

S.R. 16:2016 – GUIDANCE ON THE USE OF I.S. EN 12620:2002 - AGGREGATES FOR CONCRETE

Introduction

Standard Recommendation 16 (S.R. 16) is the Irish national guidance on the harmonised standard, I.S. EN 12620:2002+A1:2008, which defines the characteristics and properties required of aggregates for concrete, and with which all such aggregates must comply. This includes aggregates used in the manufacture of readymix concrete, concrete used in roads and other pavements, precast concrete, concrete blocks and precast concrete paving.

S.R. 16:2016 was published by the National Standards Authority of Ireland (NSAI) in December 2016, following a detailed review by the NSAI Aggregates Panel. This advice note is based on the newly published Standard Recommendation and concentrates on the key issues therein.

CE Marking to AVCP System 2+

As I.S. EN 12620:2002+A1:2008 is a harmonised standard, material produced and placed on the Irish market in accordance with this standard must be CE marked appropriately and the manufacturer must prepare and make available a Declaration of Performance for each product.

The Declaration of Performance, which is a statutory requirement, must be sent out with each load despatched or otherwise be available on the manufacturer's website. It should include the following statement with regard to the intended use: *"Aggregates for Concrete"*.

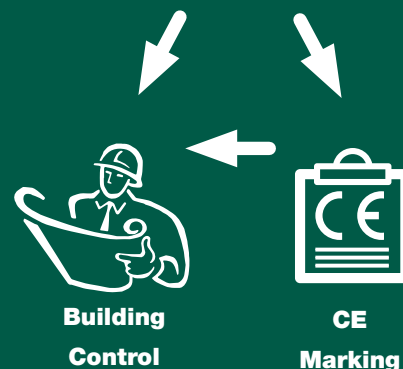
Originally the Assessment and Verification of Constancy of Performance (AVCP) system for all aggregates for concrete was level 4 with the exception of aggregates for use in skid resistant concrete surfaces. As a public confidence measure arising from legacy quality issues, it is now a requirement that the AVCP system for "Aggregates for Concrete" placed on the Republic of Ireland market be to level 2+. This means that all manufacturers of such aggregates for sale to concrete manufacturers require to have achieved AVCP level 2+ within one year of the publication of S.R. 2016, i.e. by 1st January 2018. This will require an annual independent audit and certification of compliance by an independent (notified) certified body of the manufacturer's Factory Production Controls (FPCs) in accordance with those outlined in I.S. EN 12620:2002 and other provisions of the national guidance document S.R. 16:2016.

It should be noted that aggregates that are sourced from a concrete product manufacturer's own supply and therefore are not placed on the market do not require CE marking under the Construction Products Regulation (CPR). However, most aggregate manufacturers supply some amount of products under I.S. EN 12620 onto the market and so it is likely that most sites will be required to achieve certification to AVCP system 2+. This may also result in market pressure on all producers of materials under I.S. EN 12620 to achieve the certification, even where the aggregates are used in-house where such certification is not mandatory. The time period allowed for achieving certification was designed to allow manufacturers incorporate the necessary additional audit within the normal cycle of 2017 Notified Body audits.

The specific requirements for the designation and description of aggregates and requirements for marking and labelling of delivery dockets are outlined in Section 3.7 and Section 3.8 of S.R. 16 respectively.



Product Standard



Building
Control

CE
Marking

**CONCRETE
BUILT IS
BETTER BUILT**



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Building Regulations

Within the current National Building Regulations Technical Guidance Document Part A (Structure), it is expressly stipulated that aggregates for readymix concrete must comply with the standard (I.S EN 12620) and S.R. 16 (see TGD A Section 1.1.5.2).

Geological and Petrographic Assessment

The quarry deposit must now be subject to initial and ongoing assessment, including geological and petrographic assessment as required by the standard and national guidance. Following the initial assessment, an additional geological and petrographical assessment of the quarry deposit must be carried out at least every 3 years, or when there is a major change in the lithology in the quarry, or as recommended by a professional geologist.

A professional geologist must be listed as a professional member of the Institute of Geologists of Ireland, or an equivalent professional body, with a minimum of 5 years experience of geological assessments of quarries and aggregates.

The assessment should give particular attention to identify and limit the presence of suspected problematic lithologies and/or minerals which may be unsuitable for use in concrete and concrete products. The professional geologist should assess the petrographic assessment in conjunction with other results and provide the quarry operator with a report with particular reference to potential limitations on the end use of the aggregates.

The professional geologist's report may deal with a range of potential uses across a number of aggregate standards as long as each particular use and standard are expressly detailed and addressed with a statement of compliance for each use. Annex C of S.R 16:2016 provides guidance on the geological and petrographical assessment required, and is largely identical to that set out in other national guidance for aggregate products with different end uses.

Factory Production Control and Evaluation of Conformity

In S.R 16, manufacturers continue to be directed to Annex H.5.3 and Tables H.1, H.2 and H.3 of I.S. EN 12620:2002 + A1:2008 for sampling and test frequencies, with one amendment that the minimum test frequency for sulfur compounds should be increased to twice per year, i.e. every six calendar months (see Section 3.6.4.1).

It is expressly stated that some testing can be done for multiple products (see Section 3.6.5), where products are being made from the same resource and tests are common

for compliance with multiple standards and Standard Recommendations, subject to the approval of the competent professional geologist.

Annex A contains a comprehensive list of physical parameters and limits, with additional information required on assessment of fines quality of fine aggregate or filler, and a requirement to declare Particle Density, Water Absorption, Magnesium Sulfate value, as well as Water Soluble Chloride Ion Acid Soluble Sulfate and Total Sulfur contents for all aggregates (natural aggregates and recycled concrete.)

Annex B deals with particular sources and/or specific end uses, and limits/thresholds identified here for particular sources or end uses should be taken as the defining limits/thresholds where conflicting with those set out in Annex A.

An important change to Annex B is the identification of Masonry Units of Classes MX3 to MX5 as being particular end uses (see Table B.5-Masonry subject to freeze/thaw attack) and the imposition of a Magnesium Chloride requirement of MS₂₅ for such uses.

Use of Recycled Concrete Aggregates

While not expressly precluded from use in the current S.R. 16:2004, recycled concrete aggregates were effectively precluded by virtue of an Acid Soluble Sulfate limit of 0.2%. S.R. 16:2016 now provides for an increased Acid Soluble Sulfate limit for **recycled concrete aggregates only** of 0.8% (see table B.8), the same level as in the UK where such use is routine. The current limit of 0.2% will remain for all natural aggregates as outlined in Annex A.

It should be noted that, in many instances, recycled concrete arises following recycling of waste concrete, which is also subject to waste legislation. Ireland has yet to establish end of waste criteria for such waste streams and is currently unlikely to do so until 2017, thereby prohibiting its use in the interim. Manufacturers proposing to produce recycled concrete aggregates must have regard to the legal consequences of non-compliance with this waste legislation.

Note: SR 16:2016 is available for sale by contacting the following:

- NSAI Standards Sales phone number: +353 1 857 6730 or [/www.nsa.ie/Our-Services/Standardization/Search-for-Standards.aspx](http://www.nsa.ie/Our-Services/Standardization/Search-for-Standards.aspx)

Disclaimer: This document is for general guidance only. Readers are advised to consult the relevant standards, regulations and/or standard recommendations and obtain appropriate professional advice where necessary.

