IP (INGRESS PROTECTION) RATINGS

—

BATHROOM ZONES AND EQUIPMENT CLASSES EXPLAINED

DOLPHIN

IP (INGRESS PROTECTION) RATINGS

BATHROOM ZONES AND EQUIPMENT CLASSES EXPLAINED

IP RATINGS EXPLAINED (IP = INGRESS PROTECTION)

1. The first digit - protection against ingress of foreign bodies, like: tools, dust, fingers, etc.
2. The second digit - protection against ingress of liquids. Ex. IP44 offers protection against solid objects greater than 1 mm and water sprayed from all directions.

The first digit - protection from foreign bodies

* 0 no protection from foreign bodies;
* 1 protected against solid objects greater than 50mm (e.g. accidental touch by hands);
* 2 protected against solid objects greater than 12mm (e.g. fingers);
* 3 protected against solid objects greater than 2.5mm (e.g. tools and wires);
* 4 protected against solid objects greater than 1mm (e.g. small tools and wires);
* 5 protected against dust, limited ingress (e.g. no harmful deposit);
* 6 totally protected against dust.

The second digit - protection from liquids

* 0 no protection from liquids;
* 1 protection against vertically falling drops of water(e.g. condensation);
* 2 protection against direct sprays of water up to 15 degrees from vertical;
* 3 protection against direct sprays of water up to 60 degrees from vertical;
* 4 protection against water sprayed from all directions - limited ingress permitted;
* 5 protected against low pressure jets of water from all directions - limited ingress permitted;
* 6 protected against high pressure jets of water (use on ship deck) - limited ingress permitted;
* 7 protected against the effects of immersion between 15cm and 1m;
* 8 protected against long periods of immersion under pressure.

BATHROOM ZONES EXPLAINED

ZONE 0

Zone 0 for a bathroom is the area inside the bath.

Zone 0 for a shower room is the area inside the shower basin. If there is no shower basin, zone 0 is 10cm high from the finished floor level and extends to 1.2m around the fixed shower head.

ZONE 1

Zone 1 for a bathroom is the same width as zone 0 (the width of the bath) extending to 2.25m above the finished floor level.

Zone 1 for a shower room is 2.25m from the finished floor level or the height of the fixed shower head from the finished floor level if more than 2.25m, and the width of the shower basin. If the shower has no basin then zone 1 extends to 1.2m around the fixed shower head.

Zone 1 does not include zone 0.

The space under the bath tub or shower basin is considered to be zone 1. However, if the space under the bath or shower basin is only accessible with a tool, it is considered to be outside the zones.

ZONE 2

Zone 2 for a bathroom is the same height as zone 1 (2.25m) extended to 0.6m around the bath.

Zone 2 for a shower room is the same height as zone 1 extended to 0.6m around the shower basin. If there is no shower basin zone 2 is replaced by zone 1 extended to 1.2m around the fixed shower head

The extent of the zones in a bath or shower room can be limited by floors, ceilings and walls. For more detailed information see BS 7671 diagrams 701.1 & 701.2. Any electrical equipment installed on the surface of floors, ceilings and walls that limit a zone is subject to the requirements of that zone.

RCDs are required for all circuits in locations that contain a bath or shower. The requirements for local supplementary bonding have been relaxed if certain conditions are met.

Please note that this guide is only to be used as general reference. Please ensure that you are fully aware that any electrical and installation work must be carried out in accordance with IEE Wiring Regulations, The Building Regulations and any further compliancy that might be required. If in any doubt, consult proffesional help from a qualifed individual or company.

PROTECTION AND IP RATINGS

Typical electrical items which are marked with IP numbers include:

- Extractor fans
- Lighting
- Heaters
- Electrical shower units
- Shower pumps

Shaver power points are not IP rated, however, if they comply with BS EN 60742 Chapter 2, Section 1, they can be located in zone 2 (or beyond) providing they are unlikely be be the subject of direct spray from any shower.

As well as IP numbers, items may be classed as PELV or SELV.

Protective Extra-Low Voltage (PELV) - As the name suggests, the item uses low voltage but it is connected to earth.

Separated Extra-Low Voltage (SELV) - Again a low voltage system but the output is isolated from the input.

Standard electrical wall fittings (such as wall sockets, flexible cord outlets and fused switches etc) are not IP rated so cannot be installed within zones 0, 1 or 2. No standard socket outlets are allowed within 3m of the outer limit of zone 1, and any socket fitted would be on a RCD protected circuit (as per Protection above).

USE OF EQUIPMENT

Any electrical item approved for use in a zone may be used in another zone with a higher number, but not in a lower number zone.

Zone 0

Requires electrical products to low voltage (max. 12 volts) and be IPX7 (the mechanical protection is unimportant).

Zone 1

Requires electrical products to be IPX4 or better, or SELV with the transformer located beyond zone 2. unless water spray will be present. In this case, a rating of IPX5 should be used.

Zone 2

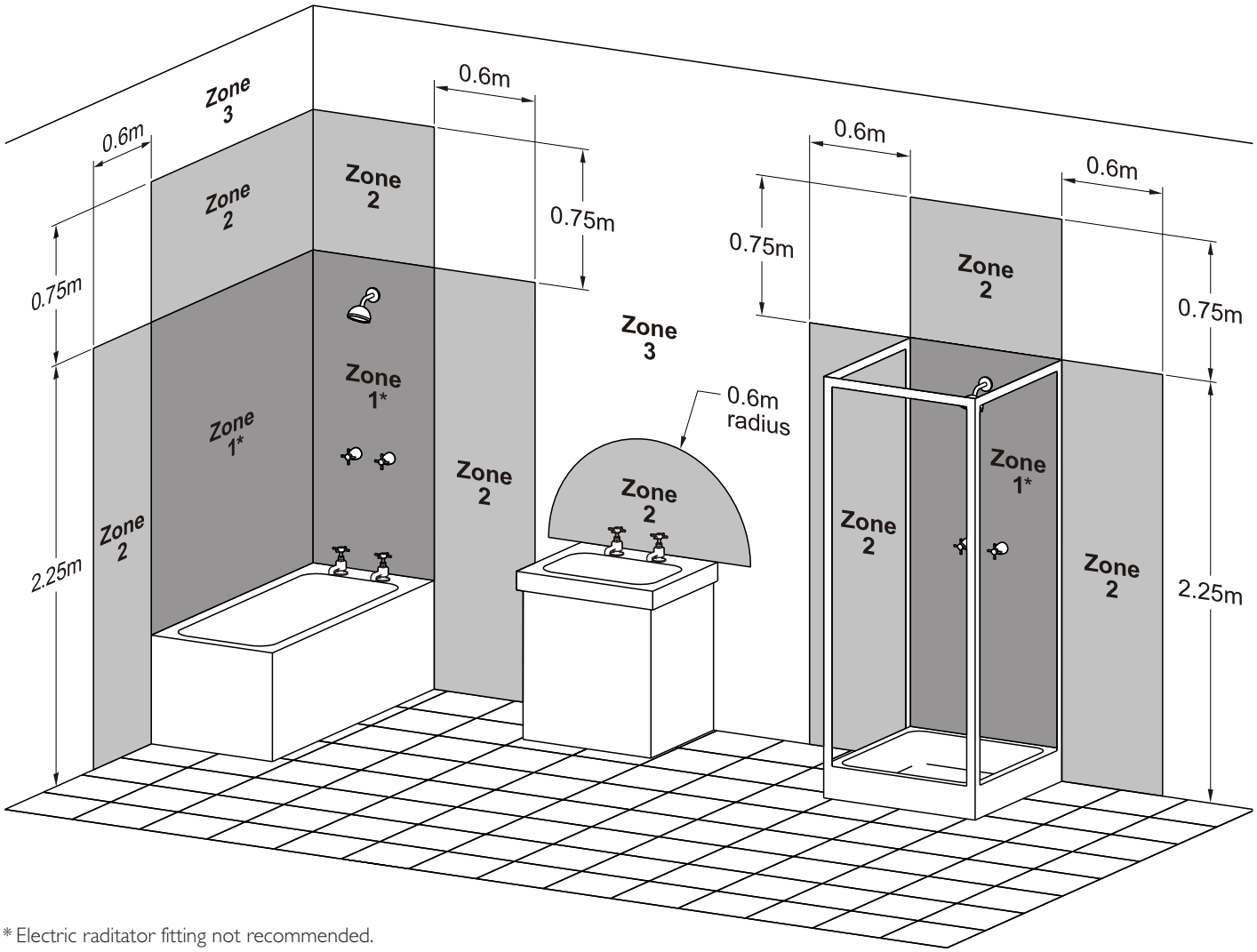
Requires electrical products to be IPX4 or better, or SELV with the transformer located beyond zone 2.

Zone 3 - the area outside zones 1 & 2.

When the size of bathroom extends beyond zone 2, assuming water jets are not to be used for cleaning this area, lower IP ratings can be used and portable equipment is allowed, however they should be positioned such
that that their flex length does not
enable them to be used in zone 2.

BATHROOM ZONES EXPLAINED

Bathroom Zones & IP Ratings



* Electric raditator fitting not recommended.

EQUIPMENT CLASSES EXPLAINED

CLASS 0 EQUIPMENT

"Equipment in which protection against electric shock relies on basic insulation only. There is no supplementary or reinforced insulation."

An example of Class 0 equipment is older style mains powered Christmas tree lights where the lights are interconnected by a bell flex type cable which is insulated but not sheathed. The recommendation is that these type of appliances should no longer be used.

CLASS 01 EQUIPMENT

"Equipment has at least basic protection throughout and is provided with an earthing terminal. The equipment has a power supply cord without a protective earthing conductor and is fitted with a plug without an earthing contact."

This is specialist equipment and is not for common use.

CLASS 1 EQUIPMENT

"Equipment in which protection against electric shock does not rely on basic protection only, but which includes means for the connection of exposed-conductive-parts to a protective conductor in the fixed wiring of the installation."

The metal parts of Class 1 equipment could assume a hazardous voltage if the basic insulation fails, so there is a requirement that the metal parts are earthed via the protective conductor. Class 1 equipment relies for its safety upon a satisfactory means of earthing from the equipment to the circuit protective conductors of the fixed installation.

Examples of Class 1 equipment are kettles, irons, washing machines etc.

CLASS 2 EQUIPMENT

"Equipment in which protection against electric shock does not rely on basic insulation only, but in which additional safety precautions such as supplementary insulation are provided, there being no provision for the connection of exposed metalwork of the equipment to a protective conductor, and no reliance upon precautions to be taken in the fixed wiring of the installation."

Class 2 equipment is also commonly known as "double insulated". As there is no earth required for Class 2 equipment there is no reliance on the earthing of the fixed installation for their safety.

Examples of Class 2 equipment are hair dryers, garden power tools etc.

CLASS 3 EQUIPMENT

"Equipment in which protection against electric shock relies on supply at SELV and in which voltages higher than those of SELV are not generated." SELV stands for "Separated extra-low voltage" which means that the equipment operates at a voltage no greater than 50v a.c. or 120v d.c. and has no protective earth connection.

Examples of Class 3 equipment are low voltage lighting etc.

DOLPHIN SOLUTIONS LTD
Southpoint, Compass Park, Bodiam, Robertsbridge TN32 5BS
Tel: 01424 202224 Fax: 01424 205200
www.dolphinsolutions.co.uk

DOLPHIN