Indian Standard

APPLICATION OF SPRAY APPLIED INSULATION CODE– OF PRACTICE

PART 3 POLYURETHANE/POLYISOCYANURATE

FOREWORD

This standard (Part 3) was adopted by the Bureau of Indian Standards, after the draft finalized by the Thermal Insulation Sectional Committee had been approved by the Chemical Division Council.

Rigid urethane foam is a generic; name given to polyurethane (PUR) or polyisocyanurate (PIR) rigid foam. These are high efficiency thermal insulation material suitable for use on surfaces operating within the temperature range of -180 to 110°C for PUR and -180 to 140°C for PIR. When applied by spray application processes, the service temperature range is restricted to -30 to +120°C for both the materials.

Some conspicuous features of spray polyurethane foam insulation are:

a) the component raw materials are in liquid form which are relatively stable by themselves and afford acceptable shelf life.

b) the process of manufacture docs not involve application of external heating or development of high temperatures in the enclosure where the material is getting formed as *in-situ* insulation.

c) since it is applied as a liquid, urethane spray applied conforms closely to any contour.

These features are exploited in *in-situ* spray application.

This technique is a preferred method adopted for many thermal insulation application, such as for buildings, storage and other equipment for the range of operating temperatures stipulated above. *In-situ* spray foaming is particularly suited where:

a) complicated shapes contours arc involved which would not lend themselves to easy insulation treatment using preformed rigid materials;

b) a joint free insulation is desired or where the number of joints is to be kept to a minimum: and

c) high disbonding forces are expected to be incident on the insulation system as in cyclone prone areas.

Though this method of insulation can be extremely efficient and cost-effective, it involves carrying out a foaming at site, often under difficult site conditions. Hence, there is need for use of appropriate specialized equipment along with specialized skill, adequate inspection during the actual spray foaming operation, to ensure that the same degree of quality control is obtained comparable to that of preformed insulation materials. The purchaser is advised to thoroughly satisfy him self that the contractor is capable of providing these important inputs that is the required specialized equipment and necessary skilled manpower for the site work. Further, it is necessary to have adequate inspection steps and to have regular test samples at

various stages of project execution on which tests are performed to ensure compliance with the specification.

The following two standards are relevant in this field:

IS No.	*Title*
13205 : 1991	Code of practice for the application of polyurethane insulation by *in-situ* pouring method.
14164 : 1994	Industrial application and finishing of thermal insulating materials at temperatures from -80 °C and up to 750 °C – Code of practice.