



## Cylindrical gears for general and heavy engineering — Basic rack

*Engrenages cylindriques de mécanique générale et de grosse mécanique — Crémaillère de référence*

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## FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 53 (originally ISO/DIS 2334) was drawn up by Technical Committee ISO/TC 60, *Gears*, and circulated to the Member Bodies in February 1971.

It has been approved by the Member Bodies of the following countries :

|                     |                       |                |
|---------------------|-----------------------|----------------|
| Australia           | Italy                 | Sweden         |
| Belgium             | Japan                 | Turkey         |
| Czechoslovakia      | Netherlands           | United Kingdom |
| Egypt, Arab Rep. of | New Zealand           | U.S.S.R.       |
| France              | Poland                |                |
| Ireland             | South Africa, Rep. of |                |

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Hungary  
Switzerland

This International Standard cancels and replaces ISO Recommendation R 53-1957.

# Cylindrical gears for general and heavy engineering — Basic rack

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard defines the characteristics of the basic rack for gears of module  $m = 1$  and diametral pitch  $P = 1$  for cylindrical gears (external or internal) for general and heavy engineering within the limits  $1 \leq m \leq 50$  and  $20 \geq P \geq 0,5$ .<sup>1)</sup>

Nevertheless the defined profile does not take into account the possible cut-off of the height of internal teeth. This height has to be calculated for each case.

## 2 TERMS AND DEFINITIONS<sup>2)</sup>

**2.1 standard basic rack tooth profile:** The rack tooth profile which is used as a basis for defining the standard tooth dimensions of a system of involute gears.

**2.2 basic rack:** An imaginary rack having the standard basic rack tooth profile for normal section.

**2.3 datum line:** The line of intersection of the datum plane with the plane of the basic rack tooth profile, or, in the reference profile, the line in relation to which the dimensions of the teeth are specified (ratio of the tooth thickness to the pitch generally equal to 0,5).

## 3 PROFILE

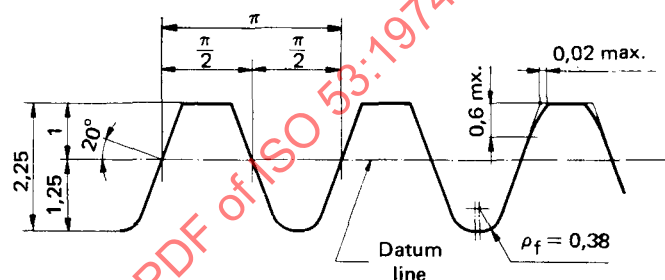


FIGURE 1 Representation of the profile of module  $m = 1$  or of diametral pitch  $P = 1$

### NOTES

1 The profile of the standard basic rack refers to cylindrical gears with involute teeth. It has substantially straight sides and the following characteristics:

|                 |                                                    |
|-----------------|----------------------------------------------------|
| Pressure angle  | 20°                                                |
| height of tooth | 2,25 $m$ (dimensions in millimetres)               |
|                 | 2,25<br>or $\frac{2,25}{P}$ (dimensions in inches) |

2 The tips of the teeth are at a distance from the reference line equal to the module and the thickness of the tooth measured on this line equals the spacewidth.

3 The standard value of the radius at the root of the tooth is fixed at 0,38  $m$ . In certain cases and as far as permitted by the conditions of meshing, this value may be increased up to a maximum of 0,45  $m$ , without changing the whole depth of 2,25  $m$  of the tooth.

4 When it is desired to effect relief to the profile, this relief is applied, in principle, to the tips of the teeth (tip relief).

1) See ISO/R 54, *Modules and diametral pitches of cylindrical gears for general and heavy engineering*.

2) Extract from ISO/R 1122, *Glossary of gears — Geometrical definitions*.