrete foundations. Casting sand is blended to proper consistency with water and certain chemicals in a muller. An auger moves the sand to a feed bin attached to the mold maker. Molds are made automatically in accordance with computer instructions. The instructions for each job are developed in the engineering shop using a microcomputer and software which was purchased from the manufacturer of the mold making equipment. The instructions are placed on a computer disk which an employee carries to the computer that controls the mold maker. The completed molds leave the molder on a conveyor which moves them to the caster.

\* The mold maker and its foundation are not taxable, since the molds are used in manufacturing the product for sale. The nontaxable equipment includes everything from the sand muller to the exit of the molds from the mold maker.

\* The computer that controls the molder is not taxable.

\* The purchased software and the computer in the engineering shop are taxable, since they do not actually control the machinery.

\* The conveyor that moves the molds from the mold making process is taxable, since the molds do not enter the manufacturing operation until they reach the caster.

\* The caster is production machinery. The caster and its foundation are not taxable.

**Example 19**

A paint manufacturer makes paint pursuant to customer specifications. After a batch is finished, a sample is ladled into a quart jar and taken to the lab for testing to assure adherence to the customer's specs. In the lab, twenty cubic centimeters are placed in a beaker which is then placed in a centrifuge. After centrifuging, the separated components of the paint are examined under a microscope for content. The test results are manually entered into a computer. The computer generates a printed

report and a label, both listing the test results and other information about the particular paint batch, e.g., name of customer and date of manufacture. The label is attached to the quart jar which contains the remainder of the paint sample. The jar is placed in a storage cabinet where it is retained for five years.

\* The testing procedure assures the quality of the completed product and the equipment which is used in conducting the testing is not taxable. This includes the centrifuge, beaker, and microscope.

\* The ladle, quart jar, and the storage cabinet are not used in testing nor in any other aspect of the manufacturing operation and are taxable. In addition, the quart jar and storage cabinet are used primarily in a function related to storage, record-keeping, and therefore are taxable.

\* The computer, computer printer, and jar label are used only to record the test results and are taxable.

#### **Example 20**

A manufacturer operates a job shop foundry where it melts ingots of raw pot metal in an electric furnace. The molten metal is poured into jacketed molds, through which water is circulated to speed up the cooling and solidification of the metal. The water is pumped from a tank, chemically treated, and conveyed by pipes to the molds. The heated water is filtered and pumped from the molds to an outside cooling tower and then returned to the same tank. Make-up water is pumped from a well on premises into the tank. The treatment chemicals are stored in liquid form in a tank, from which they are pumped and metered.

\* The furnace and molds are part of the continuous manufacturing operation and are not taxable.

\* The water is an energy transmitting substance since it removes heat from the manufacturing operation. The water treatment chemicals, water pumps, pipes, well and cooling tower are not taxable. Since the water tank is part of the recirculation system, it also is not taxable.

\* The chemical storage tank, meter, and pump are taxable, since they are merely storing or handling consumables prior to their initial use in the manufacturing operation.

\* Since the trucks are registered for highway use, they are taxable.

#### **Example 21**

A large manufacturing facility is located on three hundred fifty acres of land on the outskirts of a large metropolitan area. The production machinery and equipment is spread over several miles. The plant property is divided at various points by a river, a railroad, and a public highway. Work in process is moved from one production phase to another by large licensed trailer trucks. A private bridge was constructed to cross the river, a tunnel was constructed under the railroad, and the trucks cross the public highway.

\* This property is contiguous since the separations are only public or private rights of way and not land used for other public or private interests.

\* Since the trucks are registered for highway operation, they are taxable.

**Example 22**

A plastics manufacturer uses injection molds to form the product. Excess plastic trim is knocked off the molds and collected on a conveyor. The conveyor moves the trim to a grinder where it is reduced in size. Another conveyor moves the plastic to a regrind bin where it is stored until needed. The regrind trim is manually removed from the storage bin in hoppers and added, in certain proportions, to the purchased plastic pellets in the feed bins for the mold injection presses.

\* Since the trim is recycled back into the manufacturing operation, the entire process of collecting, transporting, regrinding, and reintroducing the trim is part of the manufacturing operation and not taxable. The regrind storage bin is holding in-process product between stages of production and is not taxable.

**Example 23**

A steel manufacturer operates two plants. Plant A produces basic steel in a BOF furnace and has bar and hot rolled strip steel producing lines. Plant B, located several miles away, produces cold rolled strip coils. All production lines produce steel scrap in the form of trimmings or defective product. At plant A, scrap from both lines is chopped to size and taken to a storage area. When needed it is added back to the furnace to be again used in steel production. The scrap from plant B is chopped to size and taken to plant A where it also is used to make new steel.

\* Since plants A and B are not contiguous, they are separate manufacturing facilities.

\* Since the scrap at plant A is returned to the furnace, all items of property used to handle and store the scrap are not taxable.

\* The equipment used to handle and transport scrap produced at plant B is taxable since the scrap is transported to plant A for reuse.

\* Since the choppers at both plants change the form of the scrap, they are not taxable.

**Example 24**

During paper manufacturing, the fibers that will comprise the finished paper product are put into a water solution. The water is drawn by an intake pipe and pump from a river that flows next to the manufacturing facility. The water is filtered and chemically treated and pumped into the hydropulper where it is combined with wood chips and other fiber source material. The resulting slurry is pumped

to a fourdrinier which removes most of the water by means of vacuum pumps. The water so removed, as well as slurry that otherwise escapes the process is collected, since it contains usable fibers. This slurry is returned to the hydropulper by pumps and pipes.

\* The water is a consumable that is used in the manufacturing operation. The river intake, pumps, filter, and chemicals are not taxable since they either treat the water or transport the water from the point of extraction at the river.

\* The hydropulper and fourdrinier are production machinery and not taxable.

\* The slurry recovery and recirculating is part of the manufacturing operation, since it recycles the product back into the manufacturing operation at the same manufacturing facility. The pumps and piping are not taxable.

#### **Example 25**

A plastics manufacturer generates steam in coal-fired boilers. Eighty-five per cent of the steam is used to heat reactor tanks, in which the first step in the manufacturing operation takes place. An insulated steam line carries the steam from the boiler to the reactor vessels. Fifteen per cent of the steam is diverted from the main steam line to heat the buildings in the manufacturing facility.

The coal purchased to fire the boilers is received at a river dock. The coal is unloaded from barges by a crane and is moved from the dock by a conveyor belt to a conical storage tower. As needed, the coal is pushed by a small bulldozer into a feed bin, which dumps the coal onto another conveyor belt which moves it to a coal pulverizer. A screw conveyor moves the pulverized coal from the pulverizer to a storage bin. Another screw conveyor removes the pulverized coal from the bin and a forced air system injects it into the boiler combustion chamber. The rate of injection is computer controlled.

Water for the boiler is pumped from the river, filtered, chemically treated, and stored in a water tank outside the boiler building. As the water is pumped from the storage tank, additional chemicals are added. Both the water and the air used to inject the pulverized coal are preheated by means of a heat exchanger in the boiler exhaust stack.

\* Eighty-five per cent of the coal and boiler water chemicals are not taxable, since eighty-five per cent of the resulting steam is used in the manufacturing operation.

\* The boiler and main steam line, including the latter's insulation, are not taxable, since a majority of the steam is consumed in the manufacturing operation. The line which carries steam for building heat is taxable.

\* The coal unloading and handling equipment and the pulverizer are not taxable. The conical storage tower and the pulverized coal bin are taxable, since they merely store the coal.

\* The forced air pulverized coal injection system is not taxable.

\* The river water inlet, pumps, lines, filters, and treatment chemicals are not taxable. The water storage tank is taxable.

\* The boiler exhaust heat exchanger is not taxable.

\* The computer that controls the pulverized coal injection is taxable.

**Example 26**

A manufacturer of ready-mix concrete uses a steam generator to heat water which is used in mixing and warming component materials in the manufacture of ready-mix concrete. The concrete is sold to construction contractors and other consumers.

\* The water is not taxable, as it transmits heat used in the manufacturing operation and becomes part of the product produced for sale.

\* The generator is not taxable as it makes the water suitable for use in the manufacturing operation.

**Example 27**

A manufacturer of extruded rubber products uses injection molding machines to force rubber through dies in order to form the desired shapes. The molding machines are operated by compressed air. The air compressor is fed air from an air dryer. The dryer is necessary to keep moisture out of the air compressor lines and production machinery.

\* The injection molding machines are not taxable as they are production machinery which act upon the product.

\* The air dryer and compressor are not taxable because they make the air used to power the molding machines suitable for use in that function.

**Example 28**

A steel manufacturer uses coke in the production of iron. Coke is a fuel which provides some of the heat required for smelting and it is also the source of carbon, a necessary ingredient in the manufacture of steel, which dissolves into the hot metal.

Coke is manufactured from metallurgical grade coal in a coke plant. The coal is crushed, blended (high and low volatile coals are mixed) and transferred to the ovens by means of conveyor systems. The crushed, blended coal is placed in a larry car which runs across the top of the coke ovens and charges the coal into the ovens. The coke battery consists of a series of ovens lined with refractory brick which bake the coal to produce coke. The coke battery is built from the ground up and does not have a separate foundation.

\* The coke battery and the coal crushing, blending, and charging systems, and larry cars are not taxable.

**Example 29**

A manufacturer buys a new coal pulverizer. The coal is fed to a boiler to produce steam to generate electricity to power equipment used to manufacture products.

\* The pulverizer is used to make the coal suitable for use in the manufacturing operation and is not taxable.

**Example 30**

A boiler is used to produce steam which primarily operates machinery and equipment used in the manufacturing operation. Other equipment feeds water into the boiler. This includes items such as pumps and a piping system. There is also a system which filters and treats raw water drawn from a creek running through the manufacturing facility.

\* The boiler is used to produce power for the manufacturing operation and is therefore not taxable.

\* The water is used to transmit energy to the manufacturing operation and is not taxable.

\* The piping, pumps, filters, and water treatment equipment are not taxable.

**Example 31**

A manufacturer installs an electrical distribution system, including generators, transformers, electrical switchgear, cable and related equipment. The electricity is used solely to produce and supply electricity to the manufacturing operation.

\* The entire electrical generation and distribution system is not taxable.

**Example 32**

A manufacturer of specialty coil steel products uses natural gas to heat annealing furnaces. The furnaces heat treat the manufacturer's product and are part of the continuous manufacturing operation. In a field owned by the manufacturer and adjacent to the plant, the manufacturer drills two natural gas wells, using a drilling rig, trencher, and various other tools, and installs drips, pumps, and transmission lines to provide gas for these furnaces. The manufacturer also installs a gas line connected to the local utility company line through which purchased gas is piped for heating the buildings in the manufacturing facility. A branch line connects this purchased gas line to the line going from the wells to the annealing furnaces, in order to supplement, if necessary, the gas produced from

the wells. One hundred per cent of the well-produced gas is burned in the annealing furnaces. No more than twenty per cent of the purchased gas is burned in the furnaces.

\* The line connected to the utility's line is incorporated into the real estate, since it primarily carries gas to heat the buildings. The wells, pumps, transmission lines and associated equipment, and the branch line remain personalty, since they carry gas for use in the manufacturing operation only.

\* The wells, pumps, transmission lines and associated equipment, and the branch line are part of the manufacturing operation and are not taxable since they are extracting and transporting fuel used in the manufacturing operation.

\* The material for the line connected to the utility's line is taxable.

\* The drilling rig, trencher, and other tools used to install the well and gas lines are taxable.

**Example 33**

A manufacturer purchases pumping and filtering equipment and related tanks and tubing to supply lubricating and coolant fluids to drilling and cutting machinery. This equipment is used to recirculate the fluids so that they may be reused in the manufacturing operation.

\* As the fluids are being treated for reuse in the manufacturing operation, the equipment which moves and treats the fluid is not taxable.

**Example 34**

A manufacturing operation uses water as a coolant in its production operation. The water is continuously recirculated in a closed system. The recirculation system includes a cooling tower and related pumps and piping.

\* As the water is a substance used in the manufacturing operation, the recirculation system equipment is not taxable.

**Example 35**

The production of flatroll metal products requires that an oil mixture, which serves as both a rolling lubricant and a coolant, be continuously sprayed on sheets in the rolling mill. Spent oil is simultaneously removed and passed through a filtering process which is interconnected with the rolling mill, after which the oil is resprayed onto the sheets.

\* The rolling mill is a production machine and is not taxable.

\* The oil filtration machinery treats the oil for reuse; therefore, this equipment is not taxable.

**Example 36**

A manufacturer of truck and tractor engines uses what are known as wet machines in its engine head and block assembly lines. These machines require the presence of a liquid coolant to operate. In the absence of such a coolant the machines would heat up rapidly, ultimately destroying the tool and the part being machined. Therefore, the interface between the tool and the block or head is flooded by spraying it with liquid coolant, a water soluble oil.

In order to save on the expense of the oil, the manufacturer devised a system to recapture the used liquid. After the coolant is sprayed on the component, it drops through a funnel-like chamber into an underground trough. The coolant collects in a u-shaped channel along with the scrap metal chips and dust produced by the machining operations. The coolant is conveyed through the underground trough by means of air pressure to a collecting tank outside the plant where a conveyor lifts the bigger chips from the coolant. These chips then enter a chipwringer which wrings out excess coolant. From the tank, the coolant is pumped back into the plant through a series of pipes. Along the way, it passes through a series of filters which removes any remaining metal particles. Thereafter the coolant is returned to the machining lines where the process begins anew.

\* The entire recirculating system is not taxable. The oil is used in the manufacture of the engine heads and blocks. The recirculating system is used to filter this oil to make it reusable for the manufacturing operation. The substances are in fact intended for reuse and not for disposal or sale.

**Example 37**

A producer of alloy steel uses an acid solution to pickle its products. The pickling process removes scale. After pickling, the used acid is filtered to remove impurities. The filtered solution is then pumped into a tank where pure acid is added to the solution in order to raise the acid content. From this tank, the solution is pumped and piped into the pickling tanks. After the acid is reused a certain number of times it can no longer be purified and strengthened sufficiently to be economically useful. It is therefore transported through a series of pipes to an acid disposal plant, where the acid is neutralized by mixing it with lime in a tank designated the neutralizing tank. The mixture is then pumped into a sludge pond.

\* The acid solution would not be taxable as it interacts with the product. The pickling tanks are production machinery and thus also not taxable.

\* The pipes from the pickling tanks through the filtration system are not taxable, as this is a treatment system which makes a substance used in the manufacturing operation reusable, and the substance is in fact intended for reuse.

\* The piping system used to transport the spent acid to the acid disposal plant, the pump into the neutralizing tank, the tank itself, the lime, and the pumps and pipes used to dispose of the neutralized solution are taxable under this rule as at this point the substance is not intended for reuse.



**Example 38**

An automobile manufacturer has a plant which stamps out steel to make automobile body parts. The manufacturer employs an engineering firm to procure and generally oversee the installation of a cold press machine which presses sheet metal into doors. The engineering firm contracts out the labor for installation of the piece of production machinery in the manufacturer's plant. The contractor which installs the machine bills the manufacturer directly.

\* The charges from the contractor for the services to install the machine are not taxable as they involve the installation of an item used primarily in a manufacturing operation to produce tangible personal property for sale.

**Example 39**

A manufacturer builds and furnishes a new administration building. The building contains offices for executives and the personnel and accounting department. The manufacturer leases a computer to process personnel, payroll, accounting, and billing information.

\* All office equipment and furnishings located in the administration building are taxable.

\* The computer is taxable.

**Example 40**

A food processor has an automated batch system for dry ingredients. The ingredients are received from outside suppliers on pallets in bags, cartons, paper drums, etc. They are moved from the receiving warehouse area by forklift, which deposits the pallets near the dry batch mixer. Some ingredients are dumped by employees directly into the mixer. Some are dumped into feed bins which discharge directly onto a scale. The proper amount of ingredient per batch is programmed into the scale by an employee. The scale controls the feed bins, opening them in turn and shutting them when the proper weight is reached. The dry ingredients are mixed and discharged by a covered conveyor to the next stage, where water is added.

\* The dry ingredients do not undergo a change in state or form until mixed with water; however, the manufacturing operation begins as to the dry ingredients when they are dumped into the feed bins or directly into the dry batch mixer, since they have been committed to the manufacturing operation when the materials handling (via the forklift) from the warehouse ceases. Thus, the bins, mixer, and scale are not taxable.

\* The forklift is taxable.

**Example 41**

A manufacturer uses a forklift primarily to move finished goods from a storage warehouse and load them on trucks for shipment to customers.

\* The tangible personal property in the warehouse and the forklift are taxable, since they are storing or handling a completed product.

**Example 42**

A manufacturer purchases storage equipment for the purpose of storing raw materials prior to commitment to the manufacturing operation includes tanks, racks, holding bins, and similar equipment.

\* Such storage equipment is subject to tax.

**Example 43**

A fiberglass manufacturer generates fiberglass waste as part of its manufacturing process. The waste is collected in various ways, including a vacuum system with collection hoses that permit workers to clean up small particles. The vacuum system deposits the fiberglass into a holding bin. Larger pieces, including rejected material that fails quality assurance testing, is transported in skid boxes by lift truck. All waste fiberglass is baled and transported by the manufacturer's trucks to a landfill for disposal. All employees in the plant are required to wear masks to prevent them from inhaling glass fibers.

\* Since the waste fiberglass is not sold or recycled by the manufacturer, the baler and all of the handling equipment, including the vacuum system, is taxable.

\* The protective masks worn by the employees are taxable.

**Example 44**

Replacement parts for production machinery are kept in storage bins in the plant storeroom.

\* While the parts are not taxable, the storage bins are taxable.

**Example 45**

A manufacturer has its employee parking lot repaved. It separately purchases the required materials and contracts the labor.

\* The materials incorporated into the parking lot are taxable as the lot is real property. The labor is not taxable as it pertains to an improvement to realty. Had the manufacturer entered into an agreement whereby the contractor provided both material and labor, there would be no direct tax consequences to the manufacturer.

**Example 46**

A manufacturer purchases a heating system and other related parts to be incorporated into a manufacturing facility. The heating system will provide heat and serve solely for the building.

\* The heating system and all related parts purchased will be taxable since it is used to produce heat for the building and not used in any manufacturing operation.

**Example 47**

A manufacturer of unassembled furniture has an extensive dust collection system throughout the manufacturing facility. Collecting units are located over the boring mills, saws, edgebanders, planes, and other places in the plant. Fans and ductwork exhaust the dusty air through a series of filters. The saw dust falls from the filters into movable hoppers. These hoppers are periodically dumped into a mixer, where the saw dust is blended with a small amount of liquid adhesive. The mixture is removed from the mixer by a screw conveyor to a press which forms it into briquettes which the manufacturer sells. The briquettes fall onto a conveyor belt which moves through a heat tunnel which causes rapid drying.

\* The entire dust collection system is taxable, since it provides environmental control throughout the entire manufacturing facility.

\* The portable dust hoppers are taxable, since they are handling a waste product.

\* The adhesive, mixer, screw conveyor, press, belt conveyor, and heat tunnel are not taxable, since they are used to manufacture a product for sale.

**Example 48**

A manufacturer makes various kinds of candy canes. The process requires that temperature and humidity in the plant be maintained within certain narrow parameters.

\* Since the temperature and humidity are regulated in the plant as a whole, rather than a special, limited area within the plant, all the equipment used to provide such regulation is taxable.

**Example 49**

A manufacturer of automotive parts paints the parts as part of its manufacturing process. The painting is done in paint booths, which are enclosures containing ventilation and other equipment that provide the booth with a controlled atmosphere so that paint is applied to each piece under nearly identical conditions, resulting in a uniform product. The paint is applied by a spraying system which results in a considerable amount of overspray. To flush this excess paint from the booth, a water spray flows through continuously. The water is drained from the booth into a treatment system which filters out

the paint. Neither the paint nor the water is reusable in the process, so they are disposed of in accordance with pollution control regulations.

\* The paint booth and its ventilation equipment are not taxable since they regulate the environment in a special and limited area of the manufacturing facility.

\* The water spray equipment is also not taxable as it is necessary for the continuation of the manufacturing operation.

**Example 50**

An automotive parts manufacturer is ordered by a federal inspector to install guardrails along the sides of aisles traveled by forklifts and a floor sweeper in order to provide a barrier for the protection of employees operating nearby machinery. The inspector also requires the installation of flashing lights on the moving equipment. The forklifts are primarily used to move in-process product.

\* The guardrails are taxable.

\* The forklifts themselves are not taxable since they are used for materials handling during the continuous manufacturing operation, so the flashing lights attached to them are not taxable. The flashing lights attached to the floor sweeper are taxable.

**Example 51**

All of the manufacturer's employees must wear ear plugs, safety glasses, hard hats, and steel toed shoes when in production areas. Some employees must wear leather or rubber gloves and aprons, depending on their jobs. The manufacturer provides all of these protective articles to the employees without charge, except eyeglasses and shoes. Employees must provide their own eyeglasses. However, the manufacturer usually buys, by special order, safety shoes for the employees and sells them, with a minimum markup to cover administrative expenses.

\* All of these protective articles and clothing are used in taxable functions. The manufacturer consumes everything except the eyeglasses and shoes and must therefore pay tax on its purchases of those items.

\* Since the manufacturer is making retail sales of safety shoes, it must have a vendor's license and collect sales tax on such sales made to the employees.

\* The employees must pay tax to the suppliers of their safety glasses.

**Example 52**

A manufacturer produces electronic equipment. Its process requires that static electricity be eliminated from the environment. If it is not, the static will destroy the electrical components. In order

to ensure that the static electricity is properly discharged, the manufacturer has its production employees wear a wrist bracelet which attaches to a grounded object. The manufacturer also requires that the production employees wear contaminant-free overalls so that the production area remains free of dirt.

\* The wrist bracelets are not taxable since they are equipment necessary to the production process.

\* The overalls are taxable since they are clothing worn throughout the plant instead of in a special and limited portion of the manufacturing facility where the environment is totally regulated.

#### Example 53

A manufacturer has several safety concerns in the manufacturing plant for which it has taken various measures. It has attached guards to certain of the production machinery to protect the workers from injury and placed safety signs at various points throughout the plant. It also furnishes clothing and other equipment to workers primarily for the workers' safety and protection. Finally, the manufacturer hangs fire extinguishers on walls throughout the plant.

\* Machinery guards are attached to the production machinery and are therefore not taxable.

\* General safety items, unless actually attached to production machinery, are taxable. Therefore, the safety signs, clothing, and other equipment are taxable.

\* The fire extinguishers are taxable.

#### Example 54

~~A manufacturer of household products purchases a computer and software for use in designing packaging for its products (a "CAD" system). The CAD equipment is capitalized and allows the manufacturer's design engineers to create and evaluate various package sizes and shapes and the effects of using different package materials. Similarly, the system can be used to design and layout different labeling. A plotter prints out the designs for review by management. When a new design is selected, the system generates detailed drawings which are sent to package manufacturers and printers who will produce the new items.~~

~~\* The entire CAD system, including the software, is used in research and development and is taxable not taxable when it is capitalized and therefore is qualified research and development equipment.~~

As part of the manufacturing process, welding robots are used throughout an assembly plant to weld the various components of the final product. Fumes created from the welding process contain harmful complex metal oxide compounds from consumables, base metals and the base metal coatings, creating safety concerns for employees throughout the manufacturing facility. Special ventilation and exhaust systems are installed in the direct vicinity of the welding operation to supply fresh air and exhaust the fumes containing the harmful components. The ventilation and exhaust equipment is not essential for

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purposes of continuing production, but merely is in place to help cleanse the environment of the manufacturing facility.

\* The special ventilation and exhaust systems are neither incorporated into machinery or equipment used in a continuous manufacturing operation and do not qualify as excepted safety equipment, nor totally regulate the environment in a limited area of the facility where such total regulation is essential for production to occur. As such, the systems are taxable.

#### **Example 55**

A manufacturer installs probes on a grinding machine, in part by using a special tool that was purchased for that purpose. The grinder is production machinery. The probes measure vibrations in the bearings of the machine while it is operating. A chart recorder records the data from the probes. When vibrations exceed a certain tolerance, new bearings are ordered and installed, thus allowing the manufacturer to make the repair in a controlled fashion and avoid extended downtime and/or more extensive damage to the grinder.

\* The probes are not taxable, since they monitor the functioning of equipment used in the continuous manufacturing operation.

\* The chart recorder merely makes a record of the monitoring and is taxable.

\* The tool purchased to install the probes is taxable.

\* The replacement bearings are not taxable, since they are incorporated into equipment used in the manufacturing operation.

#### **Example 56**

A manufacturer shuts down a reactor, which is used in the manufacturing operation, for routine maintenance. During shutdown, a section of the reactor wall is cut out, removed by crane, and a new section is welded in. Thereafter, the reactor is cleaned and the lines are flushed in preparation for start-up. All work is done by employees of the manufacturer.

\* The labor performed to remove the old section, install the new section, clean the reactor and flush the lines is not taxable.

\* The new section of the reactor wall is not taxable as it is part of a production machine.

\* The welding torch, crane, equipment used to clean and flush the reactor, and related consumables, such as acetylene and cleaning compounds, are items used to clean, repair, install, or maintain personal property in the manufacturing facility and are therefore taxable.

**Example 57**

A manufacturer purchases two trucks to move work in process between buildings within the manufacturing facility. One truck is not registered for highway use since it is used solely on the manufacturer's private property. The second truck is registered, since it must travel a short distance on a public highway which passes through the manufacturing facility.

\* The unregistered truck is not taxable, since it is used in materials handling of in-process product.

\* The truck registered for highway operation is taxable.

**Example 58**

A manufacturer of paper products uses an extremely large and complex paper-making machine. The machine consists of many parts and requires constant servicing. Some parts themselves are massive and heavy. These parts must periodically be removed and replaced.

The manufacturer uses what it calls the wet end crane to lift, remove, and replace these heavy parts. The crane is sixty feet above the plant floor and it traverses the entire length of the paper-making machine by means of overhead rails.

\* The wet end crane is taxable as it is machinery used to repair, install, or maintain real or personal property in the manufacturing facility.

**Example 59**

Concrete pipe is made in a forming kiln. The formed pipe is moved by lift truck to a steam room where it cures for one day. The steam curing speeds up the necessary chemical reaction to harden the pipe. Steam is produced by a propane fueled boiler. The propane is stored in six tanks, with lines going to a single vaporizer which converts the liquid into gas. The concrete pipe is removed from the steam room to an area where employees patch and smooth pits and flaws in the pipe. The pipe is then moved to an outside storage area where it remains for at least twenty days to allow final curing. When sold, the pipe is loaded onto flatbed trailers by a yard boom truck. Movement of the pipe in the facility is done by three interchangeable lift trucks. The lift trucks are used seventy-five per cent of the time moving the pipe to and from the steam room, twenty per cent of the time moving from the finishing area to the yard, and five per cent of the time in miscellaneous activities. The lift trucks are battery powered and share the use of a single battery charger.

\* The propane, propane lines and vaporizer, boiler, and hand tools used in finishing are not taxable. The propane storage tanks are taxable.

\* The lift trucks are primarily used for materials handling as part of the continuous manufacturing operation. The lift trucks and battery charger are not taxable.

\* The boom truck is taxable.

**Example 60**

A manufacturer produces bottle caps and furnace air filters at its single facility. The bottle caps are die punched from coils of sheet steel strip. The bottle caps are then passed through an inspection device and any caps which are found unacceptable are carried by a conveyor to a bin where they are held for sale. Acceptable caps continue through additional steps which include printing and the insertion of a gasket. After the bottle caps are punched from the sheet steel strip, the remaining perforated strip is recoiled and moved by a lift truck to temporary storage racks, from which point it is further trimmed to length during its assembly into furnace air filters.

\* This constitutes a single manufacturing operation that produces two different products at the same manufacturing facility.

\* The punching, printing, and gasket insertion equipment are all used in the production of the bottle caps and are therefore not taxable.

\* The recoiling equipment and trimming equipment are production machines and not taxable.

\* The device for inspecting the bottle caps is not taxable since it is used for testing the product.

\* The lift truck and storage racks are not taxable because they handle or temporarily store in-process product.

**Example 61**

A manufacturer purchases sheet metal for fabrication into various products. After initial storage, the sheet metal is transported to slitters by a propane powered lift truck. The slitters cut the sheet metal to length, after which it is transported to the stamping presses. As the steel goes through the stamping process, excess metal in the form of chips is produced. The metal chips are removed from the stamping area through a chute and conveyor system which transports the metal chips to a baler. The baler compresses the chips into bales which are then sold to industrial customers as scrap metal.

\* The sheet metal is committed to the manufacturing operation when deposited at the slitters by the lift truck. The lift truck and the propane used to power it are taxable.

\* The slitters and stamping presses are production machinery and are not taxable.

\* The metal chips are scrap. Since the scrap is sold, rather than being reused in the manufacturing operation at the same facility, the chutes and conveyors which handle the scrap metal chips are taxable.



\* Since the baler changes the form of the chips which are intended to be sold, the baler is production machinery and not taxable.

**Example 62**

A meat processor makes sausage, wieners, salami, bologna, and similar products. After grinding and mixing, the meat is extruded into casings of various types and sizes. The meat is then smoked and/or cooked. After cooking the casings are removed and discarded.

\* The casings are consumables that physically interact with the product during the continuous manufacturing operation and are not taxable.

**Example 63**

A dairy purchases raw milk from farmers. The milk is picked up by trucks owned by the dairy. Upon arrival at the dairy facility, a pump removes the milk from the truck through a pipe and pumps it into a clarifier, which is a centrifuge that removes particle contaminants. From the clarifier, the raw milk is pumped into a storage silo where it is held for period of time. After the raw milk is removed from the silo, it proceeds through various processes, including separation (where cream is removed), blending (where cream is added back to reach proper butterfat content), standardization (where vitamin supplements are added), pasteurization, and homogenization. After homogenization, the milk is pumped to filling equipment which packages the milk in cartons or jugs.

\* The trucks which deliver the milk from the farmers and the pump which removes the milk from the trucks are taxable.

\* The clarifier actively refines the raw milk by centrifuging and is not taxable. The clarifier is the beginning of the manufacturing operation and the raw material (milk) is committed at that point.

\* All equipment, pipes, pumps, and tanks (including the silo holding the raw milk), which process, move, or temporarily store the milk up to and including the homogenization process, are part of the continuous manufacturing operation and not taxable.

\* Any equipment or supplies used to clean the processing equipment, pipes, pumps, and tanks discussed above are not taxable because they are part of a continuous manufacturing operation to produce milk.

**Example 64**

An ice cream manufacturer purchases cream, skim milk, sugar, and various flavorings and additives. The cream and milk are placed into refrigerated tanks when received. Any particular flavoring is placed into one of several storage tanks. All of these tanks are connected by piping to a mixing tank. In-line meters control the amount of cream, milk, and flavoring withdrawn from the tanks and batched in the mixing tank. After mixing, the ice cream is packaged into cartons and moved by conveyor through a

freeze tunnel, where most of the ice cream becomes solid. After the freeze tunnel, the packaged product moves slowly through a hardening room on roller conveyors. The hardening room is a large freezer where the temperature is maintained at minus thirty degrees. The solidification of the ice cream is completed in the hardening room. On exit from the hardening room, the product is shrink-wrapped in appropriate quantities (e.g., four half gallons), palletized, and moved by lift truck into a large freezer to await shipment.

The tanks, freezers, and some in-process piping is cooled by a refrigeration system, which consists of compressors, condensers, piping, and an in-line tank for the coolant. Based upon an analysis of the refrigeration system piping used in the various areas of the facility, it has been determined that twenty per cent of the system is used to cool the cream and milk tanks, ten per cent for the mixing tank, in-process piping, and packaging operation, thirty per cent for the freeze tunnel and hardening room, and forty per cent for the freezer warehouse.

\* The initial storage tanks for the cream, milk, and flavorings are taxable.

\* The milk, cream, and flavoring are committed to the manufacturing operation at the point they are metered prior to entering the mixing tank. The meters and subsequent piping and the mixing tank are not taxable.

\* The ice cream is not completed until it leaves the hardening room. The freeze tunnel, hardening room, and roller conveyors are not taxable.

\* Any equipment or supplies used to clean the freeze tunnel, processing equipment in the hardening room, and roller conveyors are not taxable because they are part of a continuous manufacturing operation to produce ice cream.

\* The forklift that moves the palletized product into the freezer warehouse is taxable.

\* The freezer warehouse is taxable, since it is storing a completed product.

\* Sixty per cent of the coolant is taxable, since that is the proportion of this fungible used in a taxable manner.

\* The condensers, compressors, and tank for the refrigeration system are taxable, since their quantified primary use (sixty per cent) is taxable.

\* Since the refrigeration system piping is essentially identical, it is properly treated as fungible for sales tax purposes and is sixty per cent taxable.

~~\* Any equipment or supplies used to clean the freeze tunnel, processing equipment in the hardening room, and roller conveyors are not taxable because they are part of a continuous manufacturing operation to produce ice cream.~~

**Example 65**

A paving asphalt manufacturer purchases sand, stone, and asphalt cement from an outside source. The sand and stone are weighed as they are received to ensure the proper amount of product was received by the manufacturer and is subsequently stored in an outside storage area at the manufacturer's facility. The asphalt cement is stored in a tank that churns and heats the asphalt cement to ensure its viscosity. When the paving asphalt manufacturer is ready to produce asphalt, the sand and stone are moved by conveyor to a screening grate to be classified by size and the product may be subsequently crushed to the necessary levels. Once the sand and stone are at suitable sizes, the products (along with the resulting stone dust) are moved by conveyor to feeder bins, which measure the appropriate amount of each product based on the purpose of the resulting asphalt. Conveyors move the proper amounts of sand, stone, and stone dust to the dryer to remove humidity. Everything then goes into a mixer, including asphalt cement. The mixer empties directly into trucks that will deliver the asphalt to the paving site.

\* The scale that weighs the incoming sand and stone is taxable. This is an administrative process prior to the beginning of manufacturing to ensure the proper amounts of raw materials were received.

\* The initial storage tank for the asphalt cement and the equipment that churns and heats the asphalt in the storage tank are taxable because they do not change the asphalt cement into a different state or form from which it was received. It merely maintains the product in its original form.

\* The conveyors that take the sand and stone to be classified by size are taxable because the raw materials are not committed to the manufacturing process. The point of commitment is the screening grate.

**Example 66**

As part of the manufacturing process, welding robots are used throughout an assembly plant to weld the various components of the final product. Fumes created from the welding process contain harmful complex metal oxide compounds from consumables, base metals and the base metal coatings, creating safety concerns for employees throughout the manufacturing facility. Special ventilation and exhaust systems are installed in the direct vicinity of the welding operation to supply fresh air and exhaust the fumes containing the harmful components. The ventilation and exhaust equipment is not essential for purposes of continuing production, but merely is in place to help cleanse the environment of the manufacturing facility.

\* The special ventilation and exhaust systems are neither incorporated into machinery or equipment used in a continuous manufacturing operation and do not qualify as excepted safety equipment, nor totally regulate the environment in a limited area of the facility where such total regulation is essential for production to occur. As such, the systems are taxable.