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 March 20, 1989  
 SUPERCEDING  
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 April 28, 1986

COMMERCIAL ITEM DESCRIPTION

STEEL GRIT

JUN 21 1989

The General Services Administration, has authorized the use of this commercial item description in preference to Military Specification MIL-S-851, type I.

This commercial item description covers hardened cast steel grit for use in blast cleaning equipment for general blasting.

Salient characteristics:

1. The grit shall be furnished in sizes G14, G16, G18, G25, G40, G50, and G80 as specified. Grit size shall be determined in accordance with the Society of Automotive Engineers Recommended Practice 'Cast Shot And Grit Size Specifications For Peening And Cleaning - SAE J444'.
2. The grit shall be newly manufactured from virgin or recovered raw materials. The grit shall be free of dust, oil, grease, corrosion and other contaminants as determined by visual examination. Corroded or rusted grit, except for a slight red rust color shall be considered unacceptable. The grit shall contain less than .2% by weight of non-magnetic contaminants. Non-magnetic contamination shall be determined by separation of all magnetic particles from a sample of grit particles using a magnet and calculation of the percentage by weight of non-magnetic particles remaining in the sample.
3. The grit shall consist of heat treated irregular particles produced by crushing cast steel, and shall contain not more than 5% rounded particles. Particle shape shall be determined by examination of a field of 100 particles placed on a glass slide and viewed at a 4X magnification (care should be taken that half-round or near half-round particles are not counted as rounded particles). Unless otherwise specified, grit hardness shall be within the range of 40 to 52 on the Rockwell C scale. When other hardness values are desired, the purchaser shall specify a specific grit hardness within a range of Rockwell C30 (soft) to Rockwell C65 (very hard), (see notes).

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: General Services Administration, Industrial Engineering Group (7FXEI), 819 Taylor St., Fort Worth, TX 76102
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Physical characteristics (other than shape) and hardness shall conform with and be examined in accordance with Steel Founders' Society Of America 'Standard Specification for Cast Steel Abrasives', SFSA Designation: 20-66, Reprinted 1980. The applicable portions of SFSA 20-66 are paragraphs 4.3 through 6.3 and 7.3 through 7.5.3.1. which are applicable to steel grit. Hardness shall be determined using a microhardness tester, measuring the Knoop Hardness number in accordance with ASTM Standard Test Methods and Definitions for Mechanical Testing Testing of Steel Products, ASTM A370, utilizing a 500 gf load and converting the value obtained to the Rockwell C scale. Density of the grit shall be not less than 7.0 gm per cc and shall be determined by the displacement method described in the Society of Automotive Engineers Recommended Practice 'Cast Steel Shot - J827'.

4. The chemical composition of the cast steel grit shall conform with the following limitations and shall be determined in accordance with American Society For Testing And Materials 'Standard Methods For Chemical Analysis Of Carbon Steel, Low-alloy Steel, Silicon Electrical Steel, Ingot Iron, And Wrought Iron', ASTM E350:

CARBON	-	1.20 %	, maximum
MANGANESE	-	1.20 %	, maximum
PHOSPHORUS	-	0.05 %	, maximum
SULFUR	-	0.05 %	, maximum
SILICON	-	1.50 %	, maximum

SILICA SHALL NOT BE PRESENT IN THE FREE FORM AND PRESENT A HEALTH HAZARD DUE TO SILICOSIS.

5. The grit shall meet or exceed the durability requirements shown in Table I below:

Grit Size	Minimum Durability Cycles to Complete Breakdown (see notes)	Take-out Screen Size
G14	2225	40 mesh
G16	2325	40 mesh
G18	2400	40 mesh
*G25	2975	50 mesh
*G40	2950	50 mesh
*G50	2375	70 mesh
*G80	2300	70 mesh

Notes:

1/ Durability shall be tested in accordance with the Complete Breakdown method of Society Of Automotive Engineers information Report, 'Metallic Shot And Grit Mechanical Testing', SAE J445.

- 2/ Durability tests shall be performed using an Ervin Industries, Inc. shot/grit test machine (3893 Research Park Drive, P.O. Box 1168, Ann Arbor, MI 48106) or equivalent apparatus properly calibrated in accordance with the manufacturer's instructions.
- 3/ \*The grit sizes G50 and G80 in Table I above cannot be accurately tested due to limitations of the test apparatus in retaining these sizes. The values for grit sizes G25 and G40 are considered nominal due to lack of historical data. Therefore a tolerance of - 30% is permitted for these sizes.

Order of precedence. In the event of a conflict between the text of this specification and the references specified herein, the text of this specification shall take precedence. Nothing in this specification, however, shall supercede applicable laws and regulations unless a specific exemption has been obtained.

Part Numbering. Steel grit conforming with this commercial item description shall be identified by a part number configuration consisting of identification of a portion of the specification number and grit size. An example of the part number configuration is shown below.

C1041-XXX

		Grit size (e.g. G25, G40, G80, etc.)
		General specification number.

Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

Sampling. Samples for all product examinations, tests and analysis specified herein (except for grit shape) shall be selected in accordance with SFSA Designation 20-66 except that the inspection lot for sampling purposes shall be all grit of the same size presented for acceptance at one time. The 100 particle field examined for particle shape shall be randomly selected from within a sample consisting of 3 randomly selected grab samples of approximately 250 grams each which have been blended. Failure of samples to conform with requirements specified in this document or documents incorporated by reference herein shall be cause for rejection of the entire lot. When certification of testing is specified in the contract or purchase order and stated conditions of certification are maintained, the lot size may be the manufacturer's standard production lot size.

Certification of durability, hardness, and chemical composition.

When specified in the contract or purchase order, a certificate of conformance may be furnished in lieu of actual testing on a lot by lot basis providing that:

- (1) The manufacturer has objective evidence in the form of end-item test reports, showing that complete testing has been performed within the past twelve (12) months showing conformance with all test requirements for each grit size to be furnished and records which indicate a continuous process control system. Process control checks shall be accomplished during the manufacturing process and shall be designed to assure that processes and procedures which have proven to produce product conforming with all end-item tests are being maintained. Such process controls shall be ongoing and current with the last production lot of grit produced.
- (2) Tests specified in this document or the specifications or standards referenced herein have been performed by the manufacturer or an independent test facility acceptable to the Government.
- (3) That the product being offered is the same size and quality and has been manufactured using the same material, processes and manufacturing techniques as the product tested.

The Government reserves the right to require complete testing on a lot-by-lot basis if evidence indicates that the product or products supplied during the term of the contract do not conform with stated requirements or if the above conditions do not exist or are not maintained.

The intent of this provision when provided for in the contract or purchase order is to permit the supplier to certify conformance with those product characteristics identified above without end-item testing each inspection lot for conformance with stated characteristics.

Preservation, packaging, packing, labeling, and marking. The preservation, packaging, packing, labeling, and marking shall be as specified in the contract or order.

Packaging (DOD). The packaging shall be in accordance with ASTM Standard D3951, 'Packaging, Commercial'.

Marking. In addition to any other marking required by the contract or purchase order, each unit container shall be marked with the part number and lot number.

Examination for preparation for delivery. A random sample of unit, intermediate and shipping containers (as applicable) shall be selected from each lot and examined for conformance with the preservation, packaging, packing, labeling and marking required in the contract or order. Samples shall be selected in accordance with Military Standard MIL-STD-105, "SAMPLING PROCEDURES AND TABLES FOR INSPECTION BY ATTRIBUTES", Inspection level II, AQL 6.5 expressed in terms of defects per hundred unit. For purposes of this examination, a lot shall be considered all shot presented for inspection at one time.

Regulatory requirements. In accordance with section 23.403 of the Federal Acquisition Regulations, the Government's policy is to acquire items composed of the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used products are allowed under this commercial item description unless otherwise specified.

Notes:

Purchaser should specify grit size and if certification of durability, hardness, size, and chemical composition is acceptable in lieu of actual lot-by-lot examination. If hardness values other than Rockwell C40 to C52 are desired, specific hardness values should be specified. It should be noted that Rockwell C30 (soft) grit will result in less aggressive abrasive action and higher durability, while values of Rockwell C55 to C65 will produce more aggressive abrasive action and lower durability. In either case hardness values other than Rockwell C40 to C52 will result in the values shown in Table I and stated chemical composition values becoming invalid.

The issue or revision of all documents referenced herein in effect on the date of the invitation for bids, request for quotation, or purchase order shall be used to determine compliance with these requirements.

SAE Standards are available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15906.

Standard Specification for Cast Steel Abrasives, SFSA Designation 20-66 is available from the Steel Founders' Society Of America, Cast Metal Federation Building, 455 State Street, Des Plain, IL 60016.

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ASTM standards are available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

Copies of MIL-STD-105 may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402

The commercial item certification clause is not required when this commercial item description is used for procurement.

NSN's are as follows:

Grit size	NSN
G14	5350-00-271-5983
G16	5350-00-271-5983
G18	5350-00-230-3224
G25	5350-00-271-5986
G40	5350-00-230-3223
G50	5350-00-271-5988
G80	5350-00-107-1284

MILITARY INTEREST:

PREPARING ACTIVITY:

Custodian:

GSA - FSS

Army - MR

Review Activity:

Air Force - 99

User:

Navy - SH