



भारत सरकार/Govt. of India
श्रम एवं रोजगार मंत्रालय
Ministry of Labour & Employment
खान सुरक्षा महानिदेशालय
Directorate General of Mines Safety
Dhanbad -826001



Tel-0326-2221000
Fax-0326-2221027

No. DGMS Circular (Approval) No. 04

Dhanbad, Dated ...15th August, 2014

To

All Owners/ Agents/ Managers of Coal, Metalliferous and Oil Mines.

Sub- Footwear requiring DGMS Approval for use in Coal, Metalliferous and Oil Mines- Discontinuance of approval by a special order in writing.

1.0. Regulation 191 of the Coal Mines Regulations, 1957, Regulation 182 of the Metalliferous Mines Regulations, 1961 and Regulation 87 of the Oil Mines Regulations, 1984, require that ,

" No person shall go into or work in or be allowed to go into, or work, in a mine, unless he wears a protective footwear of such type as may be approved by the Chief Inspector by a general or special order in writing."

1.1. There are different varieties of protective footwears suited for different working sites in the mines. DGMS has been according approval under these Regulations to the manufacturers of these shoes by special orders since long for the benefit of the miners. There are various standards framed by BIS to suit Indian mining conditions. It is required that such protective DGMS approved footwear has DGMS marking along with BIS marking on it.

2.0. TERMINOLOGY- (As per IS : 2050)

2.1. Safety footwear for professional use – footwear incorporating protective features to protect the wearer from injuries which could arise through accidents in the working sectors for which the footwear was designed to give protection against impact when tested at an energy level of 200 J and compression at a load of at least 15 KN.

2.2. Protective footwear for professional use – footwear incorporating protective features to protect the wearer from injuries which could arise through accidents in the working sectors for which the footwear was designed to give protection against impact when tested at an energy level of 100 J & Compression at a load of at least 10KN.

- 2.3. Safety Toe cap – Footwear component built into the footwear designed to protect the toes of the wearer from impacts up to an energy level of at least 200 J and compression at a load of at least 15 KN.
- 2.4. Protective toe cap – Footwear component built into the footwear designed to protect the toes of the wearer from impacts up to an energy level of at least 100 J & compression at a load of at least 10 KN.
 - 2.4.1. IS:5852 of 1992 prescribes specification for protective steel toe cap for footwear. Caps made of tempered steel to the required shape of the last and used at the toe of the safety footwear. It may be placed either between the upper and the lining or may be attached externally over the upper of footwear by means of inward flanges. It forms an in-built integral part of the safety footwear and is intended to protect the toe of the user.
 - 2.4.2. Alternately, in place of steel toe cap, non metal fibre reinforce light weight protective toe cap may also be used in future manufacturing with the concurrence with the authorities operating the mines but in case the prescribed impact energy level and compression level described above shall have to be complied with. Such type of non metallic toe cap will reduce fatigue to the miners by walking or work due to its less weight and it will in turn improve productivity.
- 2.5. SCOPE of Application – (Types of Boots)----
 - 2.5.1. Type- 1 Boots are preferred for use where minimal water accumulation or in slurry condition of mining.

(NOTE: Boots are preferred for use where minimal water accumulation or in slurry condition of mining.)

Type - 2 Boots are preferred for use in dry condition of mining.
 - 2.5.2. Special (Varieties of Shoes) –
 - i) Fire Resistivity
 - ii) Electrical Resistivity
 - iii) Anti Skid (Slip)
 - iv) Oil Resistant for oil mines or work places where oil & grease come in contact
- 3.0 The protective shoes used in mines are required to conform to IS:15298 (Part-1):2002 (revised 2011) /ISO 8782 : 1998. This is the mother standard under which all safety footwears are required to be manufactured and tested. It contains various parameters for testing. For the purpose of use in the mines chief parameters are given at Annexure-I which must be selected besides others required under the relevant standards of BIS during testing in Govt or Govt approved test houses.

4.0 In mines the following varieties / types of shoes have been in use –

4.1 **Canvas footwear** (Textile top) - This type of shoes is being widely used in coal mines both in underground and opencast for both men and women. Such type of shoes are required to conform to IS : 3976 of 2003. There is no specific standard for women miners.

4.2 **Leather footwear** - Such type of shoes are used in dry condition only. It has two varieties – Leather sole and Rubber sole. These two varieties are required to conform to IS : 1989 (Part – I) of 1978. At present these type of shoes are not normally in used in the mines.

This type of footwear has another variety for women workers in mines. Such leather safety footwear is required to conform to IS : 11225 of 1985.

Leather Safety Shoes are also covered under IS: 11226 of 1993 for use in general industrial area. There is no mention in this standard that it is applicable to mines or not. Therefore such type may also be selected for use in mines. Under this category, following types of shoes are manufactured-

Type 1 : Ankle Boots

Type 2 : Jodhpuri Shoes

Type 3 : Derby Shoes

For above type of shoes approval have been accorded by the Directorate for use in certain type of mines as per the need of the mine operators and as required by the manufacturer.

4.3 **Polymer footwear** (PVC/Rubber) - For such type of shoes there are following three standards –

- i. IS : 5557 of 2004 – Rubber knee boots for Type 1 & 2 are required to conform to this standard. These types 1 & 2 are designed with respect to height of the shoes (but not to be categorised for use in wet and dry conditions). This covers oil resistant variety properties for use in oily areas.
- ii. IS : 12254 of 1993 – PVC knee boot / Gum boots are required to conform to this standard.
- iii. IS : 9885 of 1982 – Rubber ankle or knee boots required for use in oil mines shall conform to this standards.

5.0 **Maintenace of Footwear** – IS : 6519 of 1971 prescribes code of practice for selection, care and repair of safety/protective footwear. Normally the working life of the shoes is designed to be not less than 9 months but the shelf life of safety boots depends upon the arrangement of inside environmental conditions

of the store house of the mine (s). The internal environment of the store house must not be humid and beyond normal room temperature ($\leq 26^{\circ}\text{C}$). Leather Safety Boot having Polyurethane sole is having shelf life of lesser period and suffers subsequent hydrolysis, and subsequent degradation. The manufacturer of such footwear should declare the same to the users about it so that these could be used before its period of expiry of shelf life.

Canvas Safety Boots are also having polyurethane sole and in such cases the above guide lines should be followed.

Footwear other than Polyurethane sole has normal shelf life provided the same is not exposed to direct sunlight, rain etc. Rubber Components are subjected to ageing and as such the shelf life in no case is exceeding a year in NTP and in cool dry place.

6.0. The manufacturers shall see that-

6.1. Each boot is permanently marked with manufacturer's name / model, year & month of manufacture, safety or protective boot, any other statutory marking to be made inside of tongue or at top outer face of the boot so that least damage during mining operation occurs.

6.2. The footwear has been tested at any Govt. or Govt approved laboratory whenever standard of testing have changed. **The footwear shall bear marking of BIS license with relevant IS number along with declaration stating that it is "suitable for use in mines"**

6.3. Each pair of boot is supplied with information in English and Hindi as follows:

- (i) This footwear is not a GREEN footwear and is not BIO-DEGRADABLE.
- (ii) This footwear is recommended/ not recommended for use in fire prone or in hot surface area (delete whichever is not applicable).
- (iii) Name and full address of manufacturer
- (iv) Detail of customer care service provider
- (v) Instruction for storage and maintenance
- (vi) Drying procedure of wet Boots and cleaning of Boots for proper service
- (vii) Obsolescence dead line or period of obsolescence.

7.0. Approvals from this directorate are being granted on case to case basis being specific to the manufacturers and the type(s) of footwear they manufacture. The mine managements have been using them for protection of their persons in mines. Now it has been felt that the mines have become familiar with its necessity and have gathered sufficient experience in using such personal protective items.

- 7.1. Considering the fact it will be used complying to the statutory requirements in future and the required quality can be ensured and maintained by both the manufacturer(s) and mine users, if the laid down standards as referred above are adhered to strictly by them by getting the footwear tested in Govt or Govt approved laboratories.
- 7.2. Further, it has been felt that the process of approval need to be more simplified, transparent and friendly to the mine industry and related manufacturing industries but by ensuring proper quality as well. In view of this, it is now decided to issue a general order specifying the standards to be complied with.
- 8.0 As provided under Regulation 191 of the Coal Mines Regulations, 1957, Regulation 182 of the Metalliferous Mines Regulations, 1961 and Regulation 87 of the Oil Mines Regulations, 1984 protective footwear shall be considered as approved by the Chief Inspector of Mines (now designated as Director General of Mines Safety) by this general order in writing with effect from 1st September 2014. It may be noted that no specific approval will be required from this Directorate in this regard from that date.
- 8.1. However, the footwear, if having valid approval given to any manufacturer in the past by a special order by this Directorate, may continue to be procured for use in mines up to its respective last date of validity, but not so- as -to debar any other manufacturer(s) complying to the above mentioned standards approved by this general order.
- 9.0. All Owners/ Agents/ Managers of Coal, Metalliferous or Oil Mines providing or using or intending to provide or use such protective/ safety footwear in their mines are, therefore, requested to ensure at the time of its procurement that the footwear conform to the relevant standards referred above, updated or amended at that point of time, to maintain the desired qualities. A mechanism in this regard shall be developed and established by the mining companies/mine operators to procure, provide, maintain, storage of footwear, etc. in order to ensure safety of persons deployed in mines in compliance to the statutory requirements.

(Rahul Guha) 19-8-14
Director General of Mines Safety



(Annexure to DGMS Circular (Approval) No. 04 Dhanbad, Dated 14th August, 2014)

Chief Parameters for Performance Test of footwear for use in mines

(Complying to IS:15298 (Part-I):2011 / ISO 20344 of 2004)

Sl. No.	Minimum Parameters For Performance Testing in Govt or Govt approved Labs.	For use in Dry condition	For use in Wet condition	Remarks
1.	Impact Resistance	✓	✓	
2.	Compression Resistance	✓	✓	
3.	Minimum Inner Length of Toe cap	✓	✓	
3.	Electrical Resistance	x	✓	
4.	Flexing Resistant of sole	✓	✓	
5.	Flexing Resistant of upper body of shoe	✓	✓	
6.	Corrosion Resistant of metal toe caps or metal penetrating resistant inserts	✓	x	Only leather footwear
7.	Upper / outsole and sole interlayer bond strength	✓	✓	
8.	Leak Proof footwear	X	✓	
9.	Tear strength of upper material	✓	✓	
10.	Tear strength of sole material	✓	✓	
11.	Abrasion of outsole	✓	✓	
12.	Abrasion of insole	✓	✓	
13.	Resistant to hot contact	✓	✓	
14.	Electrical Resistant	✓	✓	for use during electrical jobs
15.	Resistance to fuel oil	✓	✓	For use in oil/grease working conditions
	✓- Test is required, X- Test not required			