

# Strength Calculations for Gears

## Amended Guidance

Guidance for the Survey and Construction of Steel Ships Part D

## Reason for Amendment

IACS Unified Requirement (UR) M56 is related to the strength calculations for gears and is based upon ISO 6336 “Calculation of load capacity of spur and helical gears”. The requirements in UR M56 have already been incorporated into the relevant ClassNK Rules.

Requirements related to the calculation of surface strength (pitching) and the tooth root bending stress of gears specified in ISO 6336 were reviewed and revised in 2008. As a result, IACS reviewed UR M56 and amended it as UR M56(rev.2) in October 2013 in order to reflect the changes made to ISO 6336.

Accordingly, relevant requirements were amended based upon UR M56(rev.2).

## Outline of Amendment

- (1) Amended formulae used to calculate internal dynamic factors in order to take into account spur and helical gear profiles, etc.
- (2) Amended formulae used to calculate helix angle factors.
- (3) Amended formulae used to calculate hardness ratio factors in order to distinguish between gears of different heat treatments such as surface-hardened gears and through-hardened gears.
- (4) Specified that rim thickness factors and deep tooth factors were also to be considered when calculating tooth root bending stresses for pinions and wheels.