INTER PLANT STANDARDIZATION – STEEL INDUSTRY		
IPSS	**SPECIFICATION FOR ARC EXTINGUISHING CHAMBER FOR ac & dc CONTACTORS** *(FIRST REVISION)*	**IPSS:1-04-028-11**
	Corresponding IS does not exist	Formerly : IPSS:1-04-028-89

0. FOREWORD

0.1 This Interplant Standard was prepared by the Standards Committee on Switchgear and Controlgear, IPSS 1:4 with the active participation of the representatives of the steel plants and established manufacturers of Arc Extinguishing Chamber and was adopted in March 2011.

0.2 Interplant Standards for steel industry primarily aim at achieving rationalization and unification of parts and sub-assemblies used in steel plant equipment and accessories, and provide guidance in indenting stores or equipment for existing equipment (or while placing orders for additional requirements) by individual steel plants. For exercising effective control on inventories, it is advisable to select a fewer number of sizes (or types) from among those mentioned in this standard for the purpose of company standards of individual steel plants. It is not desirable to make deviations in technical requirements.

0.3 Arc extinguishing chambers play a vital role in the proper functioning of an Air Break Contactor. Though there is an IS and an IPSS for contactors, the specifications are found insufficient, when the arcing chamber is considered separately. This standard is formulated to cover all aspects of the arcing chamber for its proper functioning.

0.4 This standard shall be considered together with IPSS:1-04-001-03 `Specification for contactors for voltages not exceeding 1000 V ac or 1200 dc (second revision)'.

1. SCOPE

1.1 This Interplant Standard covers arcing chambers used in contactors which have been declared obsolete by the original manufacturers. This is meant for contactors for voltages not exceeding 1000 V ac or 1200 V dc and where the arc extinction is effected by an elongation of the arc by a reactive electro magnetic field created by an arc suppressor coil incorporated in the contactor individually for each arcing chamber.

2. AMBIENT CONDITIONS

2.1 Temperature - The ambient temperature of air shall not exceed 50^{o}C.

2.2 Humidity - The maximum relative humidity shall be 100%. However the maximum ambient temperature and maximum relative humidity may not occur simultaneously.

2.3 Ambient Air - The ambient air may contain fair amount of conductive dust and corrosive fumes.

3. MATERIAL

3.1 The complete assembly of arcing chamber shall conform to the drawing supplied by user or to the drawing approved by user and the components used shall conform to the details given below if not given in the drawing.

3.2 Parts which are in the vicinity of the arc inside the chamber shall conform to Class C electrical insulation like porcelain and other ceramics, asbestos cement, patented thermo-plastics, etc, and shall have high thermal insulation properties. The material shall be hard enough to withstand mechanical vibrations and shall not deteriorate with time. the material shall be non-hygroscopic. If asbestos cement is used, it shall be unimpregnated and shall conform to non-ignitable board Class 2 as per IS 4248:1967 `Non-ignitable and self-extinguishing boards (with mineral base) for electrical purposes .

3.2.1 Surface finish of parts covered by 3.2 above shall be smooth. The surface inside the arcing chamber exposed to arcing shall not decompose to form electrically conducting layer. The electrical insulation resistance of the arcing chamber, as measured between the fixed and moving contacts of the contactor shall not be less than one kilo-ohm/volt in relation to the voltage rating of the contactor, after make and break operation of 10000 times at rated current and voltage.

Electrical conducting dust gets deposited on the inner side walls of the arc chamber due to soot/copper globule formation as a result of continuous use, leading to non-breaking of the current when the contactor is de-energized.

3.3 The material for the non-magnetic parts used for assembly of the arcing chamber and which lie in the electro-magnetic field created by the arc suppression coil, shall be brass Grade I of IS 291:1989 `Machining Purposes – Specification (third revision)' or any other suitable material to be approved by the user.

3.4 Electrical insulating materials not subjected to heat inside the arcing chamber shall conform to Class F. Suggested materials are resin bonded glass fibre sheet, bakelite, teflon, steatite etc.

3.4.1 The thickness of the insulating sheet covered by 3.4 above shall be 1.5 to 2 mm unless otherwise specified by the user in their drawing.

3.5 Materials for other parts shall be as specified below:

a) Spring Washer Spring steel C-60 as per IS 4072:1975 `Steel for

		spring washers (first revision)'.
b)	Plain washers, clamp flats	Fe 410 S as per IS 2062:2006 `Hot rolled low, medium & high tensile Structural steel (sixth revision)
c)	Rivets	St 44-R as per IS 1148:1982 `Hot-rolled steel rivet bars (up to 40 mm diameter) for structural purposes (third revision)'.

3.5.1 All the iron parts covered by 3.5 above shall have anti-rust and anticorrosive metallic coating formed by process of electroplating or galvanizing. the coating metal may be cadmium of zinc and the coating thickness shall be not less than 10 microns.

3.5.2 Nickel-chromium coating is not acceptable, as it cracks and peels off due to alternate heating and cooling cycles which the parts undergo.

4. SAMPLE APPROVAL

4.1 Provided that the arcing chamber meets all the conditions stipulated above, in addition, to qualify for approval, the sample shall:

a) Work satisfactorily for three months at rated capacity without showing any signs of mechanical damage or deterioration due to bad manufacture and/or materials, and

b) Pass the insulation value test as per 3.2.1 above.