

TT-P-791a
June 25, 1938
SUPERSEDING
 Fed. Spec. TT-P-791
 April 28, 1931

FEDERAL SPECIFICATION

PUTTY; PURE-LINSEED-OIL, (FOR) WOOD-SASH-GLAZING

This specification was approved on the above date by the Director of Procurement, for the use of all departments and establishments of the Government, and shall become effective not later than February 15, 1939. It may be put into effect, however, at any earlier date after promulgation.

A. APPLICABLE FEDERAL SPECIFICATIONS.

A-1. There are no other Federal specifications applicable to this specification.

B. TYPES.

B-1. This specification covers two types of putty for general use on wood sash (interior or exterior exposure).

Type I. Whiting putty.

Type II. White lead-whiting putty.

C. MATERIAL.

C-1. Material shall be as specified under Detail requirements

D. GENERAL REQUIREMENTS.

D-1. See section E.

E. DETAIL REQUIREMENTS.

E-1. *Pigment.*-

E-1a. The dry pigment shall conform to the following requirements:

	Whiting putty		White lead-whiting putty	
	Maximum percent	Minimum percent	Maximum percent	Minimum percent
Whiting (calcium carbonate content)		9.5		
White lead				10
Total calcium carbonate and white lead				95
Tinting pigment plus impurities	5		5	

E-1b. *Whiting.*- The whiting used in both types of putty shall be true chalk whiting, free from refractory particles larger than 50-mesh fine, shall be practically neutral, and shall have structural and physical characteristics adapted to the manufacture of putty of the required physical properties.

E-1c. *White lead.*- The white lead shall be pure, basic lead carbonate. The use of paste white lead is preferred.

E-1d. *Tinting pigment.*- Tinting or coloring pigments, if used, shall be pure and be used in minimum quantity to secure the specified tint or shade.

E-2. *Vehicle.*- The vehicle shall be either pure boiled or processed linseed oil or pure linseed oil and liquid oil drier. In no case shall the vehicle contain less than 90 percent linseed oil by weight, the remainder to be liquid oil drier. Mineral oil shall not be present. The fatty acids

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prepared from the nonvolatile vehicle shall show an iodine number of not less than 170, and shall be free from unsaponifiable matter (see pars. F-2g, F-2f, and F-2h).

Note.- The use of raw linseed oil alone as the entire vehicle is not recommended.

E-3. Putty.-

E-3a. The finished putty shall consist of the above-described pigments and vehicle and shall conform to the following requirements:

	Whiting putty		White lead-whiting putty	
	Maximum percent	Minimum percent	Maximum percent	Minimum percent
Pigment	88		89	
Vehicle (containing at least 90 percent linseed oil)		12		11
Alkalinity	(1)	(1)	(1)	(1)
Coarse particles and "skins" (total residue retained on a No. 200 sieve) percent of the dry pigment	7		7	

(1) Shall pass test.

E-3b. The finished putty, after thorough working in the hands, shall have good plastic quality without sliminess or stickiness that would render it difficult to handle and apply. It shall work readily and smoothly under a knife without crumbling or cracking. After being molded in place, it shall hold its shape until set.

Note.- Using the double taper, aluminum cone for penetration, described in Circular 300 of the National Paint, Varnish and Lacquer Association, thoroughly worked putties having a satisfactory consistency (knife grade) show a range of penetration of from 170 to 190. If over 200, the putty is slightly too soft. The desired figure is 180. This method is also described on pages 596-7 of the eighth edition of H.A. Gardner's book entitled "Physical and Chemical Examination of Paints, Varnishes, Lacquers and Colors." If the moving load is 150 grams (as in the Standard A.S.T.M. grease cone) the desired penetration for 5 seconds at 25° C. is 240. For those not equipped with a penetrometer, the simple putty consistometer described on page 599 of Gardner's book is useful. The desired range at 5 kg for 60 seconds is between 3-1/4 and 4-1/4 inches.

E-3c. Tinted or colored putty shall match, in tint or color, a sample mutually agreed upon by buyer and seller.

E-3d. The putty, as received, shall not be caked or hardened in the container. It shall show good keeping properties (freedom from excessive settling of the pigment, etc.).

F. METHODS OF SAMPLING AND TESTING.

Deliveries will, in general, be sampled and tested by the following methods, but the purchaser reserves the right to use any additional available information to ascertain whether the material meets the specification.

F-1. Sampling.-

F-1a. It is mutually agreed by buyer and seller that a single package out of each lot of not more than 1,000 packages shall be taken as representative of the whole. Whenever possible an original unopened container shall be sent to the laboratory, and when this is for any reason not done the inspector shall determine by kneading with his hand whether the material has the consistency of good putty. He shall then thoroughly mix the contents of the container and draw a sample of not less than 1 pound of the thoroughly mixed putty, place it in a clean, dry metal or glass container, which must be filled with the sample, closed with a tight cover, sealed, marked and sent to the laboratory for test with the inspector's report on caking in container.

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F-1b. When requested, a duplicate sample may be taken from the same package and delivered to the seller, and the inspector may take a third sample to hold for test in case of dispute.

F-2. Laboratory examination.-

F-2a. Caking in container.- When an original package is received in the laboratory it shall be weighed, opened, and mixed with a stiff spatula or paddle. The putty must be no more difficult to mix and knead with the hand than a normal good grade of putty. The putty shall finally be thoroughly mixed, removed from the container, and the container wiped clean and weighed. This weight subtracted from the weight of the original package gives the net weight of the contents. A portion of thoroughly mixed putty shall be placed in a clean container and the portions for the remaining tests promptly weighed out.

F-2b. Total volatile matter.- Weigh accurately from 3 to 5 g of the putty in a tared flat-bottom dish about 8 cm in diameter, spreading the putty over the bottom. Heat at 105° to 110° C for 1 hour, cool, and weigh. Calculate the loss in weight as the percentage of moisture and volatile matter.

F-2c. Freedom from lumps or grit.- Spread a portion of the mixed putty on a clean piece of glass, noting the presence of any lumps. Thin about 5 g of the putty with 3 or 4 ml of raw linseed oil or turpentine, spread the mixture to thin films on the glass, using a wide spatula or putty knife and note whether any grit is present. Refractory particles larger than 50 mesh which do not break down under a spatula shall be considered grit.

F-2d. Working qualities - Work up about 10 g of the mixed putty in the hands, noting its tendency to stick. Apply a portion of the putty to the edge of a clean piece of glass, or well-filled wood and work it out to a smooth bevel with a spatula or putty knife. Spread another portion to very thin films on the glass. The putty in both tests shall show good adhesive and elastic properties and shall not be "short" or "mealy." For comparison purposes a small batch of good putty can be satisfactorily made by taking 86 parts by weight of dry, fine, natural chalk whiting of known quality (Navy Specification 52-W-1d), adding about 14 parts by weight of boiled linseed oil, and thoroughly kneading to a stiff dough by hand. Allow the batch to "sweat" overnight, and then knead it into a stiff, dough-like mass (adding if necessary a little dry whiting).

F-2e. Percentage of pigment.- Weigh accurately about 15 g of the putty in a weighed centrifuge tube. Add 20 to 30 ml of "extraction mixture" (see Reagents), mix thoroughly with a glass rod, wash the rod with more of the extraction mixture, and add enough of the reagent to make a total of 60 ml in the tube. Place the tube in the container of a centrifuge, surround with water, and counterbalance the container of the opposite arm with a similar tube or a tube with water. Whirl at a moderate speed until well settled. Decant the clear supernatant liquid, repeat the extraction three times with 40 ml of extraction mixture. After drawing off the extraction mixture set the tube in a beaker of water at about 80° C. or on top of a warm oven for 10 minutes, then in an oven at 105° to 110° C. for 2 hours. Cool, weigh, and calculate the percentage of pigment. Grind the pigment to a fine powder, pass through a No. 80 sieve to remove any skins, and preserve in a stoppered bottle.

F-2f. Preparation of fatty acids.-

F-2f (1). To about 25 g of the putty in a porcelain casserole add 15 ml of aqueous sodium hydroxide (see Reagents) and 75 ml of ethyl alcohol, mix and heat uncovered on a steam bath until saponification is complete (about 1 hour).

F-2f (2). Add 100 ml of water, boil, add sulphuric acid of specific gravity 1.2 (8 to 10 ml in excess), boil, stir, and transfer to a separatory funnel to which some water has been previously added. Draw off as much as possible of the acid aqueous layer, wash once with water, then add 50 ml of water and 50 ml of ether. Shake very gently with a whirling action to dissolve the fatty acids in the ether, but not so violently as to form an emulsion. Draw off the aqueous layer and wash the ether layer with one 15 ml portion of water and then with 5 ml portions of water until free from sulphuric acid. Then draw off the water layer completely. Transfer the ether solution to a dry flask and add 25 to 50 g of anhydrous sodium sulphate. Stopper the flask and let stand

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with occasional shaking at a temperature below 25° C. until the water is completely removed from the ether solution, which will be shown by the solution becoming perfectly clear above the solid sodium sulphate. Decant this clear solution, if necessary, through a dry filter paper into a dry 100 ml Erlenmeyer flask. Pass a rapid current of dry air (pass through a CaCl₂ tower) into the mouth of the Erlenmeyer flask and heat to a temperature below 75° C. on a dry, hot plate until the ether is entirely driven off.

F-2f (3). It is important to follow all of the details, since ether generally contains alcohol, and after washing with water always contains water. It is very difficult to remove water and alcohol by evaporation from fatty acids, but the washing of the ether solution and subsequent drying with anhydrous sodium sulphate removes both water and alcohol. Ether, in the absence of water and alcohol, is easily removed from fatty acids by gentle heat.

F-2f (4). The fatty acids prepared as above should be kept in a stoppered flask and examined at once.

F-2f (5). The above method of preparing the fatty acids directly from the materials, rather than from the extracted vehicle, is based upon past experience in sometimes obtaining too low results by the latter method. Occasionally, however, trouble is experienced in saponifying the entire material, due to interference of pigment, particularly with Prussian blue, chrome green, and lampblack. In such an instance it is permissible to save the extracted vehicle (see F-2e), evaporate off the organic solvents on a steam bath, and saponify and prepare the fatty acids in the usual manner from this extract. If the iodine number obtained in this manner passes the specification, no further work is necessary. If the iodine number is low, it will be necessary to repeat the work directly, on the entire material.

F-2g. Test for mineral oil and other unsaponifiable matter. - Place 10 drops of the fatty acid (F-2f) in a 50 ml test tube, add 5 ml of alcoholic soda (see Reagents), boil vigorously for 5 minutes, add 40 ml of water, and mix; a clear solution indicates that not more than traces of unsaponifiable matter are present. If the solution is not clear, the oil is not pure linseed oil, and does not meet the specification.

F-2h. Iodine number of fatty acids - Place a small quantity of the fatty acids (F-2f) in a small weighing burette or beaker. Weigh accurately. Transfer by dropping from 0.09 to 0.15 g to a 500-ml bottle having a well-ground glass stopper, or an Erlenmeyer flask having a specially flanged neck for the iodine test. Reweigh the burette or beaker and determine the amount of sample used. Add 10 ml of chloroform. Whirl the bottle to dissolve the sample. Add 10 ml of chloroform to each of two empty bottles like that used for the sample. Add to each bottle 25 ml of the Wijs solution (see Reagents) and let it stand with occasional shakings for 1 hour in a dark place at a temperature of from 21° to 23° C. Add 10 ml. of the 15 percent potassium iodide solution and 100 ml of water, and titrate with standard sodium thiosulphate using starch as indicator. The titration on the two blank tests should agree within 0.1 ml. From the difference between the average of the blank titrations and the titration on the sample, and the iodine value of the thiosulphate solution, calculate the iodine number of the sample tested. (Iodine number is centigrams of iodine to 1 g of sample.) If the iodine number is less than 170, the oil does not meet the specification.

F-2i. Coarse particles and skins. - Dry in an oven at 105° to 110° C. a No. 200 sieve, cool and weigh accurately. Weigh an amount of putty containing 10 g of pigment (see F-2e) add 100 ml of kerosene, mix thoroughly, and wash with kerosene through the sieve, breaking up all the lumps but not grinding. After washing with kerosene until all but the particles too coarse to pass the sieve have been washed through, wash all kerosene from the sieve with ether or petroleum ether, heat the sieve and contents for 1 hour at 105° to 110° C., cool and weigh.

F-3. Analysis of pigment. -

F-3a. Qualitative analysis. - Make qualitative analysis following ordinary methods.

F-3b. Reaction and free alkali. - Boil 2 g of the pigment for 5 minutes with 100 ml of water,

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filter and to the clear filtrate add two drops of phenolphthalein and titrate while hot with 0.1 N hydrochloric acid. Not over 0.2 ml of 0.1 N HCl shall be required to destroy the red color. The filtrate shall also be neutral to methyl orange indicator.

F-3c. Calcium carbonate (in the absence of white lead).- Weigh accurately 0.25 g of the dry pigment, transfer to a 250 ml beaker, moisten with alcohol, dissolve in about 20 ml of 1 : 1 hydrochloric acid, keeping the beaker covered. Digest for 10 minutes on the steam bath, dilute to about 150 ml, then filter the solution and wash the insoluble residue with hot water. Bring to near boiling and make alkaline with ammonia after adding a few ml of bromine water. Let the precipitate settle, filter, and wash thoroughly with hot water. Take the filtrate and washings from the iron, aluminum, etc., concentrate to about 200 ml, adding a few drops of ammonia. Boil and add while boiling 10 to 15 ml of a hot saturated solution of ammonium oxalate, stir, and continue the boiling until the precipitated calcium oxalate becomes granular. Set on steam bath to settle (about 1 hour). Filter and wash the oxalate thoroughly with small amounts of hot water. Transfer the moist precipitate to a 400-ml beaker by means of a stream of water from the wash bottle, dissolve the part remaining on the filter by washing with warm dilute sulphuric acid. Add to the beaker 20 ml of sulphuric acid (1 : 1), dilute to about 300 ml with hot water, and titrate the oxalic acid with 0.1 N potassium permanganate and report as CaCO₃.¹

$$1 \text{ ml } 0.1 \text{ N KMnO}_4 = \begin{array}{l} 0.0028 \text{ g CaO} \\ 0.0050 \text{ g CaCO}_3 \end{array}$$

F-3d. White lead and calcium carbonate.

F-3d (1). Weigh accurately 1 g of the dry pigment into a 250-ml beaker, moisten with a few drops of alcohol, add slowly 25 to 30 ml of concentrated hydrochloric acid, cover, and boil for 5 to 10 minutes. Dilute to about 150 ml with hot water and heat for about 15 minutes, let settle on the steam bath, filter while hot, and wash any insoluble residue thoroughly with hot water. (Avoid allowing the filter paper to become cold.) Make the solution just alkaline with ammonia, then just faintly acid to litmus, using dilute (1 : 10) hydrochloric acid. The final volume should contain about 1 percent by volume hydrochloric acid. Dilute to about 300 ml and pass hydrogen sulphide gas into the clear solution to complete precipitation. Sometimes it is necessary to start the precipitation by adding a drop or two of ammonium hydroxide. Settle, filter on paper, and wash with water containing some hydrogen sulphide, dissolve the sulphide in hot nitric acid (1 : 3), add 5 to 10 ml of dilute sulphuric acid (1 : 1), evaporate until copious fumes of sulphuric anhydride are evolved, cool, add about 75 ml of water, and then about 75 ml of 95 percent ethyl alcohol. Stir, let settle, filter on a weighed Gooch crucible, wash with dilute alcohol, dry, gently ignite, and weigh as lead sulphate. Multiply this weight by the factor 0.854 and report the result as basic carbonate white lead.

F-3d (2). Boil the filtrate from the sulphide separation to expel hydrogen sulphide, add a few drops of nitric acid, and if necessary some ammonium chloride, make alkaline with ammonia, settle, and filter off any precipitate of aluminum, iron, etc., and wash the precipitate with hot water. Proceed to determine total calcium as in F-3c, and report as calcium carbonate.

F-4. Reagents.

F-4a. Extraction mixture.

- 10 volumes ether (ethyl ether),
- 6 volumes benzol,
- 4 volumes methyl alcohol,
- 1 volume acetone.

¹ If the sample is impure, reference should be made to the methods as given in *The Analysis of Silicate and Carbonate Rocks*, by W.F. Hillebrand, U.S. Geol. Surv. Bull. No. 700.

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F-4b. Aqueous sodium hydroxide. - Dissolve 100 g of sodium hydroxide in distilled water and dilute to 300 ml.

F-4c. Alcoholic sodium hydroxide solution. - Dissolve pure sodium hydroxide in 95 percent ethyl alcohol in the proportion of about 22 g per 1,000 ml. Let stand in a stoppered bottle. Decant the clear liquid into another bottle and keep well stoppered. This solution should be colorless or only slightly yellow when used, and it will keep colorless longer if the alcohol is previously treated with sodium hydroxide (about 80 g to 1,000 ml), kept at about 50° C. for 15 days and then distilled.

F-4d. Potassium iodide solution. - Dissolve potassium iodide free from iodate in distilled water in the proportion of 150 g of potassium iodide to 1,000 ml of the solution.

F-4e. Wijs solution. - The preparation of the iodine monochloride solution presents no great difficulty, but it should be done with care and accuracy in order to obtain satisfactory results. There shall be in the solution no sensible excess either of iodine or more particularly of chlorine over that required to form the monochloride. This condition is most satisfactorily attained by dissolving in the whole of the acetic acid to be used the requisite quantity of iodine, using gentle heat to assist the solution, if it is found necessary. Dissolve iodine in glacial acetic acid that has a melting point of 14.7° to 15° C. and is free from reducing impurities in the proportion so that 13 g of iodine will be present in 1,000 ml of solution. Set aside a small portion of this solution while pure, and pass dry chlorine into the remainder until the halogen content of the solution is doubled. Ordinarily it will be found that by passing the chlorine into the main part of the solution until the characteristic color of free iodine has just been discharged there will be a slight excess of chlorine which is corrected by the addition of the requisite amount of the unchlorinated portion until all free chlorine has been destroyed. A slight excess of iodine does little or no harm, but excess of chlorine must be avoided.

F-4f. Standard sodium thiosulphate solution. - Dissolve pure sodium thiosulphate in distilled water that has been well boiled to free it from carbon dioxide, in the proportion of 24.83 g crystallized sodium thiosulphate to 1,000 ml of the solution. It is best to let this solution stand for about two weeks before standardizing. Standardize with pure resublimed iodine.² This solution will be approximately decinormal, and it is best to leave it as it is after determining its exact iodine value, rather than to attempt to adjust it to exactly decinormal. Preserve in a stock bottle provided with a guard tube filled with soda lime.

F-4g. Starch solution. - Stir up 2 or 3 g of potato starch or 5 g of soluble starch with 100 ml of 1 percent salicylic acid solution, add 300 to 400 ml of boiling water, boil the mixture until the starch is practically dissolved, and then dilute to 1 liter.

F-4h. 0.1 N potassium permanganate solution. - Dissolve 3.2 g of pure potassium permanganate in a liter of distilled water, let stand 8 to 14 days, siphon off the clear solution (or filter through an asbestos filter), and standardize as follows: In a 400-ml beaker dissolve 0.25 to 0.30 g of Bureau of Standards' sodium oxalate in 250 ml of hot water (80° to 90° C.) and add 15 ml of dilute sulphuric acid (1:1). Titrate at once with the potassium permanganate solution, stirring the liquid vigorously and continuously. The permanganate must not be added more rapidly than 10 to 15 ml per minute, and the last 0.5 to 1 ml must be added dropwise, with particular care to allow each drop to be fully decolorized before the next is introduced. The solution should not be below 60° C. by the time the end point is reached. (More rapid cooling may be prevented by allowing the beaker to stand on a small asbestos-covered hot plate during the titration. The use of a small thermometer as a stirring rod is most convenient.) The weight of sodium oxalate used multiplied by 0.7469 gives its CaCO₃ equivalent.

G. PACKAGING, PACKING, AND MARKING FOR SHIPMENT.

² Treadwell-Hall, Analytical Chem., 2, 6th ed., p. 551.

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G-1. Packaging - Unless otherwise specified, commercial packages are acceptable under this specification.

G-2. Packaging - Unless otherwise specified, the subject commodity shall be delivered in standard commercial containers, so constructed as to insure acceptance by common or other carriers, for safe transportation, at the lowest rate, to the point of delivery.

G-3. Marking - Unless otherwise specified, shipping containers shall be marked with the name of the material, the size, type, and the quantity contained therein, as defined by the contract or order under which the shipment is made, the name of the contractor, and the number of the contract or order.

H. REQUIREMENTS APPLICABLE TO INDIVIDUAL DEPARTMENTS.

H-1. The following departmental specifications of the issue in effect on date of invitation for bids shall respectively form a part of this specification:

H-1a. Army - United States Army Specification No. 100-2, Standard Specification for Marking Shipments. United States Army Specifications No. 22-42, Supplies, Subsistence, for United States Army, Conditions Governing the Purchase of.

H-1b. Navy - Navy Department General Specifications or Inspection of Material, copies of which may be obtained without cost upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, D.C.

H-1c. Marine Corps; packing and marking - Shall be in accordance with Marine Corps Specifications for Packing for Ready-Mixed Paints, adopted October 28, 1929. Copies of Marine Corps Specifications for Packing may be obtained without cost upon application to the Quartermaster, Headquarters United States Marine Corps, Navy Building, Washington, D.C., or Depot Quartermaster, United States Marine Corps 1100 South Broad Street, Philadelphia, Pa.

H-2. Requirements as to purchases. -

H-2a. Navy Department purchases -

H-2a (1). Packing - Unless otherwise specified, the subject commodity shall be delivered in substantial wooden boxes or cases, so constructed as to insure safe delivery by common or other carriers to the point of delivery at the lowest rate. A single container, when packed for shipment, shall weigh not in excess of approximately 200 pounds gross. Not more than one kind of putty or size of container shall be packed in a single box.

H-2a (2). Marking -

H-2a (2)a. Individual packages - Unless otherwise specified, individual packages shall be marked with the name of the material, the type, and the quantity contained therein, as defined by the contract or order under which shipment is made, and the name of the contractor.

H-2a (2)b. Shipping containers - Unless otherwise specified shipping containers shall be marked with the name of the material, the size, type, and the quantity contained therein, as defined by the contract or order under which shipment is made, the name of the contractor, the number of the contract or order, and the gross weight.

I. NOTES.

I-1. This specification covers the requirements for high-grade linseed oil putty for general use on wood sash glazing. While the two types may be used interchangeably, it is recommended that type II be used for filling holes and cracks, and for other purposes where a harder material is desirable.

I-2. Wood sashes -

I-2a. New wood sashes should be primed with either one coat of a thin white lead-linseed oil paint (100 pounds soft paste white lead, 4 gallons linseed oil, 1-3/4 gallons turpentine, and 1 pint drier), or one coat of a thin lead-zinc paint (1 gallon of Federal Specification TT-P-36 paint plus 1 quart of linseed oil and 1 pint of turpentine), or one coat of thin boiled linseed oil (1 quart of mineral spirits or turpentine to 1 gallon of boiled linseed oil). These coatings should be allowed

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to dry hard before applying the putty. The new or unpainted wood sashes should be primed on all surfaces.

I-2b. Damp, dusty, or icy surfaces should not be puttied, but the surfaces should be dry and then wiped clean with a cloth saturated with turpentine or mineral spirits before applying the putty. Putty should not be applied in cold weather (below 40° F.) or during damp or rainy weather. Old sashes should be scraped, cleaned, and primed before setting the glass. On old work all loose putty should be removed before applying new putty. It is very important that all surfaces should be dry and cleaned of dirt, loose paint, or putty. The necessity of applying the priming coat of paint or boiled linseed oil is to avoid excessive loss of oil from the putty through absorption. On the other hand, many putty technologists do not recommend a size that dries to a hard, glazed finish, such as shellac.

I-2c. If putty is slightly soft, it can be stiffened by kneading in a little dry, chalk whiting.

I-2d. Putty meeting this specification should not be painted until it is thoroughly set and hard. Too early painting forms an air-tight film over the surface of the putty, retarding its drying, and later may cause the surface of the paint to check. However, all putty should be painted for proper protection, and in the case of this Federal Specification putty it should not be left more than 2 months before painting. There are some special, quick-setting putties that must be painted within 1 week of exposure to the weather, to avoid deterioration of the putty.

I-2e. Paint should be applied in a careful manner over putty, and the paint coat should extend slightly beyond the edge of the putty on the glass, so as to form a seal.

I-3. Requisitions and purchase orders should state the type desired, the size and type of container.

I-4. As regards the working properties of a putty, no general statement can be made which is applicable to all putties. However, it does appear that a putty that is formulated for speed of application by the glazier may not be so durable as one that is not quite so easy in handling and speedy in applying.

I-5. Putty should be purchased by net weight.

I-6. It is believed that this specification adequately describes the characteristics necessary to secure the desired material, and that normally no samples will be necessary prior to award to determine compliance with this specification. If, for any particular purpose, samples with bids are necessary, they should be specifically asked for in the invitation for bids, and the particular purpose to be served by the bid sample should be definitely stated, the specification to apply in all other respects.

I-7. This specification covers only the types, classes, grades, sizes, etc., of the commodity as generally purchased by the Federal Government, and is not intended to include all of the types, etc., which are commercially available.

Notice - When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded, by implication or otherwise, as in any manner licensing the holder or any other person of corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications, Standards, and Handbooks and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston, New York, Atlanta, Chicago, Kansas City, Mo., Dallas, Denver, San Francisco, Los Angeles, Seattle, and Washington, D.C.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications, Standards, and Handbooks from established distribution points in their agencies.)

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 119-R004	
INSTRUCTIONS			
This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).			
SPECIFICATION			
ORGANIZATION (of submitter)		CITY AND STATE	
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT \$	
MATERIAL PROCURED UNDER A			
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT			
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?			
A. GIVE PARAGRAPH NUMBER AND WORDING			
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.			
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID			
3. IS THE SPECIFICATION RESTRICTIVE?			
<input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES", IN WHAT WAY?			
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)			
SUBMITTED BY (Printed or typed name and activity)		DATE	

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